

## CASE 1

A 55 years old male patient presented suffering from abdominal, colic, repeated greenish vomiting, distension and absolute constipation for three days. He also complains of a mass in the abdominal over a previous laparotomy incision. The mass has become recently larger, tense and tender.

### KEYS

- A 55 years old male
- Abdominal colic
- Repeated greenish vomiting
- Distension
- Absolute constipation
- Mass over laparotomy incision.
- The mass has become recently larger, tense and tender

- What is the diagnosis? *strangulated hernia is a clinical diagnosis.*

→ Mostly it's a case of strangulated incisional hernia however it may be obstructed hernia but it is difficult to clinically differentiate between them so the management will be the same.

- What investigations you need (strangulated hernia is a clinical diagnosis)

#### 1. To confirm the diagnosis

- Plain X-Ray of the abdomen:

- Erect: multiple fluid levels
- Supine: According to distended segment:
  - Jejunal loop → mucosal folds (Valvulae conniventes).
  - Ileal loop → featureless with no mucosal pattern.
  - Colon → haustrations.

⇒ CT scan with contrast: *triple contrast CT scan → v. mp show*

- Has 80-90 % sensitivity in diagnosis, showing transition zone and the facial defect.

#### 2. For complications: (To assess the general condition)

- CBC: hemoconcentration and leukocytosis (especially with gangrene).

- KFTs: Pre-renal failure.

- Serum electrolytes

### N.B.

CT imaging is the standard in emergency evaluation if the clinical diagnosis is in question after history, physical and plain abdominal radiographs.

*D.D of Acute Abdomen  
or D.D of mass in the  
epigastrium.*

*distended*

*collapsed*

▪ What are the management options?

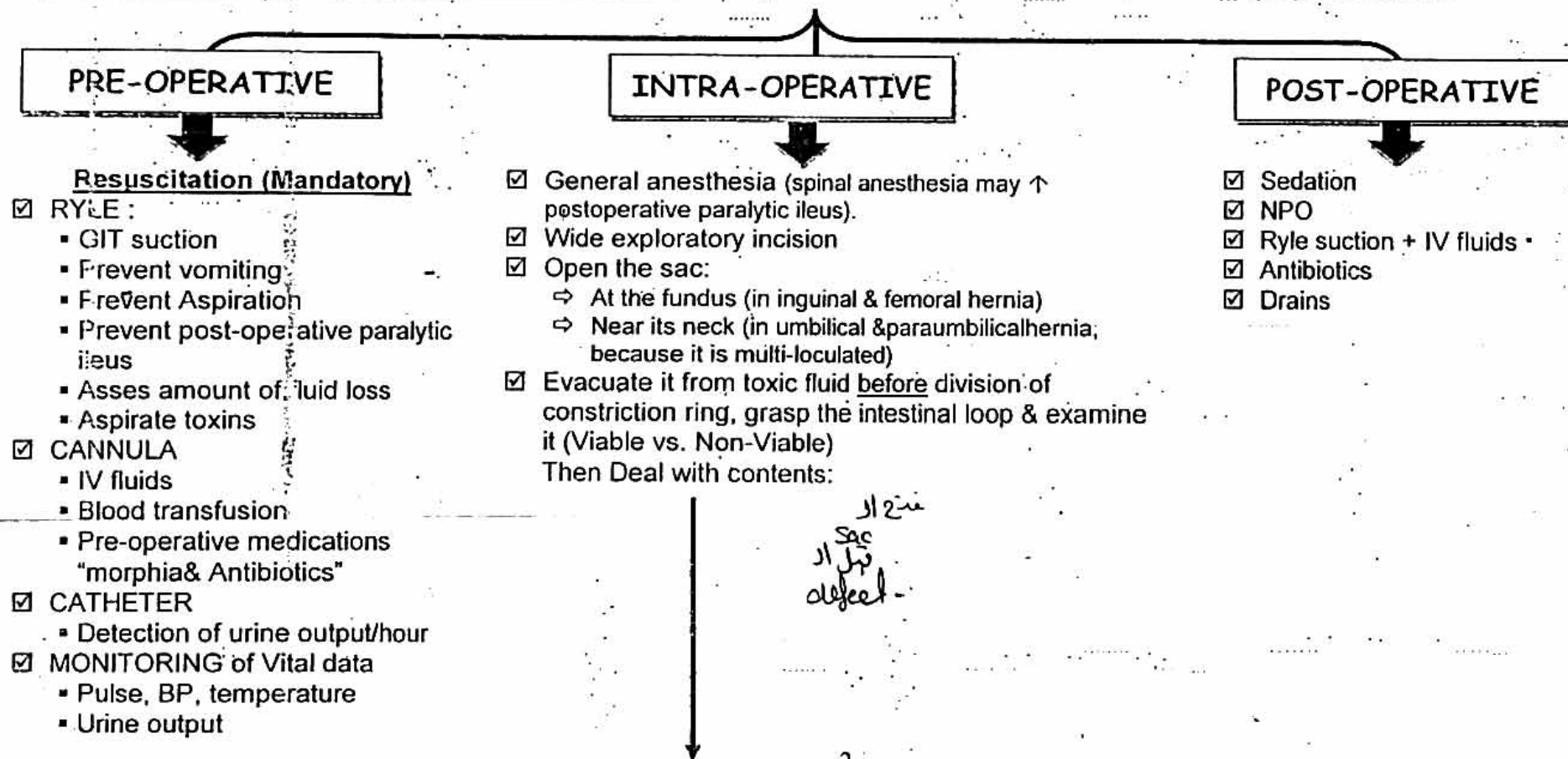
→ It is a case of complicated hernia so the priorities will be:

- TTT of complications. ( strangulation )
- TTT of hernia ( herniotomy ) & herniorrhaphy )

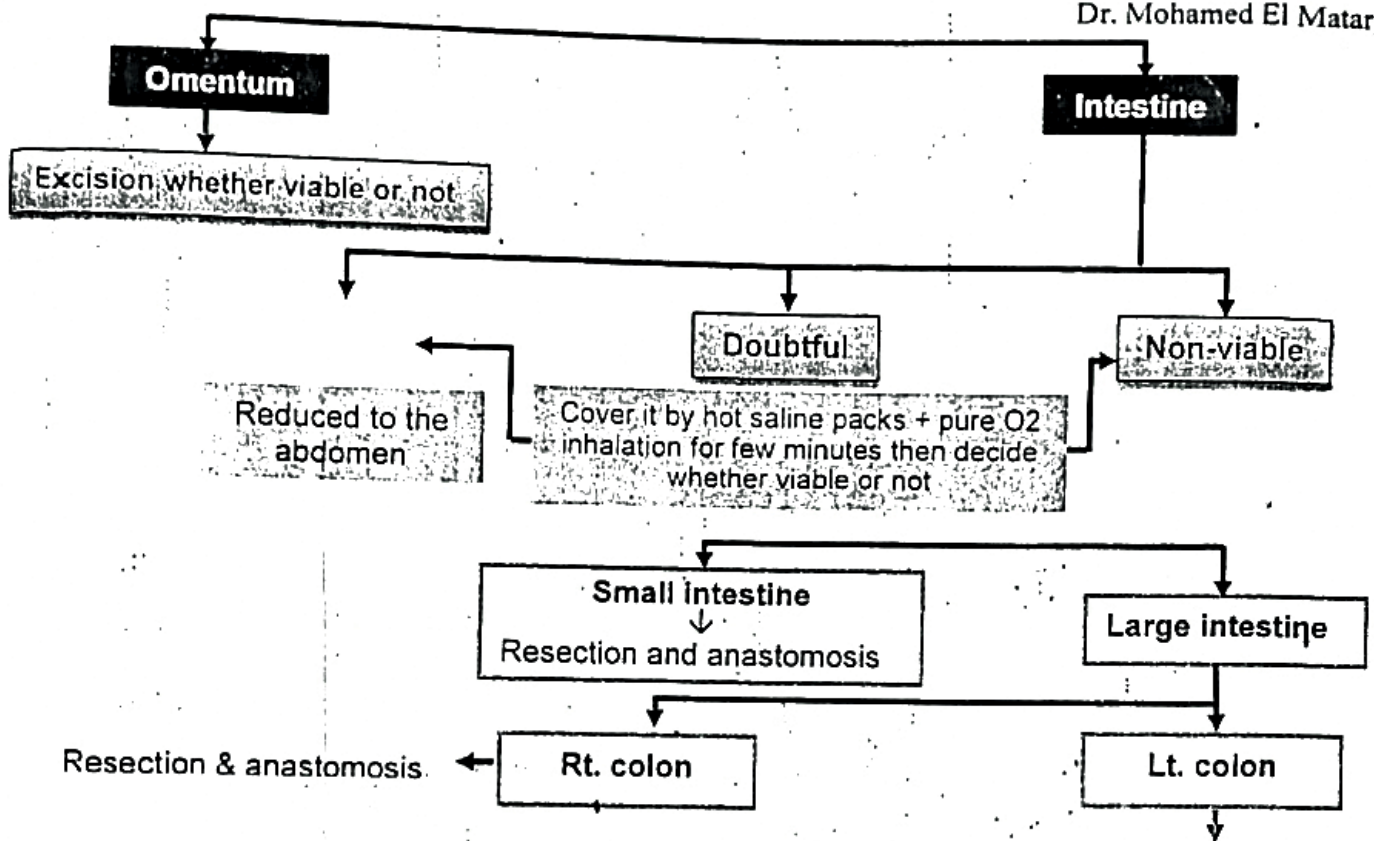
**N.B.**

- Incisional hernia treated by anatomical repair
- No hernioplasty in strangulation as the tissues are potentially infected.

**Treatment of strangulated hernia** → Urgent operation after pre-operative preparation







Colostomy  
مقنطه غير  
فتحة ال  
Hernia

1. Resection and try anastomosis after intra-operative colonic wash (lavage) = Duddy method.
2. Exteriorization of both ends (Mikulicz) from other incision and anastomose later on after improvement of general condition & preoperative colonic preparation.

		Viable	Not viable
Musculature	Consistency	Firm	Floppy
	Peristalsis	Present	Absent
Vasculature	Color	Pink	Green to black
	Mesenteric arteries	Pulsating	Non-pulsating
	If injured	Bleeds	No bleeding
Peritoneal covering	Luster	Present	Absent

#### N.B.

- o The timing for symptomatic hernia repairs depends on whether the hernia is reducible, incarcerated or strangulated
- o Reducible hernias can be repaired in an elective outpatient fashion
- o Incarcerated and strangulated hernias need to go to the operating room emergency.
- o Open or laparoscopic techniques are acceptable, although it is the preference of the author to utilize the open procedure if there is concern for strangulation. This is due to the tissue distortion and friability associated with acute inflammation

## Post-operative management

- For urgent or emergent cases if no bowel was affected usually 24 hours of observation are adequate before discharge.
- For elective cases or cases with omental incarceration, the patient usually can be discharged within 3 to 4 hours
- In cases where bowel was found strangulated and bowel resection was done, the patients are usually followed in the hospital for 2 to 3 days
- Follow up in all cases usually 3 to 4 weeks post operatively to check the wound healing
- Most patients are able to return to work within 2 weeks from surgery, and even earlier if performed laparoscopically.
- No heavy weight lifting is advisable up to 3 months from the operation.
- TTT of PPF to avoid the recurrence

## CASE 2

A 45-years-old male presented with irreducible Rt. O.I.H he was absolutely constipated since one day & there was vomiting 3 times.

### KEYS

- A 45-years-old male
- Irreducible Rt. O.I.H
- Absolutely constipated
- Vomited 3 times.

• What is the most probable diagnosis?

→ Mostly it is a case of obstructed Rt. oblique inguinal hernia however it may be strangulated hernia but it is difficult to differentiate clinically between them so the management will be the same

• How to differentiate clinically between irreducible and strangulated hernia?

→ The differentiation between obstruction and strangulation is difficult clinically, so they have the same treatment. Urgent operation to avoid strangulation, because we can't differentiate between both. However;

- Strangulation gives no expansile impulse on cough (obstructed hernia gives weak expansile impulse with cough).
- Strangulated hernia tense (full of exudate or transudate) & tender. (Obstructed hernia is not).

• Discuss the management of the presented case?

( See before )

## CASE 3

A 61 year old man presents to the emergency department with constipation and left groin mass for 3 days. His past medical history was notable for chronic obstructive pulmonary disease, type 2 diabetes, obesity & hyperlipidemia. His



surgical history was significant for two prior inguinal hernia repairs on the left side. He describes an increase in abdominal pain and distention over the past 3 days. His oral intake has decreased and he reports minimal urine output over the past 2 days. Large 12x12 cm bulge in the left inguinal region. The mass is tender to palpation, erythematous and non-reducible. Although the bulge has intermittently been present, the patient state that the size and tenderness are new in the past 2 days. Laboratory values were notable for a WBC of 8.7

### KEYS

- A 61 year old man
- Constipation, left groin mass, increase in abdominal pain and distention over the past 3 days.
- Chronic obstructive pulmonary disease, type 2 diabetes, obesity, hyperlipidemia.
- Two prior inguinal hernia repairs on the left side.
- large 12x12 cm bulge in the left inguinal region, the patient state that the size and tenderness are new in the past 2 days
- The mass is tender to palpation, erythematous and non-reducible.
- WBC of 8.7.

→ Mostly it's a case of strangulated left recurrent inguinal hernia however it may be obstructed hernia but it is difficult to clinically between them so the management will be the same.

- Discuss the management of the presented case?  
( See before )

## CASE 4

A 55 year old male smoker with diabetes and hypertension presents to the outpatient clinic with complaints of intermittent periumbilical abdominal discomfort of 3 months duration. On examination his vital signs are stable and his BMI is 41 → He has a long midline scar with 5x6 swelling in the periumbilical area. There are no overlying skin changes, the swelling is reducible and tender only to deep palpation. His past surgical history is notable for a perforated diverticulitis 5 years prior requiring emergency colectomy with diverting sigmoid colostomy. His colostomy was reversed 2 years ago and was complicated by wound infection that healed by secondary intention.

### KEYS

- A 55 year old male smoker
- diabetes, obesity (BMI is 41) and hypertension
- Long midline scar with 5x6 swelling in the periumbilical area.
- There are no overlying skin changes, the hernia is reducible and tender only to deep palpation
- Surgical history is notable for a perforated diverticulitis 5 years prior requiring emergency colectomy with diverting sigmoid colostomy.
- His colostomy complicated by wound infection that healed by secondary intention.



▪ What is your diagnosis?

→ Clinically it's a case of incisional hernia not complicated.

▪ What is the D.D?

(Associated with DM or HTN →  
عسر هضمي Digestion) (منه من 14/5/2018)

- Rectus diastasis (separation of right and left recti abdominis muscle from midline)
  - Common problem in postpartum women and obese men.
  - Symmetric, midline bulge
  - Extending from the umbilicus to the xiphoid process
  - Fascia is intact → there is no need for surgical repair
- Chronically incarcerated ventral hernia from an acutely incarcerated hernia
  - Acute incarceration may present with bowel obstruction

▪ What are the risk factors of this condition?

a. Pre-operative:

1. Weak abdominal muscles.
2. Obesity.
3. Chronic cough
4. Chronic constipation
5. Senile enlarged prostate.
6. Nature of 1ry disease e.g. peritonitis, neglected I.O. or abdominal malignancy.
7. General debilitating disease e.g. uremia, obstructive jaundice or DM.

**N.B.**  
The most common cause is SSI

b. Operative:

1. Excessive trauma to the tissues.
2. Bad hemostasis, with loss of > 1000 ml blood during operation.
3. The repair is too loose or too tight.
4. Vertical more than transverse incisions.
5. Muscle cutting more than muscle splitting incisions.
6. Closure of abdominal wall with absorbable sutures. It's recommended to take good bites on either sides of the wound using non-absorbable sutures as prolene.
7. Insertion of foreign bodies like tube drains in the main wound.

c. Post-operative:

1. Wound infection (SSI) → friable tissues, consumption of nutrients, dissolve of catgut).
2. Vomiting or vigorous coughing due to bad recovery from anesthesia.
3. Early return to work.
4. Persistent precipitating factors.
5. Abdominal distension due to prolonged paralytic ileus.
6. Wound hematoma.

▪ What is the treatment of this condition?

- Pre-operative preparations:

- Avoid the precipitating factors e.g. reduction of weight, stop smoking for at least one week, control of diabetes.
- Treatment of intertrigo if present.
- Gradual abdominal insufflation, prepare for post-operative ventilator if large hernia.  
↳ pneumoperitoneum.

\*Investigation in this case

→ The Hernia is a clinical diagnosis However

» (e.g. strangulated)  
obstructed  
hernia  
↓  
transhernial  
T.M.

investigations

to show

I.P.L

triple contrast C.T scan

White Knight Love



### Intra operative considerations:

- Use of non-absorbable prolene sutures in closure of the abdominal incision.
- Good bites on each side (0.5 cm).
- Use of mesh to avoid tension (the most important dependent factor for recurrence).
- Types of surgical repair:
  - Anatomical repair.
  - Maingot (Keel) repair.
  - Cattell's repair.
  - Tension-free hernioplasty especially if large.
  - Laparoscopic hernia repair.

### Post-operative complications

- Respiratory distress, wound infection, seroma, recurrence are the commonest

### Palliative (abdominal corset):

- If the operation is contra-indicated
- + Write TTT of complication possible complications in brief such as strangulation .....

## CASE 5

A 50 year old obese man is referred for evaluation of right inguinal bulge occurring 5 years following open repair of a right inguinal hernia .He has noticed bulge for the last several months .He denies any obstructive symptoms and has had no symptoms on the left side .Physical exam demonstrates some reducible fullness in the right groin .

### KEYS

- A 50 year old obese man
- Right inguinal bulge occurring 5 years following open repair of a right inguinal hernia
- Reducible bulge for the last several months
- No obstructive symptoms
- No symptoms on the left side.

### ▪ What is your diagnosis?

→ Clinically it's a case of recurrent Rt. inguinal hernia not complicated.

### ▪ What is the D.D.?

- |                         |                                     |
|-------------------------|-------------------------------------|
| 1. Direct hernia        | 6. Infantile hydrocele of the cord. |
| 2. Dual hernia          | 7. Encysted hydrocele of the cord   |
| 3. Femoral hernia.      | 8. Hydrocele of hernial sac.        |
| 4. Varicocele           | 9. Fibro-fatty lipoma of the cord   |
| 5. Congenital hydrocele |                                     |

### ▪ What is the etiology of such case?

- |                                      |  |
|--------------------------------------|--|
| - As incisional hernia( See before). | - Displacement of prosthesis           |
| - Incomplete removal of the sac      | - Use of prosthesis of inadequate size |
| - Missed sac (as dual hernia)        |  |

- some authors believe we could do investigation to study the anatomy of inguinal canal → laparoscope (المناظير)

▪ What is the investigation would you like to do?

- Hernia is a clinical diagnosis
- Investigations are done to detect precipitating factors, complications and as preoperative preparation of all patients
- However to evaluate for recurrent hernia the best imaging study is C.T. of the abdomen and pelvis with at least oral contrast. Two sets of images should be obtained, the first using the standard technique and the second while the patient performing valsalva maneuver. This test will allow for better identification of hernia contents, the inguinal canal

▪ What is the treatment of such case?

- Correction of precipitating factors
- Hernioplasty through a different approach to avoid dissection through the scar tissue.
- Retroperitoneal or laparoscopic approach should be considered.
- + Write the treatment of possible complications in brief as strangulation,.....

**N.B.**

Put in consideration the following during clinical examination of inguinal hernia:

- The patient must undergo more extensive physical exam of his abdomen in the standing and supine position
- Sensitivity and specificity of physical exam for the diagnosis of inguinal hernia are 75% and 96%, respectively
- The patient should be asked to cough or perform a valsalva maneuver
- In all cases all sides should be examined

## CASE 6

A 2 years old boy presented with right groin lump which proves reducible with sedation, analgesia and cold pack.

**KEYS**

- A 2 years old boy
- Right
- Groin lump
- Reducible.
- On the Anatomical site of hernia.

▪ What is the most likely diagnosis and why?

→ **Rt. inguinal hernia in infants**

- o It is always of indirect type.
- o Occurs in any sex but more common in males (20:1) due to weakness of the wall by the spermatic cord.
- o 55% on the right side due to delayed descent of the right testis.

▪ What is the D.D.?

( See before )



▪ What is your diagnosis?

→ Mostly it's a case of complete burst abdomen

**N.B.**

Postoperative fascial dehiscence has been reported between postoperative days 1 and 21 with the average occurrence being on postoperative day 7!

▪ What are the types of burst abdomen?

1. Partial burst abdomen i.e. incisional hernia
2. Complete burst abdomen with evisceration if the peritoneum is torn
3. Complete burst abdomen without evisceration if the peritoneum is intact.

▪ What is the etiology of this condition?

As incisional hernia ( See before )

▪ What is your management?

- Investigations

▪ Lab:

- Wound and tissue culture.
- Blood tests

▪ Imaging:

- X-ray multiple fluid levels due to ileus.
- U/S for pus pockets.
- CT for pus pockets, to evaluate the extent of the wound separation.

- Treatment

- Prophylaxis: Avoid and treat any predisposing factor.
- Treatment of complete burst abdomen:

a. Pre-operative measures:

1. Cover the wound with a sterile towel and warm saline.
2. Ryle's tube + IV fluids + antibiotics.

b. Operative:

1. Protruded intestinal loop are washed with saline and returned to abdomen
2. Omentum is spread over the intestine
3. Abdominal wall is closed as one layer using "through and through" retention suture as they are retained at least for 3 weeks.

c. Post-operative:

1. After closure of a fascial dehiscence particular attention should be made to modifying risk factors to prevent recurrence.
2. Abdominal binder is used post-operative.
3. Patients should be educated regarding their postoperative surgical and wound care.
4. Patients should be instructed to avoid straining and heavy lifting for a minimum of 6 weeks.
5. Patient's nutritional status should be optimized to promote healing

حالة  
من  
وفاة  
تشنج  
أغشية الحويصلات  
أزمة حجابية  
Syndrome  
ب  
وفاة  
ب  
أول راجع  
كثرة...

## CASE 8

A male patient aged 35 years was suffering from a reducible swelling in the right groin. Suddenly the swelling became irreducible and painful.

- What is the diagnosis and how will you treat him?

### KEYS

- 35 years male
- Reducible swelling in the right groin.
- Suddenly the swelling became irreducible and painful.

→ It's a case of complicated RT inguinal hernia, which may:

	Obstructed	Strangulated
Impulse on cough	+ve (difficult)	-ve
Reducibility	-ve	-ve
A.I.O	+ve	+ve
Tender	+ve	+ve
Tense	-ve	+ve

→ If strangulation or obstruction the management is Urgent operation.  
(see case 1)

## CASE 9

A 24 years old woman presents to E.R. with abdominal pain, nausea, vomiting and anorexia that began the previous evening. She describes her abdominal pain as initially para umbilical, but now localized to the right lower quadrant. Her temperature is 37.9. Her vital signs are otherwise normal. On abdominal exam her abdomen is soft and not distended but tender to palpation over mcburney's point. She has no signs of peritonitis.

### KEYS

- A 24 years old woman
- Abdominal pain, nausea, vomiting and anorexia that began the previous evening.
- Abdominal pain as initially paraumbilical, but now localized to the right lower quadrant.
- Temperature is 37.9
- Vital signs are otherwise normal.
- Abdomen is soft and not distended
- Tender to palpation over mcburney's point
- She has no signs of peritonitis

uncomplicated Acute Appendicitis.



▪ What is the differential diagnosis of this condition?

→ In adult females careful history, examination and U/S are essential to detect the cause.

→ Commonest cause of acute abdomen in surgery is acute appendicitis.

→ D.D.

**1. Acute appendicitis**

▪ Symptoms

- 1- Acute Pain that shifts
  - It starts periumbilical, ill-defined colicky (visceral pain)
  - Within 6-10 hours the pain shifts to right iliac fossa
  - Becomes sharper (Somatic pain).
  - Aggravated by movement or cough.
- 2- Anorexia & Nausea:
- 3- Vomiting: It is always preceded by pain.
- 4- Constipation: Diarrhea may present early in the course of appendicitis (1 or 2 motions) or in case of pelvic or retroileal appendicitis.

▪ General Examination

1. Mild fever  $< 38^{\circ}\text{C}$  (If higher indicates complications or suggest other causes of acute abdomen).
2. Tachycardia not prominent ( $< 100$ ): (Proportionate to fever).  
(If higher indicates complications)

▪ Local Examination

► The signs of appendicitis are more evident on McBurney's point

1. **Inspection:**
  - ↓ Abdominal movement with respiration → indicates peritonitis.
  - Rigidity on the right iliac fossa
2. **Palpation:**
  - Localized tenderness in right iliac fossa.
  - Rebound tenderness on the right iliac fossa.
  - Guarding on the right iliac fossa (voluntary muscle spasm).
  - Rigidity indicates perforation (involuntary muscle spasm).
  - If the patient presents on the third or fourth day of the attack, a tender appendicular mass may be felt in the right iliac fossa.
3. **Auscultation:**
  - There may be diminished intestinal movement.
4. **PV & PR:**
  - To detect pelvic appendix & exclude gynecological causes.

▪ Special Signs

1. **Rovsing's sign: (crossed tenderness)**
  - Pressure on left iliac fossa → pain on right iliac
2. **Hyperaesthesia of triangle of Sheren:**
  - In sub-hepatic appendicitis.
3. **Obturator sign (Zachary Cope): (in pelvic type)**
  - Pain on internal rotation of flexed right thigh due to irritation of the obturator internus muscle by pelvic appendicitis

4. **Psoas sign: (in retrocaecal type)**

- Pain on extension of the right thigh due to psoas spasm as a result of irritation by retrocaecal appendicitis.

**2. Pelvic problems**

1. **Disturbed right ectopic pregnancy:**

- History of amenorrhea
- Shock,
- Vaginal bleeding
- Tender cervix

2. **Acute salpingitis:**

- Fever, vaginal discharge, tenderness often bilateral.

3. **Midcyclic pain (Mittelschmerz)**

4. **Twisted right ovarian**

5. **PID:**

- Vaginal discharge, bilateral pain, mass felt on PV

**N.B.**

- Careful detailed menstrual history should be taken especially as regards the exact date of last menstrual period and any delay in the cycle
- PV examination is very informative

**3. Urological problems**

1. **Right ureteric coli:**

- Pain from loin → groin, pain does not increase with cough, patient writhing on himself while in appendicitis patient lies flat as movement increases pain.

2. **Rt. Pyelonephritis:**

- Fever 40°C + rigors, tender pain, dysuria
- Pain in loin radiate to groin rather than iliac fossa

**4. Lower Abdominal Problems**

1. **Non-specific Mesenteric Lymphadenitis:**

- Common in children.
- There is shifting tenderness

2. **Regional ileitis.**

3. **Deep iliac adenitis:** Common in children

4. **Mickle's Diverticulitis.**

5. **Perforated ileal typhoid ulcer:**

- History of typhoid
- tenderness all over the abdomen
- X-Ray → free gas in peritoneum (erect → gas under diaphragm).

6. **Diverticulitis of a long sigmoid colon.** Common old age

▪ **What are the investigations needed to establish a diagnosis?**

→ **Acute appendicitis is a clinical diagnosis i.e. investigations are needed mainly to exclude other causes of acute abdomen**



- **Laboratory:**

• **Leucocytic count:**

- Moderate leucocytosis (10,000 – 16,000/ul) 80- 90% of cases, However normal WBCs count does not rule out appendicitis.

• **Urine analysis:** To exclude UTI or urinary stones.

• **Pregnancy test:** If ectopic pregnancy is suspected.

- **Radiological:**

• **U/S:**

- May diagnose appendicitis (dilated lumen, thick walled appendix , non-compressible
- Exclude other diseases (Ureteric stones, Gynecological problems)

• **CT**

- Although CT scan is an expensive, a focused contrast CT scan limited to the appendix may actually be cost saving.
- A study showed that routine appendix focused CT in patients with suspected appendicitis prevented unnecessary appendectomies as well as unnecessary hospitalization for observation

- **Instrumental:**

• **Laparoscopy:**

- Some surgeons have the policy to perform laparoscopy for females in the childbearing period with lower right abdominal pain.
- **Advantage** → If the problem is medical (PID, Mid-ovulatory pain) ,we protect the patients from hazards of surgery

**N.B.**

- Patients >50 or have suspicious findings on imaging should undergo colonoscopy to rule out malignancy

▪ **What is the treatment of an appendicular mass?**

- **Appendicular mass:**

▪ **Conservative management:** (Oschner Sherren)

→ This is due to marked adhesion so the operation is difficult & injury of the caecum might lead to fecal fistula

- Semi-sitting position to relax the abdominal muscles & to make the pelvis more dependent
- NPO if there is vomiting for 48 hours.
- Intravenous fluids (until nausea subsides, then oral intake starts with fluids followed by gradual introduction of solid meals).
- Intravenous antibiotics: Ampicillin + Metronidazole + Aminoglycosides.
- Monitoring of:
  - Vital signs
  - Degree of tenderness
  - Vomiting
  - Size of the mass

→ **Results of conservative management:**

- In 80-90% of patients, Mass↓, fever↓, pain↓ → appendectomy after 3 months (interval appendectomy).
- Pain ↑ (throbbing), fever ↑ (hectic) → abscess
- Pain↓, fever↓, but mass persists → investigate as cancer caecum.

Abdominal, mesenteric vascular occlusion  
intestinal fistula

Appendicular abscess: (complicated mass)

- Urgently drainage muscle cutting extra-peritoneal & Antibiotic

## CASE 10

A 28 years old female came to the emergency room with vague abdominal pain, around the umbilicus and then localizing to the right iliac fossa. She had nausea, a pulse rate of 100/min., temperature 37.8 C. Abdominal examination revealed localized tenderness, and rebound tenderness in the right iliac fossa.

### KEYS

- A 28 years old female
- Vague abdominal pain around the umbilicus
- Then localizing to the right iliac fossa.
- She had nausea.
- Pulse 100/min.
- Temperature 37.8 C
- Localized tenderness, and rebound tenderness in the right iliac fossa

▪ What is the most probable diagnosis?

→ **Acute appendicitis**

▪ Enumerate the differential diagnosis? (See before )

▪ What are the investigations required? (See before )

▪ What are the possible complications?

— Local complications:

1. Persistent Obstruction → Gangrene and perforation
2. Appendicular mass (Phlegmon)
3. Appendicular Abscess
4. Chronic Appendicitis (Recurrent Subacute appendicitis)
5. Fecal Fistula

— General Complications: (rare)

- 1- Septicemia, toxemia, bacteremia or pyemia.
- 2- Portal pyemia (Pylephlebitis):
  - It is a grave condition (rare).
  - Cause: Suppurative thrombophlebitis of portal venous system.
  - Clinical Picture: Chills, ↑ fever, low grade jaundice & later hepatic abscess

▪ What is the treatment of the case and its complications?

A. Uncomplicated:

— Acute appendicitis.

- Urgent appendectomy through Gridiron incision at point of maximum tenderness (mostly at McBurney's point)



## **B. Complicated**

### **- Appendicular mass:**

#### **▪ Conservative management: (Oschner Sherren)**

→ This is due to marked adhesion so the operation is difficult & injury of the caecum might lead to fecal fistula

- Semi-sitting position to relax the abdominal muscles & to make the pelvis more dependent
- Ryle if there is vomiting for 48 hours.
- Intravenous fluids (until nausea subsides, then oral intake starts with fluids followed by gradual introduction of solid meals).
- Intravenous antibiotics: Ampicillin + Metronidazole + Aminoglycosides.
- Monitoring of:
  - Vital signs
  - Vomiting
  - Degree of tenderness
  - Size of the mass

#### **→ Results of conservative management:**

- In 80-90% of patients, Mass↓, fever↓, pain↓ → appendectomy after 3 months (interval appendectomy).
- Pain ↑ (throbbing), fever ↑ (hectic) → abscess
- Pain↓, fever↓, but mass persists → investigate as cancer caecum.

### **- Appendicular abscess: (complicated mass)**

#### **▪ Urgently drainage muscle cutting extra-peritoneal & Antibiotic**

a. *U/S guided drainage.*

b. *Open drainage:*

- Muscle cutting incision
- Extraperitoneal drainage
- Drain is introduced
- Appendix is not removed

#### **▪ Appendectomy after 3-6 months.**

### **- Diffuse Peritonitis:**

1. Resuscitation & Monitoring.
2. Exploration.
3. Removal of the appendix.
4. Peritoneal toilet.
5. Three drains:
  - Pelvic drain → most dependent while standing.
  - Hepatorenal → most dependent while lying down.
  - Paracaecal.

- Appendectomy, through Rt. lower paramedian incision due to adhesions & to explore the abdomen to exclude other causes of dyspepsia.

### **- Portal Pyemia:**

- Ligation of ileocolic vessel + antibiotics + TPN.

## CASE 11

A 22 years male with pain in the right iliac fossa, vomiting & diarrhea.  
O/E : tachycardia, with tenderness and guarding the right iliac fossa.

### KEYS

- A 22 years male
- With pain in the right iliac fossa,
- Vomiting & diarrhea.
- Tachycardia
- with tenderness and guarding the right iliac fossa

▪ Discuss the Diagnosis?

→ Mostly it's a case of acute appendicitis pre-ileal, post ileal causing enteritis or pelvic causing proctitis however exclusion of other cause of lower abdominal pain is important (See before )

**N.B.**

This patient is a male patient

▪ What are the Specific Investigations? (See before )

## CASE 12

A 25-years-old male gives history of vague umbilical pain that shifted to the Rt. Iliac fossa of 3 days duration. The patient has pulse of 100/man & temp is 38 c. abdominal examination reveals a tender mass in Rt. Iliac fossa.

### KEYS

- A 25-years-old male
- Vague umbilical pain that shifted to the Rt. Iliac fossa of 3 days duration.
- Pulse of 100/man
- Temp is 38 c.
- Tender mass in Rt. Iliac fossa.

▪ Diagnosis?

→ It is a case of appendicular mass appendicitis however exclusion of other cause of lower abdominal pain is important (See before)

▪ Discuss the Management?

Diagnosis ( C/P, investigations) (See before)

**N.B.**

This patient is a male patient

▪ Treatment

TTT of appendicular mass and abscess (See before)



## CASE 13

A 57 years old man presented with epigastric discomfort since two months for which he received a proton pump inhibitor with no improvement. Dyspepsia was to all types of food. He lost eight kilograms of his weight over the last two months. He is a heavy smoker and occasional alcohol user, but never had such symptoms before the last two months. He is not diabetic. There is no history of gastro-oesophageal reflux nor gall stones. On general examination he looked pale and weak. Abdominal clinical examination was not remarkable.

### KEYS

- A 57 years old man, heavy smoker, alcohol user.
- Epigastric discomfort for two months
- Dyspepsia to all types of food
- With no improvement on proton pump inhibitor
- Lost eight kilograms
- Is no history of gastro-oesophageal reflux nor gall stones
- Abdominal clinical examination was not remarkable.

## CASE 14

A 52 years old male presents with history dyspepsia and epigastric discomfort for 6 months. He describes 2 episodes of black tarry stool and 30 lb weight loss over the past 3 months. His past medical history is significant for hypertension, hyperlipidemia and BPH. He had an open appendectomy as a child. He drinks 8 beers a day and has a 30 pack year history of smoking cigarettes. He has family history of heart disease and hypertension. His medications include tamsulosin, metoprolol, omeprazole and Lipitor. He is not allergic to any medication.

### KEYS

- A 52 years old male
- History dyspepsia and epigastric discomfort for 6 months.
- 2 episodes of black tarry stool → Melena
- 30 lb weight loss over the past 3 months.
- Hypertension & hyperlipidemia
- Alcoholic and smoker

like 6 CRC → show anemic  
 ↓  
 like adult

What are the diagnostic possibilities?

→ Any old male with dyspepsia is cancer stomach until proved otherwise however other causes of dyspepsia should be excluded

## ✓✓ → D.D. of dyspepsia:

### a. Gastric causes

- Chronic gastric ulcer. ( epigastria pain after meal decrease with fasting )
- Chronic gastritis.
- Gastric carcinoma

### b. Duodenal causes:

- Chronic duodenal ulcer (abdominal pain increase with fasting decrease with eating )

### c. Biliary causes:

- GB carcinoma.
- GB stone (Usually female 40 . Fatty ..... )

### d. Pancreatic causes:

- Chronic pancreatitis. ( usually alcoholic )
- Pancreatic carcinoma. (old male with progressive painless jaundice )

### e. Appendicular dyspepsia (chronic appendicitis)

### f. Colonic dyspepsia specially CA caecum

## • How would you investigate him?

### 1. For diagnosis:

#### Upper GI endoscopy:

- To visualize the macroscopic picture.
- Endoscopy detects tumor at earlier stage than radiology. The diagnostic accuracy of upper GI endoscopy for gastric cancer approaches 98% .
- To take multiple biopsies (punch or brush cytology).

#### Barium meal:

##### A- If cauliflower mass:

→ Persistent irregular filling defect

##### B- If malignant ulcer:

→ Large Ulcer niche outside the ulcer bearing area.

##### C- Linitis plastica (leather bottle stomach):

→ Marked narrowing of lumen of the stomach without interruption of barium flow.

## 2. For staging:

#### Abdominal U/S:

- Detects L.Ns involvement (not accurate).
- Detects liver secondaries.

#### CT scan:

- Detects LN involvement (more accurate than U/S)
- Helps in preoperative staging of the disease.

#### Endoscopic U/S:

- Can detect the depth of invasion in the gastric wall

#### PET scan:

- Detect metastasis

written سؤالات

Call سؤالات  
- Screening

Gastric classification  
of cancer stomach  
Linitis

→ show depth  
of invasion  
in the  
muscle  
Endoluminal U/S

CT scan with  
contrast  
→ show  
surrounding  
structure  
& LN



### 3. For follow up:

#### - Tumor markers:

- It is of prognostic value rather than diagnostic.
- CEA ↑ in 65% and indicates extensive spread.
- CA19-9 & recently CA 72-4

### 4. For preoperative preparation:

#### - CBC:

- Anemia (micro or macrocytic anemia)

#### - KFTs, LFTs, serum electrolytes:

- For operable fitness

### ▪ What is the treatment plan for the most probable diagnosis?

#### A. Operable Cases

- Aim is to cure the patient.
- Radical operation is performed:
  - 1) Removal of the tumor bearing area + safety margin 5 cm above + first 1.5 cm of the duodenum below.
  - 2) Removal of the omentum (greater & lesser).
  - 3) Removal of L.Ns
  - 4) Spleen
  - 5) Tail of pancreas.
- According to site of tumor:

Site	Operation	Anastomosis
• Lower 1/3	→ Lower radical partial gastrectomy	Stomach to jejunum (Billroth II or Polya gastrectomy)
• Middle 1/3	→ Total radical gastrectomy	Esophagus to jejunum (Roux enY)
• Upper 1/3	→ Esophagogastrectomy (through thoraco-abdominal incision to guarantee an upper safety margin)	Esophagus to jejunum (Roux enY)

#### **N.B.**

Oral feeding is started once it is established that the patient does not have an intra-abdominal leak from esophagojejunostomy.

#### B. Inoperable Cases

##### ▪ Resectable:

- Palliative gastrectomy (Best palliative option) as it is surface tumor hemorrhage and obstruction might occur, it is not so sensitive to irradiation & chemotherapy.

##### ▪ Irresectable:

- According to site of tumor:

1. If in pyloric region → **Anterior gastrojejunostomy.**
2. If in upper stomach → **Posterior gastrojejunostomy.**

##### ▪ Radiotherapy & chemotherapy.

- 5 fluoro-uracil in general adenocarcinoma not sensitive to irradiation & chemotherapy

## CASE 15

A 40-years-old male patient presented to emergency room with abdominal pain of 24 hours duration. The condition started by sudden severe epigastric pain, followed by a period of total improvement. The patient gives history of dyspepsia. Pulse was 120 per minute, A.B.P was 90/60 mm/Hg & temp 37.9 C. Abdominal examination revealed tenderness & rigidity over epigastrium & Rt. Side abdomen

### KEYS

- A 40-years-old male
- Recurrent abdominal pain of 24 hours duration.
- The condition started by sudden severe epigastric pain, followed by a period of total improvement
- History of dyspepsia.
- Pulse was 120 per minute,
- A.B.P was 90/60 mm/Hg & temp 37.9 C.
- Tenderness & rigidity over epigastrium & Rt. Side abdomen

#### ▪ Discuss the management?

→ **Acute Perforated peptic ulcer mostly duodenal ulcer (Mostly stage of septic peritonitis)**

## CASE 16

A 45 years old business man presented to the ER because of sudden severe pain in his abdomen above the umbilicus. On examination his abdomen was slightly distended, tender, and very rigid on percussion there was obliteration of liver dullness. The patient is a smoker with history of attacks of heart burn but there is no history of medications

### KEYS

- A 45 years old business man , smoker
- Sudden severe pain in his abdomen above the umbilicus.
- Abdomen was slightly distended, tender, and very rigid
- On percussion there was obliteration of liver dullness.
- Attacks of heart burn but there is no history of medications

#### ▪ What is the diagnosis of this case?

→ **Clinically It's a case of acute perforated peptic ulcer.**

→ **Other causes of acute abdomen should be excluded such as:**

- Mesenteric ischemia: There is no cardiac problem or bleeding per rectum.
- Small bowel obstruction: But the pain not colicky, there is diminished liver dullness.
- Crohn's disease: But no chronic diarrhea, malabsorption
- pancreatitis, appendicitis, diverticulitis, ruptured abdominal aortic aneurysm, pneumonia, pulmonary infarction, and renal or biliary colic.

sever board like  
Rigidity  
Laparotomy  
Per  
forated  
peptic  
ulcer



• Describe the development of clinical picture of this case if neglected?

**1. The patient now in the Stage of Chemical Peritonitis:**

▪ Symptoms

- Sudden severe pain in epigastrium, which then becomes generalized.

▪ Signs

➤ General: Pallor, sweating, subnormal temperature, rapid weak pulse.

➤ Local:

- Inspection: Board like rigidity,
- Palpation: guarding, epigastric tenderness.
- Percussion: ↓ liver dullness (air under the diaphragm).  
Shifting dullness (fluid in the peritoneal cavity).
- Auscultation: ↓ intestinal sounds (Paralytic ileus occurs late).
- P/R: fullness in Douglas pouch in females & rectovesical pouch in males.

**2. Stage of Illusion (Quiescent Stage):**

Patient feels better with less pain & rigidity

**3. Stage of Septic Peritonitis if this case neglected**

▪ Symptoms

- Pain increases with rising temperature.

▪ Signs

➤ General: Fever & tachycardia.

➤ Local:

- Generalized rigidity, tenderness, progressive abdominal distension.

• What investigations needed in this case?

**1. Plain X-Ray abdomen erect:**

- Air under the diaphragm (absence of air under diaphragm doesn't exclude perforation but nit is +ve 70% of cases and it is enough to take the patient to the operating theatre).

**2. U/S:** Shows fluid in peritoneum → aspiration.

**3. Gastrografen meal:** ensure escape of the dye through the perforation,

**4. CT with contrast** (more accurate)

**5. Routine pre-operative investigations:** C.B.C ,.....

• What is the management of this case?

- It is important to quickly diagnose a perforated peptic ulcer because the prognosis is good if treatment is provided within the first 6 hours, whereas delayed treatment beyond 12 hours is associated with decreased survival and increased morbidity.

**1. Resuscitation & Monitoring:**

a- Resuscitation:

- Ryle: continuous aspiration.
- IV (fluids, blood, antibiotics, analgesics, H<sub>2</sub> blockers, omeprazole).
- Catheter

b- Monitoring: of BP, pulse, urine output, CVP, electrolytes and pH.

- ▶ Emergency Operation: (the simplest procedure is done)
- ▶ Peritoneal toilet then
  - a. Simple closure of the perforation with omental patch (Graham's method)
  - b. In Gastric ulcer → biopsy must be taken.
  - c. Draining of the peritoneum.

## 2. Postoperative-Care:

### - Medical treatment of the ulcer → LIFE STYLE MODIFICATION:

1. **Rest:** Physical & mental rest (sedatives might be needed)
2. **Small frequent meals:** about 5 times a day
3. **Avoid irritant foods** → spicy etc.
4. **Avoid irritant drugs** → NSAIDs are stopped
5. **Avoid** → smoking, alcohol, coffee, tea and cola.

Change in the character of pain = complicated

## CASE 17

A 33-years-old male patient presenting with persistent projectile vomiting & colicky abdominal pain 4 weeks duration. The vomitus contained food particles from previous meal. On examination his tongue was dry, oliguric & his pulse was 60 per minute, A.B.P was 110/70 mm/Hg. Abdominal examination revealed waves of peristalsis

pyloric obstruction ← healed duodenal ulcer

### KEYS

- A 33-years-old male
- Persistent projectile vomiting
- Colicky abdominal pain 4 weeks duration.
- The vomitus contained food particles from previous meal.
- Tongue was dry, oliguric & his pulse was 60 per minute,
- Blood pressure was 110/70 mm/hg.
- Abdominal examination revealed waves of peristalsis

نقص كلسي  
duodenal ulcer  
وبسبب

### • What is the possible diagnosis and differential diagnosis?

→ Clinically it is a case of gastric outlet obstruction mostly due to healed duodenal Ulcer → post pyloric stenosis complicated by dehydration

#### → D.D. of pyloric obstruction in adults:

- 1- Healed DU: (history of periodic pain that's now lost & become continues. O/E: suction splash)
- 2- Malignant obstruction :Cancer pylorus
  - Old age
  - Cachexia
  - Vomiting
  - Epigastric mass
  - Metastatic: jaundice, malignant ascites.
- 3- Pressure from outside i.e. CA head of pancreas; old age & obstructive jaundice.
- 4- Others: as chron's disease, T.B.



## ▪ Clinical evaluation and investigations?

### ▪ Symptoms:

#### ➤ Pain:

- History of periodic pain, which is lost at presentation & changing to epigastric pain. (Some cases are silent first and first presentation is pyloric stenosis)

#### ➤ Vomiting:

- Projectile, contains food of previous day, not bile stained, foul odour from fermentation, characteristically in the evening

### ▪ Signs: (We have to exclude malignancy)

#### ➤ General:

1. Under weight.
2. Dehydration
3. Chest infection

#### ➤ Abdominal:

##### • Inspection:

- Epigastric fullness
- Peristaltic waves from left to right.

##### • Auscultation:

- Succussion splash

### ▪ Investigations:

→ Main aim is to exclude malignancy & assess the general condition of the patient.

#### 1. Radiological:

دس على برج بركون  
Chest

#### ➤ Barium meal:

##### → Findings:

- a. Dilated stomach
- b. Soup Dish appearance or inverted hat appearance (Fluid level + rugae)
- c. Delayed gastric emptying

Chest X-ray

→ It may miss small pyloric carcinoma, therefore gastroscopy is essential.

#### 2. Instrumental:

#### ➤ Upper GI endoscopy:

→ Main value: To exclude malignancy ± biopsy

→ Findings: Dilated stomach with atrophic gastritis & stenosed inactive pyloric ring with failure of passage through pylorus.

### **N.B.**

Endoscopy can only be done on empty stomach and so should follow a period of fasting & gastric lavage..

#### 3. Laboratory: (assess general condition of the patient)

▪ CBC → anemia, hemoconcentration.

▪ KFTs → prerenal failure.

▪ Serum electrolytes → ↓ Na<sup>+</sup>, K<sup>+</sup> & Cl<sup>-</sup> & paradoxical aciduria.

water & electrolyte imbalance.

Nottingham - 12/3/2018 or gastrojejunostomy

## How to prepare the patient and how to treatment the case?

→ Only surgical but not an emergency

### 1. Preoperative preparation:

- a) Correction of the general condition of the patient (Preoperative preparation).
  - 1. High protein fluid diet given I.V.
  - 2. Correction of fluid (by saline first), electrolytes ( $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Cl}^-$  and  $\text{Ca}^{++}$ ) and acid-base balance by I.V solution. (alkalosis)
  - 3. Blood transfusion for anemia.
  - 4. Chest physiotherapy and antibiotics.
- b) Gastric lavage through Ryle's tube.

### 2. Operative:

- a) The standard treatment: → Truncal vagotomy & gastrojejunostomy
- b) In the elderly or unfit patients → Gastrojejunostomy alone

## CASE 18

44 years old man presented at the ER with massive melena and drowsiness. The patient indicated that he had several bowel motions containing black tarry colored stools. There is a history of frequent drinking of alcohol and also the patient used ibuprofen (Non-steroidal analgesic) tablets frequently to relieve headache and knee pains in the last ten days. On general examination, his temperature was 37 C, pulse rate 110/minute, B.P. 95/70 and the respiratory rate was 22/minute. The patient was pale and cooperative on insertion of nasogastric tube fresh blood comes out in the aspirate.

### KEYS

- 44 years old man
- Massive melena and drowsiness.
- Several bowel motions containing black tarry colored stools.
- Frequent drinking of alcohol and ibuprofen for last 10 days.
- Temperature was 37 c
- Pulse rate 110/minute
- Blood pressure 95/70
- Respiratory rate was 22/minute
- The patient was pale and cooperative

### What are the possible sources of bleeding?

→ Black tarry colored stools = melena = upper GI bleeding

→ Upper G.I. hemorrhage is usually due to lesions above the ligament of Treitz (end of duodenum).

- Bleeding chronic PU (gastric or duodenal)
- Acute erosive gastritis
- Rupture esophageal varices
- Bleeding disorders, e.g. hemophilia, thrombocytopenia.
- Mallory Weiss syndrome
- gastric carcinoma (rare)

≠ air of surgery in emergency  
to save the life of the pt.



→ **Localization of the site and cause of bleeding by history of:**

- Previous attacks and their management.
- Hepatitis and bilharziasis. + manifestation of liver cell failure O/E
- Medications, particularly NSAIDs.
- Peptic ulcer symptoms + tender epigastrium O/E
- Bleeding tendency.

• How could you proceed in the investigations according to priorities?

1. Fiber-optic Endoscopy:

- Is the most important investigation. It should be performed as early as possible once the patient has been resuscitated.
- In the majority of cases (90-95%) endoscopy will establish the cause of bleeding
- Endoscopy can also be used therapeutically to stop bleeding

**N.B.**

When feasible, biopsy of the ulcer is important to identify any associated malignancy and to detect presence of H.pylori

2. SMA angiography:

- In difficult cases where radiography or endoscopy fails to diagnose the lesion that causes the bleeding
- Angiography needs to be performed during active bleeding

3. CBC

5. LFTs

4. KFTs

6. ABG & serum electrolytes

• How can you proceed in the treatment according to priorities?

→ 1. Correction of general condition of the patient (Resuscitation + Monitoring)

Q Skates  
How to  
introduce  
central  
line?  
Pp's Skates  
Catheter  
Skates

- Admit to hospital. Severe bleeding cases require ICU admission.
- Repeated clinical and hematocrit assessment.
- Insert two peripheral venous lines & withdraw blood for cross-matching & blood tests.
- Insert a Foley catheter, Urine output is the best monitor of tissue perfusion.
- A central venous line is needed for monitoring in severe cases.
- IV sodium containing fluids is started until blood is available e.g., Ringer's lactate.
- A nasogastric tube is inserted for all cases.
- Correct coagulopathy by FFP and by giving missing factors. Patients taking warfarin or antiplatelet are likely to require reversal of their coagulopathy.
- Endotracheal tube intubation should be considered in patients with altered mental status because aspiration of blood is a major cause of morbidity and mortality.

2. Urgent endoscopy: Done once the patient is stabilized and according the cause:

A. If acute erosive gastritis:

also  
gastric  
tub?

- IV proton pump inhibitors.
- Endoscopy: Local injection of adrenaline in the submucosa or laser photocoagulation → if failed → Urgent gastrectomy

تصنيفات العلاجية في العيادتين  
Hematocrit - 10 - 20

\* Normal CVP \*  
7-10 cmH<sub>2</sub>O

13

26  
BP و هونام  
مباشرة  
دور اول حامية يتركز

## CASE 19

A 60-years-old male patient was admitted to the emergency department after severe attack of Hematemesis. The pulse was 120/min. & ABP was 90/60 mmHg. Abdominal examination was free. The patient mentioned that he used to take medications for indigestion.

### KEYS

- A 60-years-old male
- The pulse 120/min.
- Abdominal examination was free.
- Severe attack of Hematemesis.
- ABP was 90/60 mmHg.

- Discuss the management?  
( See before )

## CASE 20

A 40-years-old male presented with vomiting large amounts of blood. Pulse 140/min, B.P 90/60, jaundice, drowsy, irritable with clinical ascites.

### KEYS

- 40-years-old male
- Pulse 140/min
- Jaundice, drowsy, irritable with clinical ascites
- Vomiting large amounts of blood (haematemesis)
- B.P 90/60

- What is the most likely diagnosis?  
→ Clinically it's a case of upper GI bleeding mostly rupture esophageal varices but other causes of upper GI bleeding should be excluded ( See before )
- Discuss specific investigations & immediate managment?  
( See before )

## CASE 21

A 45 year old male with a long standing history of a duodenal ulcer presented with hematemesis to the emergency room. His blood pressure was 80/50, his pulse was 135 and his respiratory rate was 32.

### KEYS

- A 45 year old male
- Hematemesis.
- Pulse was 135
- Long standing history of a duodenal ulcer presented
- Blood pressure was 80/50
- Respiratory rate was 32



## CASE 22

A 58 year old man presents to the emergency room following several episodes of coffee ground emesis. He suddenly vomits a large volume of bright red blood. his wife explains that he is generally healthy except for the stomach ulcer he had the previous year. He completed a course of two antibiotics and continues to take omeprazole daily. He has never had any operation and takes no other medications. On exam the patient is distressed but alert and no longer vomiting. Initial vital signs reveal tachycardia with a pulse of 115 and blood pressure of 100/70. He has mild discomfort with deep palpation in the epigastrium and the remainder of his exam is unremarkable

### KEYS

- A 58 year old man
- Several episodes of coffee ground emesis.
- Suddenly vomits a large volume of bright red blood.
- Generally healthy except for the stomach ulcer he had the previous year.
- Completed a course of two antibiotics and continues to take omeprazole daily.
- On exam the patient is distressed but alert
- Tachycardia with a pulse of 115
- Blood pressure of 100/70.
- He has mild discomfort with deep palpation in the epigastrium
- The remainder of his exam is unremarkable

▪ What is the most likely diagnosis?

→ Clinically it's a case of upper GI bleeding mostly bleeding peptic ulcer, but other causes of upper GI bleeding should be excluded ( See before )

**N.B.**

Peptic ulcers are the most common cause of upper GIT bleeding needing hospitalization

▪ How would you resuscitate the patient?

( See before )

▪ How would you investigate and treat him?

( See before )

## CASE 23

A 45-years-old male presented for the 1st time to the ER by complaining of upper G.I.T. bleeding. He was on NSAIDs for joint pains for the past 3 weeks. Examination revealed: Liver 2 fingers below the costal margin, spleen enlarged 3 fingers below the costal margin.

## B. If peptic ulcer:

### ► Conservative Treatment:

→ Most of cases stop bleeding spontaneously due to clot formation at base of ulcer

1. IV proton pump inhibitors.
2. Urgent endoscopy: Done once the patient is stabilized.

#### → Diagnostic:

⇒ Either blood clot is seen at base of the ulcer or actual bleeding is seen.

#### → Therapeutic:

##### ⇒ Indications:

1. The ulcer is seen to be actively bleeding
2. Visible vessels in the base
3. Fresh clot covering the ulcer.

##### ⇒ Methods:

1. Laser coagulation.
2. Thermal coagulation.
3. Injection of the ulcer base by adrenaline or alcohol.

### N.B.

- The following cases usually respond well to conservative treatment:
  1. Young patients under 45 years old.
  2. Minor bleeds.
  3. Short history of dyspepsia.
  4. Recent history of ulcerogenic drug intake
- Studies show that epinephrine injection alone is inferior to combined therapies with epinephrine injection and thermal coagulation or placement of a hemoclip

3. Patients are advised to avoid tobacco & NSAIDS as well as to continue PPI therapy.
4. Those colonized with H.pylori receive triple therapy & eradication is confirmed at follow up

### ► Surgical Treatment:

#### → Indications:

##### A. Absolute Indications:

1. Patient under adequate medical treatment bleeds.
2. Severe bleeding from the start of about 2L or more (> 4 units of blood needed for correction).
3. Continuous bleeding (as evidenced by the need to transfuse 1000 ml of blood / day to maintain stability)
4. If bleeding recurs while patient is in the hospital

##### B. Relative Indications:

1. Old patient due to atherosclerosis → can't withstand effect of shock & the arteries are not capable of good contraction to stop bleeding
2. Associated with a serious disease → risk of operation is less than risk of shock
3. Long history of ulcer disease → doesn't respond well to medical treatment

#### → Methods:

- If GU → Gastrectomy.
- If DU → Truncal vagotomy + pyloroplasty + under running sutures for hemostasis. (Gastroduodenal artery may require ligation)



## C. If bleeding esophageal varices:

### 1. Prevent encephalopathy:

- By evacuating blood from GIT & preventing its fermentation.
- **Method:**
  - Gastric lavage.
  - Repeated enemas.
  - Enteral antibiotics e.g. neomycin 0.5 gm/ 4 hrs. (↓ bacterial flora)
  - Lactulose (10 – 30 ml tds orally). It is fermented to lactic acid → combines with ammonia and has mild laxative effect

### 2. Stop bleeding:

- Measures to stop bleeding are arranged in order of priority.
- If one method fails, the next is used.

#### i. Urgent upper GIT endoscopy:

- Confirm the source of bleeding (diagnostic).
- Therapeutic
  - Injection Sclerotherapy: Intravariceal or Paravariceal
  - Band ligation: First choice now.
    - Encircle each varix by a tight band → thrombosis of the veins.
    - Comparable results as sclerotherapy with fewer side effects.

#### ii. Drugs:

##### - Vasopressin:

##### ➢ Dose:

- Continuous infusion into a peripheral vein at 0.2 unit/kg dissolved in 200ml of 5% dextrose given over 20 min.

##### ➢ Action:

- vasoconstriction of splanchnic arterioles → ↓ portal venous pressure

##### - Glypressin (vasopressin + Glycine): Has more prolonged action.

##### - Somatostatin: Lower intravariceal pressure.

##### - Octreotide: Longer acting analogue of somatostatin.

**N.B.**  
Temporary control bleeding

#### iii. Balloon tamponade:

##### - Indications:

- ~ Bleeding is severe & can't do endoscope.
- ~ Band ligation / sclerotherapy & drugs didn't stop bleeding.

##### - Value:

- ~ Temporary measure until arranging for repeat endoscopy or emergency TIPSS or surgery.

##### - Types:

##### 1. Linton-Nachlas tube:

- Has a large gastric but no esophageal balloon.

##### 2. Sengstaken-Blakmore tube: (3 lumen)

- Have both gastric & esophageal balloons.
- Effective in cases of gastro-esophageal bleeding.

##### 3. Minnesota: (4 lumen tube)

- The fourth lumen is for aspiration of saliva from esophagus

**N.B.**

- The gastric balloon is inflated by 200 ml air and pulled upward to press gastric fundus.
- If bleeding continues, the esophageal tube is inflated and the pressure in it should not exceed 40 mm Hg.
- Patient should be in ICU for monitoring & insertion of endo-tracheal tube to prevent aspiration pneumonia

#### iv. Transjugular intrahepatic porto-systemic shunt (TIPSS):

- If all the previous methods failed to stop bleeding.

### KEYS

- A 45-years-old male
- NSAIDs for joint pains for the past 3 weeks
- Spleen enlarged 3 fingers below the costal margin.
- Upper G.I.T. bleeding.
- Liver 2 fingers below the costal margin

- What is the D.D?  
→ Upper GI bleeding for D.D. ( See before )
- How to reach a diagnosis?  
( See before )
- What is the treatment?  
( See before )

## CASE 24

A 68 year old male presented to the emergency room complaining of passage of fresh blood mixed with blood clots per rectum, which was not related to defecation. This was the 4th attack in 24 hours. He was pale, pulse rate 120/min, blood pressure was 90/60, and nasogastric aspirate was bilious.

### KEYS

- A 68 year old male
- passage of fresh blood mixed with blood clots per rectum,
- Not related to defecation. ( not piles )
- This was the 4th attack in 24 hours.
- He was pale, pulse rate 120/min, blood pressure was 90/60,
- Nasogastric aspirate was bilious. ( not upper GIT bleeding )

- What are the most likely causes of this massive bleeding per rectum in such patient?  
→ Massive bleeding per rectum in adults:
  1. Diverticular disease.
  2. Angiodysplasia.
  3. Ulcerative colitis
  4. Ischemic colitis (less common)
  5. Bleeding piles (less common)
  6. Massive bleeding from upper GIT. ( excluded by bilious nasogastric aspirate )

### N.B.

Cancer colon is a cause of fresh bleeding/rectum but not a common cause of massive bleeding/rectum



▪ What is the next step in management?

→ **Estimation of severity of bleeding and resuscitation**

- Admit to hospital. Severe bleeding cases require ICU admission.
- Repeated clinical and hematocrit assessment.
- Insert 2 peripheral venous lines & withdraw blood for cross-matching & blood tests.
- Insert a Foley catheter. Urine output is the best monitor of tissue perfusion.
- A central venous line is needed for monitoring in severe cases.
- Ryle tube and aspirate to exclude causes of upper GIT bleeding.
- IV sodium containing fluids is started until blood is available e.g., Ringer's lactate.
- Exclude Bleeding tendency
- Correct coagulopathy by FFP and by giving missing factors.

→ **Localization of the site and cause of bleeding:**

**A. History:**

- Previous attacks and their management.
- Diverticular disease, usually large volume painless bleeding and ass. with IBS
- Angiodysplasia repeated attacks
- Haemorrhoidal bleeding is characterized by :
  - o Fresh bright red.
  - o Jet or drops separate from stools.
  - o Occurs with straining usually by the end of defecation.
- In ulcerative colitis there is a long history of diarrhoea with rectal discharge of mucous or blood.
- Patients with ischemic colitis are usually elderly and complain of left sided abdominal pain especially after meal and bright red rectal bleeding.
- Recent change of bowel habits, esp. In carcinoma of colon.

**B. Examination:**

- **Abdominal examination** may reveal presence of a mass e.g., cancer sigmoid
- **DRE** may reveal carcinoma of rectum.

**N.B.**

Clinical examination is usually irrelevant in cases of diverticular disease and vascular malformations

▪ What are the diagnostic investigations?

→ **Lower GI bleeding is more difficult to diagnose than upper GI bleeding**

→ **No source of bleeding can be identified in 12% of cases.**

1. Proctoscopy: Will reveal internal haemorrhoids

2. Sigmoidoscopy:

- The rigid sigmoidoscope can reach up to 30cm from the anal verge
- The fiber-optic sigmoidoscope can reach up to 70cm and so it can diagnose most of the lesions of the rectum, sigmoid colon and descending colon.

3. Colonoscopy:

- Can visualize the whole colon but it needs proper preparation of the colon by repeated enemas before the procedure.
- In patients with massive colonic bleeding, the blood will obscure the field and so it is better to postpone the procedure in these situations.

**N.B.**

Colonoscopy is the investigation of choice for chronic blood loss.



4. Angiography:

- This invasive investigation is performed when colonoscopy cannot be performed because of massive bleeding or when colonoscopy cannot pinpoint the source of bleeding e.g. in angiomatous malformations of the colon.
- Selective catheterization of the superior or inferior mesenteric artery will usually succeed in localizing the source of bleeding, an attempt can be made to stop the bleeding by injection of vasoconstrictors or gel foam through the angiography catheter.

5. Isotope scans:

- The patient's own RBCs are tagged with  $^{99m}\text{Tc}$  and then injected intravenously.
- Abdominal scanning by a gamma camera can identify the site of bleeding.
- Diagnostic not therapeutic

6. Contrast radiology:

- Double contrast barium enema is only justified as an elective investigation in case of chronic blood loss not in massive B/R
- What is the proper treatment if the source of bleeding was in the sigmoid colon?
  - Spontaneous remission rate is 80%. Bleeding has usually ceased by the time the patient presents to hospital.
  - Bleeding is recurrent in 25% of cases.
  - Start the usual resuscitative measures.
  - If massive bleeding continues proceed with colonoscopy or angiography according to the available experience and facilities.
  - If angiography succeeds in localizing the bleeding point an attempt can be made to stop bleeding by injection of vasopressin 0.2 unit/minute or by embolization with thrombin or gel foam.
  - If colonoscopy visualizes an area of vascular malformation (angiodysplasia), bleeding can be stopped by diathermy or laser
  - If all the previous measures fail to stop bleeding, surgical intervention will have a lower mortality than continued conservative management.
  - If the source of bleeding could be localized preoperatively, segmental resection of the colon would be performed
  - If localization fails → total colectomy and ileorectal anastomosis.

## CASE 25

A 30 years old obese male presented to the E.R. with severe constant epigastric pain referred to the back. He was admitted that he was used to many alcoholic drinks in weekends. On examination he was uncomfortable, temp. 38.5C, pulse was 110/min, BP was 110/60 and respiratory rate was 28/min. abdomen was distended, tender epigastrium & paraumbilical region. Laboratory studies revealed WBC count of 18,000/mm<sup>3</sup>, HB 14 gm%, hematocrit 45%, glucose was 190 mg%, total bilirubin 3.3 mg%, AST 370 U/L and serum amylase was 6800 IU/L. The initial plain x-ray abdomen in erect position revealed nothing significant.



### KEYS

- A 30 years old male obese & alcoholic
- Temp. 38.5C
- BP was 110/60
- Abdomen was distended, tender epigastrium & paraumbilical region.
- WBC count of 18.000/mm
- Glucose was 190 mg%
- AST 370 U/L
- The initial plain x-ray abdomen in erect position revealed nothing significant.
- Severe constant epigastric pain referred to back.
- Heart rate 110/min
- Respiratory rate was 28/min.
- HB 14 gm%, hematocrit 45%
- Total bilirubin 3.3 mg%
- Serum amylase was 6800 IU/L.

## CASE 26

A 39-year-old male with a history of alcohol abuse presents to the emergency department complaining of epigastric abdominal pain for the past 36 hours. He describes the pain as constant and radiating to his back. He also complains of nausea and has vomited several times. He had a normal bowel movement one day prior to presentation and denies melena. He admits to drinking a case of beer each day for the past week. He denies smoking and illicit drug. His family history is significant for hypertriglyceridemia. Physical exam reveals abdominal distension and diffuse tenderness to palpation, worse over the epigastrium, but no guarding or rigidity. He is not jaundiced and has no Grey-Turner or Cullen signs. His vital signs are notable for a temperature of 37.9 °c, sinus tachycardia, and hypotension with a blood pressure of 90/60 mm Hg. He has palpable distal pulses and no pretibial edema.

### KEYS

- 39-year-old male, alcoholic, not smoker
- Constant epigastric abdominal pain for the past 36 hour radiating to his back
- Nausea and has vomited several times.
- Normal bowel movement one day prior to presentation and denies melena.
- His family history is significant for hypertriglyceridemia
- Abdominal distension and diffuse tenderness to palpation, worse over the epigastrium but no guarding or rigidity.
- Not jaundiced and has no grey-turner or Cullen signs.
- Temperature of 37.9 °c
- Sinus tachycardia
- Hypotension 90/60 mm hg.
- Palpable distal pulses and no pretibial edema.

Major Symptoms  
Pain  
Signs → early

guarding also possible

Rigidity

Jaundice late

## What are the main diagnostic probabilities?

### 1. Acute pancreatitis:

- The most probable cause however other causes of upper abdominal pain should be excluded.

### 2. Perforated Peptic Ulcer →

board like rigidity Rix

- History of dyspepsia

- Plain X-Ray shows air under diaphragm.

### 3. Acute Cholecystitis:

- Female with history of biliary colic
- Pain in the right hypochondrium

- Fever is higher.
- U/S will confirm the diagnosis.

### 4. Intestinal Obstruction :

- Repeated vomiting.
- Multiple fluid levels in X-Ray abdomen erect

- Absolute constipation.

### 5. Inferior wall MI

- Old age, heavy smoker, with chest pain

### 6. Dissecting aortic aneurysm leaking AAA

- Old male, hypertensive, with severe chest pain, pulsating abdominal mass

Mesenteric vascular occlusion

↓  
ألم في البطن  
لا تستجيب

①  
② pain  
③ shock  
④  
⑤

## How to investigate this case?

### A. For diagnosis:

#### 1) Serum Amylase:

- Elevated within few hours.
- Remains elevated for 2 - 3 days.
- Diagnostic level: > 1000 somogyi units.
- Normal level: 100 - 300 somogyi units.
- Serum amylase is not specific, but in other diseases as perforated peptic ulcer, acute cholecystitis, intestinal obstruction and acute mesenteric ischemia, it does not exceed 500 units.
- After 5 days, level of serum Amylase drops, but urinary Amylase increases.

#### 2) Serum Lipase (specific).

#### 3) CT scan:

triple contrast

- CT scan with IV contrast is very helpful in the diagnosis.
- It reveals enlargement of pancreas, pancreatic edema & intraperitoneal fluid.
- Pancreatic necrosis is diagnosed when a big part of the parenchyma is not enhanced after contrast injection.
- The presence of necrosis is a strong indicator of severity of the attack.
- C.T scan should be performed at least 48 hours after the onset of symptoms in order to detect the extent of necrosis
- Studies revealed that the associated radiation exposure was significant, & after C.T imaging, changes in clinical management were infrequent. Subsequently, it is recommended that the use of C.T be restricted to patients with severe pancreatitis.

#### 4) Plain X-Ray of the abdomen:

Acute on top of chronic + calcified u/x's

- Gall bladder stone. (not in this case)
- Colon cut off sign: distended transverse colon and collapse of descending colon.
- Sentinel loop ileus: distention of the duodenum & upper part of jejunum.

#### 5) Paracentesis: Hemorrhagic fluids & pancreatic enzymes.

#### 6) ECG & cardiac enzymes: To exclude MI

#### 7) Laparotomy

→ intestinal  
وآلام في البطن  
Pancrease.

transverse  
Colon  
is cut off  
pancreas.



How to Assess severity of Acute pancreatitis??

Dr. Mohamed El Mary

B. For the cause:

- 1) Abdominal U/S: May show gall stones (not in this case)

C. For complications:

1) CBC:

- Leucocytosis.
- Hematocrit value: Usually increases due to fluid loss but may decrease in hemorrhagic pancreatitis

2) ABG: To detect cases who might need mechanical ventilation

3) LFTs: ↑ bilirubin due to stone or edema.

4) KFTs: Renal failure due to hypovolemia or MOF.

5) Fasting blood sugar: ↑ due to ↓ insulin.

6) Serum Ca: Decreases due to formation of Ca soaps, ↓ aluminum.

7) Hypoproteinemia.

Calcium  
8 base Dist  
late

What are the expected complications of such disease process?

A. Systemic complications: " MOF "

1) Shock:

- a- Hypovolemic shock (vomiting, exudates & hemorrhage).
- b- Neurogenic shock (pain).

2) ARDS: Adult Respiratory Distress Syndrome and respiratory failure.

3) Renal failure: Due to hypovolemia or as a part of MOF.

4) Pleural & pericardial effusion

5) DIC: Consumptive coagulopathy.

6) Acute gastroduodenal stress ulceration & hemorrhage & paralytic ileus

7) Tetany: Due to hypocalcemia.

8) Left sectorial portal hypertension: Splenic vein thrombosis.

early  
+  
- age  
- Blood sugar  
- CBC + Hematocrit value

B. Local complications:

1) Pseudopancreatic cyst (10%)

2) Pancreatic abscess: (4.5%)

- The patient presents with a swelling in epigastrium & hectic fever.
- The abscess should be drained.

3) Chronic pancreatitis.

Bad Prognostic Markers in Acute Pancreatitis

(Ranson's criteria) indicates the risk of systemic complications and the likelihood of pancreatic necrosis

On Admission (early)			Within the First 48 hrs. (late).		
Age	>	55 years.	Base Deficit	>	4 mEq/L
Blood sugar	>	200 mg/dl	Serum Ca	<	8 mg/dl.
WBCs count	>	16 000/uL	Hct. decrease	>	10%.
Serum LDH	>	350 IU/L	BUN elevation	>	5 mg/dl.
AST	>	250 IU/L	Arterial PO <sub>2</sub>	<	60 mmHg

#  
C69

• What are the main lines of treatment?

→ Essentially conservative

→ Resuscitation + Monitoring + No drugs are of value + limited indications for surgery.

# A. Conservative: (best)

→ Severe cases are admitted to the ICU.

1) Relief of pain:

- By pethidine combined with atropine to avoid spasm of sphincter of Oddi.
- Morphine should be avoided as it causes severe spasm of sphincter of Oddi.

2) Replacement of the lost fluids:

- By crystalloids, plasma and blood (in hemorrhagic causes).
- Monitored by vital signs, urine output and CVP.

3) Rest of the pancreas and bowel:

- NPO, NG suction.
- Somatostatin: ↓ GIT secretion.
- Rest as the patient's anorexia and pain resolve

4) Respiratory support.

- O2 mask or mechanical ventilation

5) Resistance of Infection

- By prophylactic antibiotics. The value of antibiotics is controversial, yet it may reduce the incidence of infection in cases of necrotizing pancreatitis. The preferred antibiotics are those of the carbapenems class, e.g. imipenem / cilastatin or meropenem

6) Reassessment after improvement: (if the cause is gallstone)

- By ERCP to remove any residual stones.
- ERCP & sphincterotomy is recommended if there is obstructive jaundice or cholangitis, otherwise it is not required during the attack

7) Other therapy:

- PAF antagonist e.g. Lexipasant
- I.V calcium is added to the infusion as required
- Diuretics

Nutrition →

بكل الأحيان على شكل  
Nasal Aliment  
harmful organism (pathogens).

B. Surgical:

• Indications of Surgery:

- If explored after doubtful diagnosis → drain & close the abdomen.
- In late cases; we remove the necrotic tissues which were detected by CT.
- Complications:

- Left-sided portal hypertension → Hassab's operation.
- Pseudopancreatic cyst that does not resolve in 6 wks → Cystogastrostomy or Cystojejunostomy.
- Percutaneous aspiration of fluid collection.

C. Treatment of the cause:

- CBD stones, stop alcohol intake

**N.B.**

Cholecystectomy should be performed when safe to avoid recurrence of gallstone-associated pancreatitis

لوالحيان سريع  
TAN  
لو صحت بسرعه  
الكلية تفرج

بفتح ال  
pancreatitis  
لوقه

Necrosis  
أو

pseudo-  
pancreatic  
cyst

مستويات الالو قد تكون  
من 6 أسابيع أو أكثر  
C.m. →

drainage.  
قد يكون



## CASE 27

متضار  
الضالان

A middle-aged man with a history of alcohol abuse and several previous episodes of acute pancreatitis requiring hospitalization presents with vague upper abdominal pain, weight loss, and early satiety for the past several months. Physical examination reveals a non-pulsatile fullness in the epigastrium with minimal tenderness to palpation. A computed tomography (CT) scan, enhanced with intravenous contrast, is obtained and demonstrates a 6- x 8-cm fluid collection compressing the posterior wall of the gastric body

### KEYS

- A middle-aged man alcoholic
- Previous episodes of acute pancreatitis requiring hospitalization
- Presents with vague upper abdominal pain, weight loss & early satiety for the past several months.
- Physical examination reveals a non-pulsatile fullness in epigastrium with minimal tenderness to palpation.

#### • What is your diagnosis?

→ It is a case of **pseudo pancreatic cyst**. (This is a collection of pancreatic secretion and inflammatory exudates within a lining of inflammatory tissue rather than epithelium "false cyst")

#### • What is your D.D?

→ Mass in the epigastrium:

##### A. Parietal swellings:

- Skin: Abscess, Sebaceous cyst & Haemangioma
- S.C tissue: Lipoma & Neurofibroma
- Muscle: Fibrosarcoma
- Hernia: Incisional hernia & Epigastric hernia

##### B. Intra-abdominal swellings:

###### • Visceral:

###### i. Lt. lobe of the liver:

1. Amoebic abscess → Occurs usually in endemic areas and responds very well to metronidazole within 72 hours
2. Hydatid cyst → Usually occurs in endemic areas (e.g Algeria) and shows hydatid thrill in 70% of cases
3. Malignant nodule (cancer) → CT scan is accurate and level of alpha feto protein above 2000 ng/dl is diagnostic
4. Liver cirrhosis → There may be history of the cause and manifestations of cirrhosis, e.g. bleeding tendency.

###### ii. Transverse colon:

1. Carcinoma → More in females and usually presents by a mass rather than I.O
2. Bilharzial colitis → Hard nodular mass and may be associated with portal HTN
3. Diverticulitis → Occurs usually in old males & may cause massive bleeding per rectum

###### iii. Greater omentum:

1. TB peritonitis → There may be ascites, pain or abdominal masses. It is best diagnosed by laparoscopy.



2. Malignant nodule "Tumor" rare
- iv. Stomach:
1. Carcinoma
  2. Epigastric abscess
  3. Gastric outlet obstruction → Characteristic projectile, non-bilious, foul odor vomiting containing food from previous meals or days especially at the night
- Vascular
    - i. Aorta:  
Abdominal Aortic aneurysm (AAA) but 95% below level of renal arteries (i.e in the umbilical region).
    - ii. Aortic L.Ns:
      1. Lymphadenitis: Acute & chronic (non-specific & specific e.g. TB lymphadenitis).
      2. Malignancy: Lymphoma & metastatic carcinoma
  - Retroperitoneal sarcoma
- What is the investigation would you like to do?
- Barium meal: Shows forward displacement of the stomach in a lateral view
  - The most accurate diagnostic measures are:
    - U/S
    - C.T. scan enhanced with intravenous contrast: Will show fluid collection compressing the posterior wall of the gastric body
- What is the treatment of such case?
- Treatment should be considered for symptomatic patients, most of cases resolve spontaneously
  - Follow-up for 6 weeks clinically & by U/S to allow development of strong cyst wall that can hold sutures.
  - If persistent after 6 weeks → Internally drained to stomach (cystogastrostomy) or jejunal loop.
  - It can be performed by open or laparoscopic internal drainage.

**N.B.**

- Distinguishing a pancreatic pseudocyst from a cystic neoplasm of the pancreas is crucial
- Pseudocyst by excluding internal septations that are frequently found in cystic neoplasms
- EUS-guided fine needle aspiration of the cyst fluid can also help to discriminate these two diagnoses. Cyst fluid high in amylase but content is consistent low in mucin with a pseudocyst.
- Mucin and high carcinoembryonic antigen may be more suggestive of a mucinous cystic neoplasm.
- ERCP is helpful in determining whether a pseudocyst communicates with the main pancreatic duct and whether downstream strictures of the pancreatic duct

**CASE 28**

A 40 year old female with history of recurrent rt. abdominal colicky pain presented to ER with severe epigastric pain radiating to back that improves by leaning forward. On examination; pulse 100/min, B.P 100/60 mmHg, temperature 38.5. Abdominal examination showed severe tenderness of the epigastrium. Laboratory investigations showed WBCs 20,000/mm<sup>3</sup>, serum amylase 1500 IU/L. abdominal ultrasound showed multiple small gall bladder stones. The patient's acute condition was treated and was discharged she returned after 2 months to the outpatient clinic complaining of progressive abdominal swelling.



## KEYS

- A 40 year old female
- History of recurrent right abdominal colicky pain
- Severe epigastric pain radiating to the back that improves by leaning forward.
- Pulse 100/min, blood pressure 100/60 mm Hg, temperature 38.5.
- Severe tenderness of the epigastrium.
- Wbcs 20.000/mm<sup>3</sup>, serum amylase 1500 iu/l.
- Abdominal ultrasound showed multiple small gall bladder stones.
- The patient's acute condition was treated and was discharged she returned after 2 months to the outpatient clinic complaining of progressive abdominal swelling.

- What is your possible diagnosis?
  - Acute pancreatitis complicated by pseudo pancreatic cyst
- What are other possible etiologies for the patient's acute condition?
  - Bile Duct Stones (COMMONEST): (50%)
    - 50% of cases of acute pancreatitis are associated with CBD stones.
    - Transient obstruction of the ampulla of Vater which is a common channel between CBD and the pancreatic duct → bile enters the pancreatic duct → activates the pancreatic enzymes.
    - It is now realized that, the simple passage of a stone through the ampulla may initiate an attack.
  - Excess Alcohol Intake: (35%)
    - Its metabolites activate pancreatic enzymes.
  - Postoperative (Iatrogenic) Pancreatitis:
    - CBD exploration & ERCP (1-3%)
    - The 3rd most common cause
    - Splenectomy (injury of the tail) → pancreatic fistula.
    - Gastrectomy.
    - Afferent loop obstruction (after gastro-jejunostomy).
  - Idiopathic Pancreatitis: (20%)
    - However, it has been suggested that most of these cases are due to the passage of minute stones through the sphincter of Oddi.
  - Neoplasm: Peri-ampullary carcinoma.
  - Other rare causes:
    - Hypercalcemia (hyperparathyroidism).
    - Hyperlipidemia.
    - Familial pancreatitis.
    - Drug-induced pancreatitis: Corticosteroids, estrogen containing contraceptive pills.
    - Viral → Mumps.
- What was the treatment of the patient's acute condition?  
( See before )
- What is the most sensitive radiological investigation to be done for the patient's progressive abdominal swelling?  
( See before )
- What is the treatment of this condition?  
( See before )

**CASE 29**

A 52 Male presents with 8 months progressive dysphagia. O/E A lymph node is felt in the cervical region.

**KEYS**

- A 52 Male
- 8 months progressive dysphagia.
- lymph node is felt in the cervical region

**CASE 30**

# A 65-year-old man presents with a 3-month history of progressive low retrosternal dysphagia and a 15-lb weight loss. He has experienced heartburn and effortless regurgitation of gastric contents, worse when supine and after eating, for more than 15 years and treated with over the counter antacids. In the past 5 years, however, the heartburn has gradually subsided along with his need for antacid use. He has had no abdominal pain, hematemesis, or melena. Aside from mild chronic dehydration, his physical examination is entirely unremarkable.

**KEYS**

- A 65-year-old man
- 3-month history of progressive low retrosternal dysphagia
- 15-lb weight loss.
- He has experienced heartburn and effortless regurgitation of gastric contents worse when supine and after eating, for more than 15 years and treated with over the counter antacids.
- In the past 5 years, however, the heartburn has gradually subsided along with his need for antacid use.
- No abdominal pain, hematemesis, or melena.
- Mild chronic dehydration
- Physical examination is entirely unremarkable

smooth shagreened  
← Ring

Cancer Mass

▪ What is the diagnosis?

- **Progressive dysphagia in old male is cancer esophagus.**
- **Clinically it is a case of cancer esophagus; however other causes of dysphagia must be excluded such as:**

**A. In the Mouth:**

- Stomatitis, glossitis
- Neoplasms, and ulcers of tongue and cheek.

**B. In the pharynx:**

- Pharyngitis and tonsillitis.
- Retropharyngeal abscess.
- Plummer-Vinson syndrome → More in females. Associated with spooning of nails and splenomegaly.



- Pharyngeal diverticulum → Usually in an old male. Associated with neck swelling that regurgitates undigested food on compression.
- Postcricoid carcinoma → Associated with dysphagia at a late stage and Moure's sign

### C. In the Esophagus:

#### 1. Mechanical causes:

##### ⇒ Lumen:

- Foreign body.

##### ⇒ Wall:

- Congenital stenosis.
- Traumatic as corrosive stricture.
- Inflammatory as reflux esophagitis → More in obese females above 40 years old. Associated with heart burn. 24 hour PH monitoring is diagnostic.
- Neoplastic as carcinoma.

##### ⇒ Compression from outside:

- Thoracic aortic aneurysm Thoracic
- LNs.
- Malignant thyroid.

- dysphagia lazarica →

Abnormal Rt subclavian artery

↓  
Esophagus

#### 2. Neuromuscular:

- Achalasia of the cardia. → painless dysphagia
- Neuritis of glossopharyngeal or vagus nerve.
- Myasthenia gravis
- Esophageal motility disorder e.g. corkscrew esophagus.
- Hysterical or bulbar palsy

Shah's Ring

Retroskeletal Pain

• Stricture  
• Reflux disorder

• Diffuse esophageal spasm

**N.B.**

- ☑ Pseudo-achalasia, with obstruction secondary to a neoplasm in the distal esophagus or extraluminal compression, can present in the same manner & must be considered in D.D
- ☑ Chagas' disease (chronic trypanosome cruzi infection result in denervation of hollow viscera and consequent dysfunction) : Is clinically identical to achalasia : an aperistaltic esophagus and a LES that fails to relax in response to swallowing

### What are the investigations needed in this case?

#### A. For diagnosis:

- 1) Esophagoscopy: To demonstrate the lesion & take biopsies.
- 2) Barium swallow:
  - Cauliflower mass → Persistent irregular filling defect.
  - Scirrhus lesions → Irregular narrowed segment with overhanging margins. [Shouldering]
  - Differentiate between achalasia & carcinoma as in cancer proximal dilatation is mild & termination is irregular [Rat tail appearance]

#### B. For staging:

- 1) Endoluminal sonar: Show extent of tumor (the most important for local staging and assessing operability)
- 2) Chest X-Ray: Elevated copula of diaphragm due to affection of phrenic nerve, pleural effusion & pulmonary metastasis.
- 3) Abdominal U/S → liver metastasis & ascites.

- 4) CT scan → Showing extent of the lesion, L.N metastasis & presence of infiltration of surrounding structures.
- 5) Bone Scan.
- 6) Bronchoscope → invasion of the trachea (bronchoscope is done before barium swallow because if there is fistula → barium will pass into trachea).
- 7) Indirect Laryngoscope → invasion of recurrent laryngeal nerve.

### C. For preoperative preparations:

- 1) CBC: Anemia & leucocytosis in chest infection.
- 2) LFTs: For metastasis
- 3) KFTs
- 4) Serum electrolytes

### ▪ What is the treatment of this case?

- **Dysphagia: (indicates advanced stage of the disease)**
- **Most cases are incurable at time of presentation**

### A. Inoperable Tumors (60% of the patients)

⇒ Treatment is **palliative**

⇒ Aim of treatment is to **relieve dysphagia** i.e. allow the patient to swallow

⇒ Indications for palliation:

1. Unfit for surgery
2. Distant metastasis
3. Wide local metastasis:
  - Tracheo-oesophageal fistula.
  - Recurrent laryngeal paralysis.
  - Infiltration of the pleura or pericardium or extensive lymph node deposits.

⇒ Methods of palliation:

#### ➤ Intubation: the best nowadays

- The idea is to insert a rigid tube through the stenosed segment to keep a patent lumen
- The tube is inserted by :
  - o Gastrostomy (e.g. Celestin tube)
  - o Esophagoscopy (e.g. Souttar tube).

#### ➤ Radiotherapy:

- The dose of X-Ray should be between 4000 and 4500 rads over 4 weeks.
- Suitable for upper esophageal carcinoma
- Complications include: esophageal bleeding, esophageal perforation & pneumonitis.

#### ➤ Laser photocoagulation (YAG):

- Dysphagia can be relieved by endoscopic laser therapy.
- Energy cause coagulative necrosis.
- Complications include chest pain.
- Treatment needs to be repeated every 6-8 weeks.

#### ➤ Gastrostomy:

- Performed when there is no other alternative.

The patient remains unable to swallow his saliva, so it doesn't relieve the problem thus it's obsolete nowadays.



## B. Operable tumors (40%)

⇒ Treatment is radical.

⇒ Aim is to cure the patient

⇒ Indications:

- Good general condition
- No advanced local or distant spread.

⇒ Idea:

1. Resects the lesion with adequate safety margin in either side (10 cm)
2. Restore the continuity of the GIT.

⇒ Types of operations:

1) Nowadays many surgeon prefer to do: Transhiatal total esophagectomy

➤ Thoracotomy is avoided by mobilizing the esophagus from the abdomen via the diaphragmatic hiatus and via the neck incision.

➤ Advantages:

- No need for thoracotomy.
- Anastomosis in neck (if leakage occurs, it is not dangerous).
- Guarantee of an adequate safety margin.
- Stomach can be mobilized easily.

### N.B.

- If there is any intra operative difficulty in transhiatal oesophagectomy, McKeown operation (3 phases) should be done.
- McKeown operation (3 phases):
  - o 1st phase: Laparotomy & mobilization of stomach.
  - o 2nd phase: Rt. thoracotomy through 5th intercostal space & esophageal mobilization.
  - o 3rd phase: Neck incision, the esophagus & stomach are delivered to the neck where resection is done and anastomosis of the stomach & cervical esophagus is carried out emptying, and absence of obstruction at the jejunostomy tube site.
- A barium swallow on day 7 documents integrity of the anastomosis, adequacy of gastric emptying, and absence of obstruction at the jejunostomy tube site.
- Tumors below the diaphragm (1 phase) for lower 1/3 tumours → Lt thoraco-abdominal incision, the stomach & lower esophagus are removed with esophageo-gastric anastomosis.

## CASE 31

Mother came to the ER with her daughter 7-years-old with history of corrosive ingestion.

▪ What is 1<sup>st</sup> aid ttt., sequelae & definitive management of this case?

### A. Immediate treatment

- Ask the patient to swallow some water or milk to dilute corrosive effect.
- Exclude laryngeal edema:
  - How: No stridor or dyspnea.
  - If present: Introduce endotracheal tube.
- Analgesics → for pain
- Antibiotics } Markedly ↓ esophageal stricture
- Steroids → To ↓ laryngeal edema (Shouldn't be administered for more than 3 weeks.)
- No oral intake for 1-2 weeks
- Gastric lavage is contraindicated

## B. Investigations

### 1. Barium swallow:

- Diagnose the 1) Length 2) Level 3) Multiplicity of the stricture.
- This is done before endoscopy & preparatory step before dilatation.

### 2. Esophagoscopy:

- Why: To confirm the presence of the corrosive injury.
- When: After 24hrs.
- Exceptions: In cases with laryngeal edema or in patients in whom perforation is suspected.
- Precautions: Shouldn't be introduced through damaged area to avoid perforating it.

## C. Later definitive treatment:

### 1. Endoscopic dilatation:

- Very gradual repeated dilatation using bougies.
- Done after the end of the first week.
- Criteria of success of dilatation:
  - Improvement of swallowing.
  - Progressive increase in size of the dilator.
  - Patient is increasing in weight.

### 2. Surgery:

#### ▪ Indications:

- Failure of dilatation
- The need of frequent dilatations
- Dilatation is hazardous or difficult.

#### ▪ Operation:

First gastrostomy as a minor procedure to improve the patient condition before the definitive surgery.

Then Colon bypass operation is performed.

**N.B.**  
Some surgeons excise the stricture esophagus as it is precancerous.

## CASE 32

A 60-year-old man with a known history of alcohol abuse presents to the emergency department complaining of substernal chest pain after multiple episodes of vomiting. Initial vital signs reveal sinus tachycardia along with a systolic blood pressure of 85 mm Hg. The patient is also febrile to 39.1°C. On physical examination, the patient is found to have a systolic crunching sound heard at the left sternal border (Hamman's sign) along with subcutaneous emphysema. Laboratory tests demonstrate an elevated white blood cell count of 15,000/mm<sup>3</sup> but are otherwise normal.

### KEYS

- Known history of alcohol abuse.
- Substernal chest pain after multiple episodes of vomiting.
- Sinus tachycardia, a systolic blood pressure of 85 mm Hg
- Febrile to 39.1°C.
- Systolic crunching sound heard at the left sternal border (Hamman's sign)
- Subcutaneous emphysema.
- Elevated white blood cell count of 15,000/mm<sup>3</sup>.



• What is your diagnosis and differential diagnosis?

→ Clinically, this is a case of spontaneous esophageal perforation

**N.B.**

You must be careful to rule out other cardiac, vascular, or intrathoracic pathology that may contribute to this patient's presenting symptoms (retrosternal pain).

• What are the other causes of esophageal perforations?

• What are the other types of perforation?

**III+ Boerhaave's S**

1. Iatrogenic:

- Unskilled esophagoscopy, during removal of F.B. or stricture dilatation.
- Its commonest site is at the level of cricopharyngeus muscle (upper esophagus).

2. Accidental:

- FB, caustic ingestion and stab wound.

3. Spontaneous:

- The condition is likely affect patients with head trauma and drunken
- in Both situations there is vomiting and uncoordinated esophageal motility
- The lower esophagus fails to relax in front of the ejected vomitus so the pressure markedly rises & the wall becomes stretched & perforates
- As a result the wall gives way either partially were the mucosa only is split producing severe bleeding (Mallory weiss syndrome), or completely (**Boerhaave's S**) through the whole wall thickness.
- The tear is longitudinal in the lower part of the esophagus
- The tear is usually situated in the left posterior aspect.

• How could you diagnose such a case? ( clinical picture + investigations)

1. Clinical Picture

- Severe dysphagia.
- Severe pain at the site of rupture.
- Patient is acutely ill, with fever, tachycardia & hypotension
- Mediastinal emphysema appears as crepitus at the base of the neck, later subcutaneous emphysema over the chest wall & the neck.
- If rupture penetrates the pleural cavity → pneumothorax or pleural effusion occur → lead to respiratory distress

**N.B.**

The combination of subcutaneous emphysema, vomiting, and chest pain comprises **Mackler's triad**, a pathognomonic sign for esophageal perforation.

2. Investigations

- Plain X- Ray:

- Air in neck, pleura and mediastinum.
- Pleural effusion.
- Hydropneumothorax

**N.B.**

- There is no role for endoscopy
- Barium swallow is not used

- Gastrografin Swallow (Esophagogram): (The best for diagnosis)

- Will reveal site & extent of rupture.



▪ What is the treatment of this case?

✓ Cervical perforation:

1. Nil by mouth
2. IV hyperalimentation
3. Drainage of the extravasated fluid
4. Intensive antibiotics
5. If the case is early, surgical closure of the perforation may be successful

✓ Thoracic perforation

1. If the diagnosis is early, suture of the perforation & chest drainage are often successful. A flap from the gastric wall may be utilized to close the perforation
2. If the diagnosis is delayed any attempt to close the perforation will fail. esophagectomy & a gastric pull up operation with chest drainage may save the patient.

## CASE 33

A with an unremarkable past medical history presents to his primary care physician with a chief complaint of difficulty swallowing. He describes symptoms of progressive dysphagia to liquids MORE THAN solids and over several years. He regurgitates undigested food daily and has loss of weight was not remarkable. He occasionally regurgitates when lying down at night and sometimes wakes up coughing. He denies any nausea, chest, or abdominal pain. His vital signs and physical examination are otherwise unremarkable.

### KEYS

- 48-year-old male.
- Progressive dysphagia to liquids more than solids over several years.
- He regurgitates undigested food daily.
- He occasionally regurgitates when lying down at night and sometimes wakes up coughing.
- He denies any nausea, chest, or abdominal pain.
- His vital signs and physical examination are otherwise unremarkable.

▪ What is your diagnosis and differential diagnosis?

→ Clinically The diagnosis is achalasia of the cardia, however other causes of dysphagia should be excluded ( See before )

▪ How could you diagnose such case?

1. Type of patient

- More often in 2<sup>nd</sup> to 4<sup>th</sup> decades.
- Equal in both males & females.

2. Symptoms

a) Dysphagia →

- Gradual onset, slowly progressive & of long duration.
- Towards fluids > solids. - Painless
- First intermittent but as the disease progresses becomes constant.

b) Postural Regurgitation → Alkaline, foul smelling (when lying down during night)

c) Halitosis due to stasis of food → Putrefaction.



d) Retrosternal pain (esophagitis) (stasis → infection).

e) Pulmonary symptoms: As aspiration & wheezing.

### 3. Signs

- The general condition is usually reasonable compared with patients with cancer esophagus.
- Bad nutritional state or anemia (late)

### 4. Investigations

#### a) For diagnosis:

- Barium swallow: (main diagnostic tool)
  - Delayed evacuation.
  - Advanced cases → Esophagus appears dilated and tortuous (Called sigmoid esophagus).
  - Lower end is tapered (narrow) → [Parrot (Hen's)- beak appearance]
  - Absence of air in the fundus of stomach

#### **N.B.**

In barium meal if the esophagus is interrupted above the diaphragm it is mostly carcinoma of lower end esophagus but if the cardia below diaphragm is narrowed it is mostly achalasia

#### ➢ Plain X-Ray chest:

- Absence of gastric air bubble. - Widening of mediastinum.

#### ➢ Esophagoscopy: (Biopsy + cytology in doubtful cases)

- Main aim is to exclude carcinoma:
  - ~ Esophagus is dilated & full of retained food & fluid.
  - ~ Signs of esophagitis (red esophagus).
  - ~ Narrow eccentric cardiac orifice (golf ball appearance) → esophagoscope can pass in achalasia but in carcinoma it is not wide enough for passage.

#### ➢ Esophageal manometry:

- Weak peristaltic wave
- Failure of relaxation of LOS.
- Pressure in high pressure zone is > 25 mmHg (N=8-25 mm Hg).

#### b) For complications:

- CBC: Anemia, hemoconcentration & leucocytosis.

### ▪ What is the treatment of this condition?

→ **Surgical TTT (Most reliable method of treatment)**

#### Modified Heller's operation

- Not extending to cardia depending on manometry.
- This is done to avoid reflux
- Expose the lower part of esophagus & cut muscle fibers completely until mucosa bulges through the incision.
- Some authors advise anti-reflux mechanism.

#### → **Medical Treatment**

- CCBs or Botulinum toxin or nitrates, are of very little clinical value (ineffective).
- Effectiveness of these TTT. is short-lived & often causes significant side effects.
- Endoscopic injection of botulinum toxin (Botox), its effects often last < 6 months
- Botox injections can also cause an inflammatory reaction, which can make a future myotomy more difficult.

→ **Forcible Dilatation by**

- High pneumatic pressure balloon: using Regiflex tube, the risk of perforation associated with this procedure is 3% to 5%.
- Plummer's hydrostatic balloon (obsolete)

**N.B.**

None of the available treatments will return the esophagus to normal, & esophageal body remains aperistaltic.

A careful balance must be achieved between alleviating obstruction & creating Gastroesophageal reflux.

**CASE 34**

A old 55 Years healthy mildly obese woman is referred for evaluation of refractory heartburn and regurgitation. Her symptoms have been present for approximately 10 years. She initially attempted lifestyle changes including cessation of smoking and caffeine use as well as weight loss but did not have significant relief. Her symptoms has improves by using proton pump inhibitor but she continues to have breakthrough symptoms especially after eating and when lying down.

**KEYS**

- A old 55 years healthy mildly obese woman
- Refractory heartburn and regurgitation for approximately 10 years.
- She initially attempted lifestyle changes including cessation of smoking and caffeine use as well as weight loss but did not have significant relief.
- Improves by using proton pump inhibitor but she continues to have breakthrough symptoms especially after eating and when lying down

▪ What is your diagnosis and differential diagnosis?

→ Clinically, this is a case of gastro-esophageal reflux disease GERD, however other causes of dyspepsia should be excluded (See before)

▪ How could you diagnose such case? (clinical picture + investigations)

1. Symptoms

A- Typical symptoms:

- Heart burn
  - Regurgitation
  - Dysphagia
  - Water brush
- Retrosternal  
→ Burning  
→ Mimic angina

- These symptoms are aggravated by posture (lying flat, bending & stooping) & ↓ by standing.
- Can be severe specially at night & after large meals.

B- Atypical symptoms:

- Chest pain simulating coronary artery disease.
- Pulmonary manifestations simulating bronchial asthma.
- Aspiration pneumonia



- Laryngeal manifestations as persistent cough, choking or change in voice.
- Bleeding from ulcer → anemia or hematemesis (rare).

**N.B.**

- Certain alarm symptoms as dysphagia, odynophagia, weight loss, anemia and gastrointestinal bleeding should prompt the search for esophago-gastric malignancy
- Fat dyspepsia is more common in GERD than Gall stone disease

## 2. Investigations

### a) For diagnosis

#### Instrumental:

##### ➤ PH study:

- If the time of esophagitis symptoms is the same time of lowered PH, then symptoms are due to reflux.

##### ➤ Esophageal manometry:

- It assesses the LOS pressure and peristalsis.
- It will reveal loss of high pressure zone of the lower end of esophagus in case of sliding hiatus hernia.

##### ➤ Upper GI endoscopy:

- Evaluate the degree of esophagitis.
- Diagnose the presence of Hiatus hernia.
- Biopsy if suspecting malignancy or Barrett's esophagus
- Belsey endoscopic grading of reflux:
  - Grade I hyperemic mucosa.
  - Grade II intermittent superficial ulcers.
  - Grade III extensive ulceration.
  - Grade IV stricture or Barrett's esophagus.

#### Radiological:

##### ➤ Barium swallow & meal in 20°: (Trendelenburg position):

- Reflux of barium from stomach to esophagus.
- In case of sliding hiatus hernia: → part of stomach in the chest (gases in chest).

### b) For complications:

- CBC → microcytic hypochromic anemia due to chronic blood loss.

## ▪ What is the treatment of this case?

### 1. Conservative (Main line):

#### a) Life style modification:

- Reduction of weight (markedly improve symptoms).
- Stop smoking
- Avoid large, fatty, spicy & acidic meals.
- Avoid chocolate, coffee & spirits.
- Avoid lying flat especially after meals for at least 2 hrs.
- Sleep with extra pillows (elevate head & bed 15°).
- Avoid constricting clothes as corset.

b) Drug therapy:

- Antacids:
- H2 receptor blockers:

- Proton pump inhibitor (PPI):
- Prokinetic drugs

**N.B.**

- PPIs are the most effective single drug for esophagitis.
- Prokinetics are as effective as H2 blockers

2. Surgical:

→ Approximately 10-15% of patients with GERD will be referred for consideration to have antireflux surgery.

➤ Indications:

1. Failure of conservative treatment after 6 months.
2. Presence of complications:
  - Hemorrhage or chronic anemia.
  - Esophageal stricture with failure of endoscopic dilation.
  - Atypical symptoms.
3. Presence of other indications for laparotomy e.g. Saint's triad.
4. Non-compliance of the patient.

➤ Procedure [anti-reflux surgery]:

○ Nissen fundoplication:

- Includes a complete wrap of the fundus of the stomach around the lower end of the esophagus (360°) to create a high pressure zone.
- This operation can be done by open or laparoscopic surgery

## CASE 35

A 66-year old man presents to the clinic for evaluation of a large hiatal hernia discovered on chest x ray. He has a significant history of gastro-esophageal reflux disease characterized by retro sternal burning and regurgitation which is controlled by a proton pump inhibitor taken daily. More recently he is experiencing mild postprandial chest discomfort and early satiety. He also notes occasional dysphagia and vomiting. On examination he is well appearing. Heart sounds are normal and his lungs are clear. Occasional bowel sounds are heard on auscultation of the chest. On examination his abdomen is soft without tenderness or palpable masses and he has no palpable lymphadenopathy. Upon laboratory investigations he is noted to have a hemoglobin level of 10.5. Recent colonoscopy was negative.

### KEYS

- A 66-year old man with large hiatal hernia discovered on chest x ray.
- Significant history of gastro-esophageal reflux disease controlled by a P.P.I. taken daily.
- Recently he is experiencing mild postprandial chest discomfort and early satiety.
- Occasional dysphagia and vomiting.
- On examination he is well appearing.
- Heart sounds are normal and his lungs are clear.
- Occasional bowel sounds are heard on auscultation of the chest.
- On examination his abdomen is soft without tenderness or palpable masses
- No palpable lymphadenopathy.
- Hemoglobin level of 10.5.
- Colonoscopy was negative



▪ What is your diagnosis?

→ Clinically, it is a case of hiatus hernia mostly sliding type (GERD) presence of dysphagia make the probability of association with rolling hernia i.e mixed type III or complicated by esophagitis or stricture, however other causes dysphagia should be excluded especially cancer esophagus

**N.B:**

- Presence of H.H. on Ba. meal doesn't mean the symptoms are due to H.H. H.H. may occur without reflux & reflux may occur without presence of H.H.

▪ What are the types of hiatal hernia?

→ There are four types of hiatal hernias:

1. Type 1 or the sliding hiatal hernia :

- Is the most common accounting for 90% to 95% of hiatal hernias. It is characterized by migration of the gastroesophageal junction through the hiatus.

2. Type 2 hernias are true paraesophageal hernias :

- Where the GEJ remain in its normal anatomic position below the diaphragm while the gastric fundus herniates above the GEJ through the hiatus.

3. Type 3 or mixed type hiatal hernias:

- Characterized by herniation of both GEJ & gastric fundus above diaphragm. These tend to be large hernias with more than 50% of stomach located in mediastinum.

4. Finally type 4 hiatal hernias :

- Occur when type 2 or 3 & other organs (spleen, colon) migrate into thorax as well.

▪ What further investigations are needed in this case?

1- Barium meal in the Trendelenburg's position:

► The sliding hernia :

- Appears as a small epiphrenic bulge which is reducible in the erect position
- Widening of the esophageal hiatus.
- Usually there is reflux of barium from the stomach to the esophagus.
- If there is esophagitis, there will be irregularity of the esophageal lumen with granular mucosal pattern.

► Paraesophageal Rolling hernia:

- Herniation of the stomach into chest
- gastroesophageal junction in its normal location.

2- Perform the investigations of GERD. ( See before )

Sliding hernia	Rolling hernia
More common	More serious
Cardia in chest	Cardia in place
+ve reflux	No reflux
Mainly conservative TTT	Surgical TTT

▪ How could you treat this case?

► Treatment of sliding hiatus hernia:

- It should be stressed that sliding hiatus hernia alone does not need treatment.
- If there is symptoms of GERD follow the medical treatment in case (92) → .....
- Only if the symptoms or complications of GERD are severe, then surgery will be needed.
- The principles of surgery are:
  - Reduction of the hernia.
  - Maintain a segment of the esophagus intra-abdominally.
  - Performance of anti-reflux mechanism (Nissen fundoplication).
  - Repair of the right crus of the diaphragm.

► Treatment of paraesophageal hernia: **Is only surgical**

- Stomach is retracted downwards
- Hernial sac is excised.
- Repair of hernial defect in the diaphragm.

## CASE 36

A 55 years female presented with severe right upper quadrant abdominal pain after fatty-meals. The pain radiating to the shoulder and back with nausea.

### KEYS

- A 55 years female
- Severe right upper quadrant abdominal pain after fatty meals.
- The pain radiating to the shoulder and back with nausea.

▪ Discuss the diagnosis & D.D of this case?

→ **Clinically, this is a case of biliary colic.**

→ **It presents by:**

1. Pain:

- Site: Right hypochondrium.
- Character: Colicky pain.
- Radiation: Right shoulder & less common to the back of the right chest.
- Onset: Sudden onset.
- Course: Increase in severity over 30 minutes.
- Duration: Lasts for less than 5-6 hrs. (more than this suggests acute cholecystitis)
- Associated symptoms: Severe attacks may be accompanied by nausea & vomiting.
- Precipitated by: Fatty meals
- Relieved by: Antispasmodics.

2. Reflex symptoms:

- Reflex retrosternal pain usually diagnosed as anginal pain, and actual ECG changes may occur.



3. Biliary dyspepsia:
  - Fatty dyspepsia with bloating & excessive eructation after fatty meals is a common complain.
4. Signs:
  - Tenderness in the right hypochondrium, and Murphy's sign may be +ve.

→ **D.D pain in the right upper abdomen**

▶ Perforated Peptic Ulcer:

- History of dyspepsia is present.
- Plain X-Ray shows air under the diaphragm.

▶ Acute Cholecystitis:

- Pain in the right hypochondrium
- Fever is higher.
- U/S will confirm the diagnosis.

▶ Intestinal Obstruction:

- Repeated vomiting.
- Absolute constipation.
- Multiple fluid levels in X-Ray abdomen erect

▶ Amebic liver abscess

- Patient in endemic areas presents with picture similar to acute cholecystitis but with major pain and minimal fever
- +Ve metronidazole Therapeutic test

▶ Acute hepatitis

▶ Acute pancreatitis:

- Alcoholic patient or history of gall stone
- Sever epigastric pain radiate to the back
- Increase serum amylase and lipase
- C.T.

▶ Pyogenic liver abscess:

- Fever, malaise, RT upper quadrant pain
- Tender hepatomegaly

▶ Subdiaphragmatic abscess:

- Subphrenic abscess should be suspected whenever hectic fever develops or persists after the treatment of any inflammatory lesion within the abdomen
- Pus somewhere, Pus nowhere else, Pus under the diaphragm
- General: FAHM
- Local:
  - Impaired chest movement on the affected side
  - Tenderness may be present in the lower ribs & just below the costal margin.

▶ Right pyelonephritis:

- Fever 40°C + rigors, tender pain, dysuria

▶ Inferior wall MI

▶ Dissecting aortic aneurysm

▪ What are the investigations to diagnose & exclude D.D of this case?

▶ Abdominal U/S: ( Inv. Of choice)

- Detects size & thickness of GB & presence of the stone (in 98% of cases).
- Detects diameter of CBD and any intrahepatic biliary dilatation.

► **Plain X-Ray:**

- Only 10-15% are radio-opaque.
- They are multiple, faceted signet ring.
- They lie anterior to spine in lateral view

► **LFTs**

- Bilirubin, ALP, gamma GT.  
(If high direct bilirubin & ALP → Stone in CBD → ERCP is needed)
- PT, albumin, SGOT, SGPT.

► **KFTs:**

- Creatinine, BUN.

► **CBC:**

- It helps in diagnosis of infections.

► **Investigations to exclude the D.D:**

- **Amebic liver abscess**
  - U/S
  - Serological: CFT, IHA. Gel diffusion precipitative test is +ve in 95% of amoebic abscesses
  - Stools analysis: Entamoeba histolytica will be found.
  - Therapeutic test: Toxic symptoms will improve on metronidazole as a therapeutic agent. (diagnostic & therapeutic).
- **Acute hepatitis:**
  - LFTs, viral markers
- **Pyogenic liver abscess:**
  - CBC, U/s, C.T. scan
- **Perforated peptic ulcer:**
  - X ray erect, gastrographin meal, U/S
- **Subdiaphragmatic abscess:**
  - X ray, U/S
- **Right pyelonephritis:**
  - CBC, U/S, KFTs, urine analysis
- **Acute pancreatitis:**
  - Serum amylase, lipase, C.T.

## CASE 37

A 43 female with long history of fatty dyspepsia, presented with upper Rt. abdominal pain. Temperature 39°C, pulse 130/min with rebound tenderness in upper Rt. quadrant.

### KEYS

- A 43 female
- History of fatty dyspepsia
- Upper Rt. abdominal pain.
- Temperature 39°C
- Pulse 130/min
- Rebound tenderness in upper Rt. quadrant.



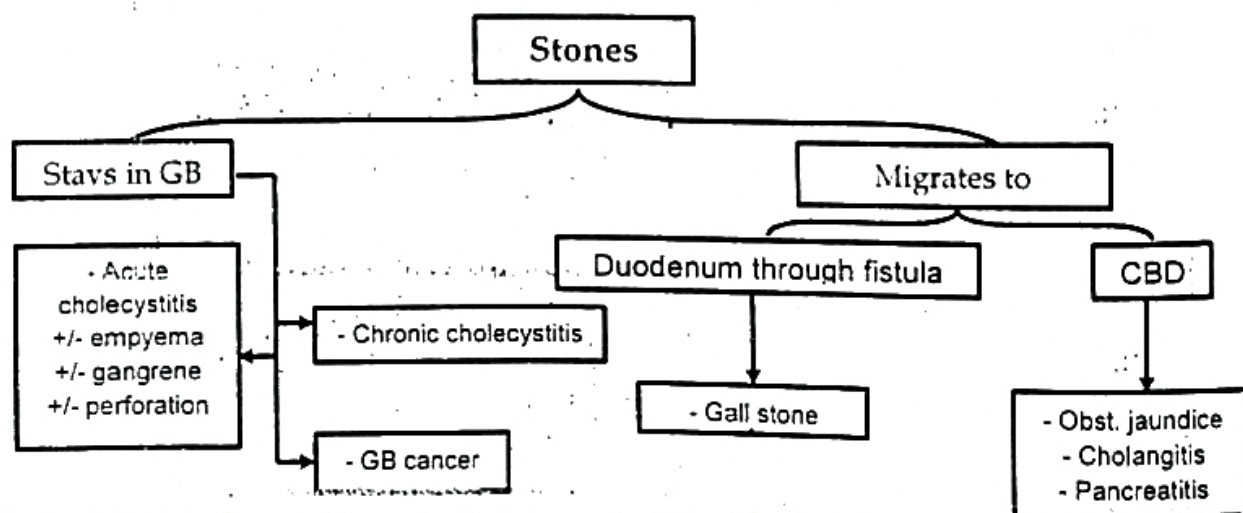
## CASE 38

A 48 year old female presented to the emergency room with persistent dull aching pain in the right hypochondrium, radiating to the right shoulder, and associated with vomiting. On examination, the temperature was  $37.8^{\circ}\text{C}$ , abdominal examination revealed absence of scars, plus the presence of tenderness and guarding in the right hypochondrium. The lab results showed a total leucocytic count of 13000, a serum bilirubin of 0.8 mg/100ml, and an ALT of 22 IU/L. A HIDA scan revealed non-visualization of the gall bladder.

### KEYS

- A 48 year old female
- Persistent dull aching pain in the right hypochondrium, radiating to the right shoulder, and associated with vomiting.
- Temperature was  $37.8^{\circ}\text{C}$ ,
- Abdominal examination revealed absence of scars,
- Presence of tenderness and guarding in the right hypochondrium.
- Total leucocytic count of 13000, (H)
- Serum bilirubin of 0.8 mg/dl, (N)
- ALT of 22 IU/L. (N)
- A HIDA scan revealed non-visualization of the gall bladder. (diagnostic)

- What is your diagnosis?  
— Mostly it's a case of **acute obstructive cholecystitis** however other causes of acute abdomen should be kept in consideration ( See before )
- What might examination of the back reveal?  
— **Boas sign** (An area of hyperesthesia between Rt. 9th & 11th ribs posteriorly)
- Mention the possible complications.  
— **Complications develop in 3-5 % of symptomatic patients per year.**



• A large stone obstructing Hartman's pouch will cause pressure on CBD leading to **Mirizzi syndrome**

## ► Complications in the gall bladder:

1. Obstruction of cystic duct or neck of gall bladder:
  - **Mucocele of gall bladder.** (if contents remain sterile)
  - **Acute calcularcholecystitis** (if infection occurs) with or without empyema (suppurative inflammation), gangrene or perforation.
2. Chronic calcularcholecystitis:
  - Usually it has thick walled gall bladder & is contracted.
3. Carcinoma of the gall bladder:
  - Long-standing calcular disease → Squamous metaplasia → carcinoma.
  - It is a very rare complication however, 90 % of cases with carcinoma of gall bladder have gallstones.

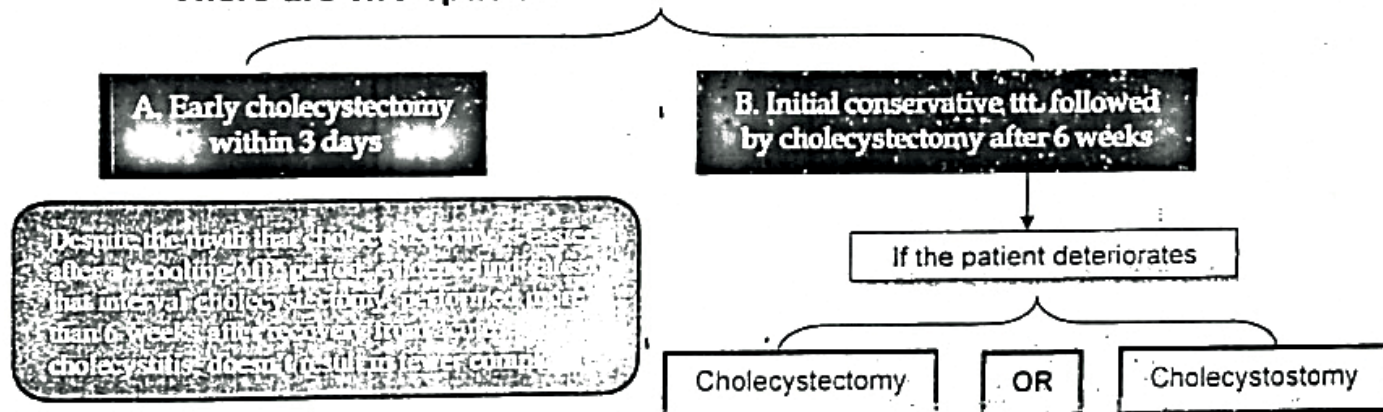
## ► Complications caused by migration of stones:

1. Migration to common bile duct:
  - a. Obstructive jaundice:
    - This occur with its consequences: bleeding tendency, septicemia, renal & hepatic failure.
  - b. Cholangitis & cholangitic abscesses of the liver.
  - c. Acute pancreatitis:
    - Occurs when stone obstructs the lower end of CBD or pancreatic duct.
  - d. Biliary cirrhosis:
    - This occur in long-standing intermittent obstruction. (rare)
2. Migration to duodenum through fistula:
  - **Gall stone ileus: (rare)**  
→ Fistula between gall bladder & duodenum → stone passes (> 2.5 cm) → Impact in the terminal ileum (about 2 feet from ileocaecal valve) → Intestinal obstruction. (Called gall stone ileus obstruction)

## ▪ What is the treatment of this case?

→ The definitive treatment is **cholecystectomy**.

→ There are two options:



## ► Early cholecystectomy within 3 days of onset of attack:

- Early cholecystectomy is now recommended.
- Provided that:
  - 1- Sure diagnosis.
  - 2- Good surgeon.
  - 3- Fit patient.
- Advantages:
  1. Early surgery is not difficult as adhesions are fibrinous and not fibrous.
  2. Avoid possible future complications of acute cholecystitis.



3. One day hospital admission with early return to work.

► Initial conservative treatment followed by cholecystectomy after 6 weeks:

▪ Initial conservative treatment:

1. Feeding: Stop oral feeding & give IV fluids.
2. Ryle: Tube suction.
3. Antispasmodics: To relax the sphincter of Oddi.
4. Sedatives: e.g. Pethidine, because morphia is contraindicated as it causes spasm of the sphincter of Oddi, or NSAIDs.
5. Antibiotics: Effective against gram negative bacilli as Ampicillin or a cephalosporin.
6. Observation: Pulse, temperature, area of tenderness & rigidity.

▪ Then:

- Under this treatment most of the patients improve & the attack subsides.
- Patient is sent home & comes back after 6 weeks to have elective cholecystectomy.

▪ If patient deteriorates during conservative treatment:

- Either:

1. Cholecystectomy → If safely feasible.
2. Cholecystostomy → If dense adhesions is present, as this makes cholecystectomy a risky operation. (percutaneous or laparoscopic cholecystostomy)

▪ What are the post-operative complications of cholecystectomy?

1- Primary hemorrhage:

- Due to injury of cystic artery
- Treatment:
  - Compression of hepatic artery at the free border of lesser omentum between left index (in foramen of Winslow) & left thumb (over the free border of lesser omentum)
  - "Pringle's maneuver"

2- Injury of important structures:

- CHD or CBD → stricture → obstructive jaundice.
- Accidental ligation of hepatic a.
- Injury of duodenum → repair in two layers + NG suction

3- Post-cholecystectomy jaundice:

- a. Missed stone in CBD.
- b. Stricture or ligation of CBD.
- c. Liver cell failure (due to ligation of hepatic a.).
- d. Incompatible blood transfusion
- e. Viral Hepatitis.
- f. Halothane toxicity.

4- Post-cholecystectomy syndrome "Persistence of symptoms post operatively"

- a. Stricture of CBD.
- b. Missed stone in CBD.
- c. Long cystic duct stump (only if contains a stone).
- d. Biliary dyskinesia.
- e. Wrong diagnosis: e.g. Duodenal ulcer.

5- Subphrenic collection

## CASE 39

40-years-old diabetic woman presented with persistent pain in Rt. Hypochondrium for one day. Her temp. 39°C. Abdominal examination revealed tenderness & Guarding in Rt. Hypochondrium.

### KEYS

- 40-years-old diabetic woman
- Temp. 39°C
- Persistent pain in Rt. Hypochondrium for one day
- Tenderness & Guarding in Rt. Hypochondrium.

## CASE 40

70-year-old woman with multiple chronic medical conditions presents to the emergency room with 36 hours of right upper-quadrant (RUQ) pain and subjective fever. She describes numerous prior episodes of postprandial RUQ abdominal pain that resolves after several hours. While her pain is occasionally accompanied by nausea and vomiting, she denies jaundice, alcoholic stools, or dark urine. On exam, she is febrile to 38.5°C with otherwise normal vital signs. Her abdomen is soft with a well-healed vertical midline incision. She has marked tenderness to palpation in the right subcostal region and a positive Murphy's sign.

### KEYS

- 70-year-old woman
- 36 hours of right upper-quadrant (RUQ) pain.
- Numerous prior episodes of postprandial RUQ abdominal pain that resolves after several hours. occasionally accompanied by nausea and vomiting
- No jaundice, alcoholic stools, or dark urine.
- Temp 38.5°C with otherwise normal vital signs.
- Marked tenderness to palpation in the right subcostal region and a positive Murphy's sign.

#### ▪ What is the diagnosis?

→ Clinically it is a case of acute obstructive cholecystitis however other causes of acute abdomen should be excluded ( See before )

#### ▪ How to confirm the diagnosis? ( C/P + investigations )

#### ► Symptoms:

##### A. General:

- FAHM (fever is high)

##### B. Local:

##### 1. Pain:

- At first: It is diffuse colicky upper abdominal pain.
- Then it becomes dull-aching, persistent & localized to right upper quadrant.(when serosa is inflamed)



- May be referred to: to the Rt shoulder due to irritation of under surface of the diaphragm supplied by sensory fibers of phrenic n..
- 2. Usually there is nausea, sometimes vomiting.

### ► Examination

#### A. General:

- High temperature (fever) & tachycardia.
- Jaundice: Present if large stone is impacted in hartman's pouch and compresses bile duct ( MIRIZI syndrome )

#### B. Local (maximum on the Rt. hypochondrium):

→ **Signs of acute abdomen** → **marked at Rt. Hypochondrium.**

- ✓ Inspection: rigidity.
- ✓ Palpation: tenderness, guarding, rebound tenderness.
- ✓ Percussion: -ve.
- ✓ Auscultation: decreased intestinal sound.
- ✓ DRE: -ve

#### C. Special signs:

- ✓ Boas' sign: An area of hyperesthesia between Rt. 9th & 11th ribs posteriorly.
- ✓ GB mass: difficult to palpate due to overlying tenderness and rigidity

### ► Investigations

#### A. For diagnosis:

##### 1. Laboratory:

- CBC: PMN leucocytosis may be present.
- LFTs: Usually normal except in Mirizzi syndrome .

##### 2. Radiological:

##### ▪ U/S: (investigation of choice)

###### ➢ Gall bladder:

- Stones obstructing cystic duct (sensitivity reaching 98%) Distension of GB.
- Thickened wall.
- Serosal edema.

- Micro abscesses.

###### ➢ CBD:

- Diameter of the CBD (normal 0.6 mm)

- Stones

##### ▪ HIDA:

###### ➢ Scanning of the liver & gall bladder:

- Most accurate but not practical
- If the CBD is visualized while Non-visualization of the gallbladder at 60 minutes is diagnostic acute calcular cholecystitis.

**N.B.**  
Murphy's sign may be detected

### **N.B.**

- Gallbladder contraction may be stimulated by morphine or cholecystokin to further increase HIDA's accuracy in diagnosing cholecystitis.
- Measurement of the gallbladder ejection fraction by HIDA also allows for identification of biliary dyskinesia.

#### B. To exclude D.D e.g.:

- ECG for ischemic heart
- Serum amylase for acute pancreatitis

#### ▪ What is the possible treatment? ( See before )

## CASE 41

A female patient, came to emergency room with severe Rt. Hypochondrial pain, Rt. Shoulder & radiating to back, bilirubin level was 0.8 & temp. 37°C.

### KEYS

- A female patient
- Severe Rt. Hypochondrial pain, Rt. Shoulder, radiating to back
- Bilirubin level was 0.8 (N)
- Temp. 37°C.

- What is your diagnosis?  
→ **Mostly it is a case of gall bladder stone causing biliary colic however consider the D.D. ( See before )**
- What are the possible complications?  
( See before )
- What is the treatment?

#### ► Treatment of stones

##### A. Asymptomatic Gall Stones:

**No treatment (wait & watch) except in:**

- Elderly diabetic patient (controversial)(because if acute cholecystitis occurs → gangrene)
- Porcelain GB (gall bladder wall calcification), which is precancerous.

##### B. Symptomatic Gall Stones:

**Cholecystectomy is the standard treatment  
Done either open or laparoscopic.**

### N.B.

CBD stones are found in 15% of patients undergoing cholecystectomy (without preoperative ERCP).

#### ► Treatment of possible complications

##### 1. Acute Cholecystitis:

- Patient > 48 hours: Conservative treatment then cholecystectomy (now done lap.).
- Patient < 48 hours: Urgent cholecystectomy.

##### 2. Acute Pancreatitis: Conservative treatment.

##### 3. Obstructive Jaundice:

**First we do ERCP**

- If succeed → Laparoscopic cholecystectomy
- If fails → We do open cholecystectomy & explore CBD..

##### 4. Gall Stone Ileus:

**Relief of intestinal obstruction**

- Resuscitation & Monitoring.



**-Deal with the stone :**

- Crushing the stone
- Milking to pass ileocecal valve

- Removal by enterostomy
- Resection anastomosis

## CASE 42

55 years old diabetic female came complaining of persistent pain & vomiting of 6 hours duration. On examination pulse was 100/minute, B.P 130/90 mm Hg. & temp. 37°C. She had a mild tinge of jaundice & localized tenderness in the Rt. Hypochondrium.

### KEYS

- 55 years old diabetic female
- Pulse 100/minute
- Temp. 37 c. ( Not cholecystitis nor cholangitis )
- Mild tinge of jaundice ( May be calculi or mirrizie syndrome )
- Localized tenderness in the Rt. hypochondrium
- Persistent pain & vomiting of 6 hours duration.
- B.P 130/90 mm Hg.

- Discuss the Management?  
( See before )

## CASE 43

A 44 years old obese type II diabetic female was previously diagnosed as having gall stones for which nothing was done for 3 years. This lady presented to the E.R. 9 p.m. suffering from severe deep color urine & showed little acetone in it. Her eyes showed icteric tinge.

### KEYS

- A 44 years old obese type II diabetic female
- Having gall stones for which nothing was done for 3 years.
- Severe deep color urine & her eyes showed icteric tinge.

- Discuss the management?  
( See before )

## CASE 44

A 38-years old woman presented by severe Rt. hypochondrial pain radiating to the back for the past 3 days. She has noticed that her urine has become dark in color. On examination there was yellowish coloration of sclera.

### KEYS

- A 38-years old woman
- Severe Rt. Hypochondrial pain radiating to the back for the past 3 days.
- Urine has become dark in color.
- Yellowish coloration of sclera.

- What is the provisional diagnosis?  
( See before )
- What are the investigations & treatment?  
( See before )
- What are the possible complications of treatment?  
( See before )

## CASE 45

A female patient fifty years old, she had 5 children, felt sever right sided abdominal pain 3 days previously; this was followed by dark urine, pale stools. On examination she was clinically jaundiced, abdominal examination revealed no palpable gall bladder.

### KEYS

- A female patient fifty years old,
- She had 5 children
- Sever right sided abdominal pain 3 days previously
- By dark urine, pale stools.
- Clinically jaundiced
- Abdominal examination revealed no palpable gall bladder (Courvoisier's law)

- What is the initial diagnosis?
  - Clinically it is a case of obstructive jaundice mostly calcular O.J.
  - C/P of patient with calcular O.J.:
  - Symptoms:
    1. Jaundice
      - Onset: slowly progressive
      - Course: Intermittent, usually does not reach severe degree.
      - Duration: variable
    2. Urine
      - Dark → excess direct billirubin
      - Frothy → excess bile salts → ↓ surface tension
    3. Stool: Bulky offensive clay colored stool.



4. Pain: (biliary colic)

- Site: Rt. Hypochondrium, epigastrium
- Character: Severe dull aching pain.
- Radiation: Rt: scapular region or back.
- Course: Recurrent attacks
- What ↑: Fatty meals
- What ↓: Antispasmodics
- Associated symptoms: There may be nausea & vomiting.

5. Fever: Intermittent with rigors (ascending cholangitis)

6. Itching: Specially in limbs due to ↑ bile salts and PG in skin.

7. Bleeding tendency: Due to malabsorption of Vit. K, improved by IV Vit. K.

**N.B.**

Charcot's triad:

- Indicates ascending cholangitis.
- Recurrent attacks of: - Pain. - Jaundice. - Fever and rigors.

Reynold's pentad:

- As above + altered mental state + shock

CBD has no smooth Ms. → so, it can be presented by dull aching pain.

► Signs

1. General

1- Vital signs:

- Temperature: high if associated with cholangitis.
- Pulse: bradycardia (bile salts suppresses SAN & myocardium).
- BP: hypotension (vasodilator effect of bile salts).

2- Jaundice: May not be severe.

3- Purpura and ecchymosis (signs of bleeding tendency).

4- Itching marks.

2. Local

→ GB:

- Usually not palpable<sup>2</sup> (chronic inflammation → fibrosis).
- Murphy's sign is +ve.

• What are the investigations would you order?

► Laboratory

1. LFTs:

- Bilirubin: ↑ serum bilirubin mainly direct fraction
- Alkaline phosphatase: ↑. It's the most sensitive indicator of biliary tract obstruction
- SGOT & SGPT: Slight rise specially with cholangitis.
- γ GT and 5-nucleotidase: Both are maximally elevated.
- PT: Prolonged, improved by IV vitamin K

2. Stool:

- Clay colored, bulky offensive.
- Stercobilinogen: diminished

### 3. Urine:

- Dark colored.
- Frothy.
- Bilirubin:  $\uparrow$  direct  $> 10 \text{ mg\%}$ .
- Urobilinogen: diminished

### 4. BUN & creatinine: $\uparrow$ in hepatorenal failure.

### 5. CBC: To exclude hemolytic anemia, increase TLC if there is cholangitis (polymorph-nuclear leucocytosis)

### ► Radiological

#### 1. Abdominal U/S: (The first to be done)

- CBD diameter  $> 8 \text{ cm}$  on U/S suggests CBD stones.
- Dilated intrahepatic biliary radicals.
- Chronically inflamed GB with stones. (Not diagnostic of obstruction but points to it)

#### 2. ERCP: (Indicated in OJ with suspected lesion in lower end of the CBD)

- Both common bile ducts and pancreatic duct will be visualized.
- Stone will appear as a filling defect.

#### 3. PTC: (indicated in obstructive jaundice with suspected lesion in upper end of CBD)

- Visualize extra and intrahepatic biliary system.

#### - Indications:

- a. Impacted stone.
- b. Arrest of dye due to stricture.
- c. Failure of cannulation of duodenal papilla).

#### 4. MRCP: Good diagnostic value but not therapeutic)

#### 5. Abdominal CT: To exclude cancer head of pancreas.

### ▪ Mention advantages of using U/S for diagnosis & it's findings in G.B?

→ **Abdominal U/S is the 1st investigation done in most biliary disorders.**

#### ► Advantages:

- Easy, non-invasive and inexpensive, quick to perform.
- Can be done in acute inflammation & jaundice.

#### ► It can detect:

- a- GB stones in 98% of cases. (very accurate)
- b- CBD stones in 70% of cases. (less accurate)
- c- Thickening of the GB wall.
- d- Masses in porta hepatis or head of pancreas.
- e- Dilatation of extra and intra hepatic biliary ducts in patients with obstructive jaundice.

### ▪ What preparations should she receive & explain why?

→ **Preoperative Preparations:**

→ **Admission to hospital for few days until preparation is done:**



1. Correct clotting dysfunction:

- I.V vitamin K & patient should be checked before operation.

2. Guard against liver cell failure:

- Broad spectrum antibiotics (e.g. cephalosporins) if there is evidence of cholangitis

3. Guard against renal failure:

- Adequate hydration by IV fluids.
- I.V. mannitol (If urine output is not good enough).
- Oral bile salts (May prevent renal failure & endotoxemia)

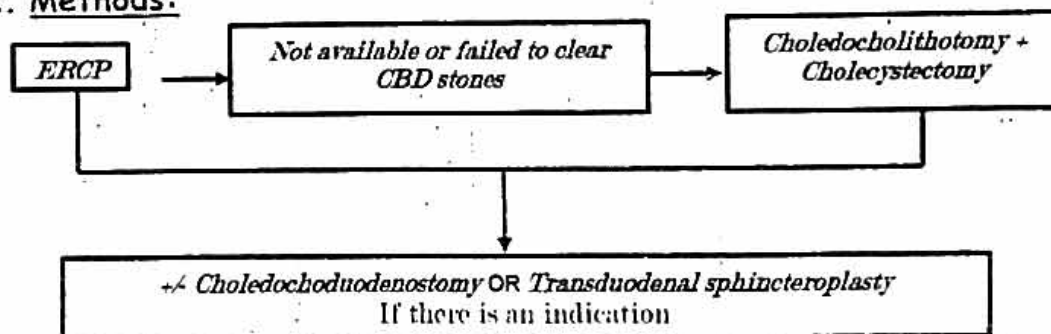
▪ What treatment should be done after the preparation?

→ **Definitive Treatment**

1. Aim:

- To relieve biliary obstruction by removal of CBD stones: (1st priority)
  - a) With endoscope or b) By CBD exploration.
- To remove the GB, that is usually the source of CBD stones (2nd priority).

2. Methods:



❖ If ERCP available:

→ Procedure

1. Sphincterotomy by diathermy (at 11 o'clock to avoid injury to the blood supply).
2. Removal of stone(s) by dormia basket or ballon catheter.
3. A large stone can be fragmented before removal either by mechanical, electrohydraulic or laser lithotripsy

❖ If ERCP not available or failed to clear CBD stones:

- Operative exploration of CBD and removal of the stones (Choledocholithotomy)
- Then Check absence of stones by choledochoscope. Its use makes the incidence of missed stones ZERO in treatment of calcular obstructive jaundice

a. If choledochoscope not available: Intraoperative T-tube cholangiography to detect any missed stones

- T-tube is inserted in the CBD, which is closed around it with the long limb of the tube brought outside the patient
- ↓ incidence of missed stone from 10-20% to 0%

b. T-tube cholangiography Postoperative:

- If intraoperative imaging is not available, but in this case there is a high incidence of missed stones.
- Cholangiography prior to T-tube removal is usually performed 7-10 days postoperative to check for missed stone.
- If there is no residual stones & there is free flow of contrast to duodenum the tube is removed

- If retained stones are identified the mature T-tube tract (after 6 weeks) can be used as a route for non-operative stone extraction.
- Other therapeutic maneuvers such as balloon dilatation of bile duct strictures or stent placement can be done via the T-tube tract.

❖ Additional procedures to prevent future obstruction:

→ Indications:

- Impacted stone in the lower end of CBD
- Stricture of CBD.
- Inaccessible stones.

→ Choice:

- If  $CBD > 2\text{ cm}$  → Choledochoduodenostomy.
- If  $CBD < 2\text{ cm}$  → Transduodenal sphincteroplasty (rarely done now as it can be performed by endoscopic sphincterotomy)

▪ What are the possible complications of treatment?

→ **Complications of ERCP**

1. Bleeding in 2-9%, may be due to coagulation disorder.
2. Acute cholangitis in 1-3%, may progress to septicemia & death specially with failure of bile duct clearance after sphincterotomy. If endoscopic drainage fails, it's mandatory to achieve biliary drainage
3. Pancreatitis in 1-4%.

→ **Complications of cholecystectomy**

( See before )

## CASE 46

A 60 years old man came presenting with upper abdominal pain for two months and loss of appetite. On examination the abdomen was lax but the liver was enlarged. No ascites was detected. The patient was jaundiced and his urine was dark and stools clay colored. The direct bilirubin and serum alkaline phosphatase were elevated.

### KEYS

- A 60 years old man
- Upper abdominal pain for two months
- Loss of appetite.
- Abdomen was lax but the liver was enlarged.
- No ascites was detected.
- The patient was jaundiced and his urine was dark and stools clay colored (O.J.)
- The direct bilirubin and serum alkaline phosphatase were elevated. (O.J.)

▪ What are the possible causes of this condition & how to differentiate between them clinically? (history /examination )

→ Painless jaundice in a middle-aged or elderly person without overt liver disease should be assumed to be a malignancy until proven otherwise however, D.D. of O.J. should be considered



1. Cancer head pancreas
2. Cancer stomach with metastasis to LN at porta hepatis
3. Klatskin tumor
4. Calculus obstructive jaundice
5. Lymphoma

### 1. Cancer head pancreas:

→ Any elderly male with rapidly progressive painless jaundice should be considered as cancer head of pancreas till proved otherwise.

- Obstructive Jaundice
  - Painless
  - Progressive:
  - Olive green
- Asthenia (common).
- Anorexia & loss of weight.
- O/E:
  - Distended palpable GB in 50% (Courvoisier's law)
  - Enlarged liver (Due to engorgement with bile).
  - Enlarged Virchow's LNs (Troisier's sign).
  - Thrombophlebitis migrans (Trousseau's sign).

### 2. Cancer stomach with LN metastasis:

→ Any Male > 40 years, with unexplained dyspepsia you should exclude cancer stomach and dislike to meat may occur but rare

- Anorexia (Loss of weight) & Asthenia
- Epigastric pain may occur
- O/E
  - Anemia (Anemia in the elderly should raise possibility of malignancy and stomach is one of the commonest)
  - obstructive jaundice due to metastasis to LN at porta hepatis
  - Enlarged Virchow's LNs (Troisier's sign).
  - Thrombophlebitis migrans (Trousseau's sign).
  - An epigastric mass. may occur in 30%

### 3. Klatskin tumor:

- Cholangiocarcinoma above the level of gall bladder
- Its cause of malignant obstructive jaundice in old age but without gallbladder

### 4. Calculus obstructive jaundice (less probable D.D.)

- Common in middle aged females
- Jaundice
  - Slowly progressive
  - Intermittent,
  - Does not reach severe degree.
- Recurrent attacks of Pain (biliary colic)
  - Site: Rt. Hypochondrium, epigastrium
  - Character: Severe dull aching pain.
  - Radiation: Rt. scapular region or back.
  - What ↑: Fatty meals
  - What ↓: Antispasmodics

- O/E

- GB: Usually not palpable (chronic inflammation → fibrosis)
- Murphy's sign is +ve.

▪ What investigations are needed in this case?

► Laboratory

A. LFTs:

- **Bilirubin:** ↑ serum bilirubin mainly direct fraction.
- **Alkaline phosphatase:** Raised
- **SGOT & SGPT:** Slight rise specially with cholangitis.
- **γ GT and 5-nucleotidase:** Both are maximally elevated.
- **PT:** Prolonged, improved by IV vitamin K

B. Stool:

- Clay colored, bulky offensive.
- Stercobilinogen: diminished

C. Urine:

- Dark colored.
- Frothy.
- Bilirubin: ↑ direct
- Urobilinogen: diminished

D. BUN & creatinine:

- ↑ in hepatorenal failure.

E. C.B.C:

- To exclude hemolytic anemia,
- **Increase T.L.C.:** If there is cholangitis (polymorph-nuclear leukocytosis)

F. Tumor markers

- Carcinoembryonic antigen (CEA).
- CA19-9
- Pancreatic oncofetal antigen (POFA).
- Pancreatic cancer associated antigen (PCAA)

► Radiological

A. Abdominal U/S:

- CBD diameter > 8 cm on U/S suggests CBD stones.
- Dilated intrahepatic biliary radicals.
- Chronically inflamed GB with stones
- Liver secondaries

B. ERCP: Diagnostic & therapeutic

- Stone will appear as a filling defect.
- In cancer head of pancreas: Irregular stricture in lower part of CBD & for biopsy
- Placing stent

C. PTC:

- Indicated in obstructive jaundice with suspected lesion in upper end of CBD

D. MRCP: Good diagnostic value but not therapeutic

E. Abdominal CT:

- To exclude cancer head of pancreas/stomach
- LN at porta hepatis
- Assess operability in cancer (pancreas / stomach).
- CT guided biopsy if biopsy by endoscopy failed and markers was not high.

F. Upper GI endoscopy:

- To detect any mass in the stomach and take biopsy

G. Barium meal: It shows:

- **If cauliflower mass:** Persistent irregular filling defect
- **If malignant ulcer:** Ulcer niche outside the ulcer bearing area.



- Linitis plastic → (leather bottle stomach): Marked narrowing of the lumen of the stomach without interruption of barium flow.

► For preoperative preparation:

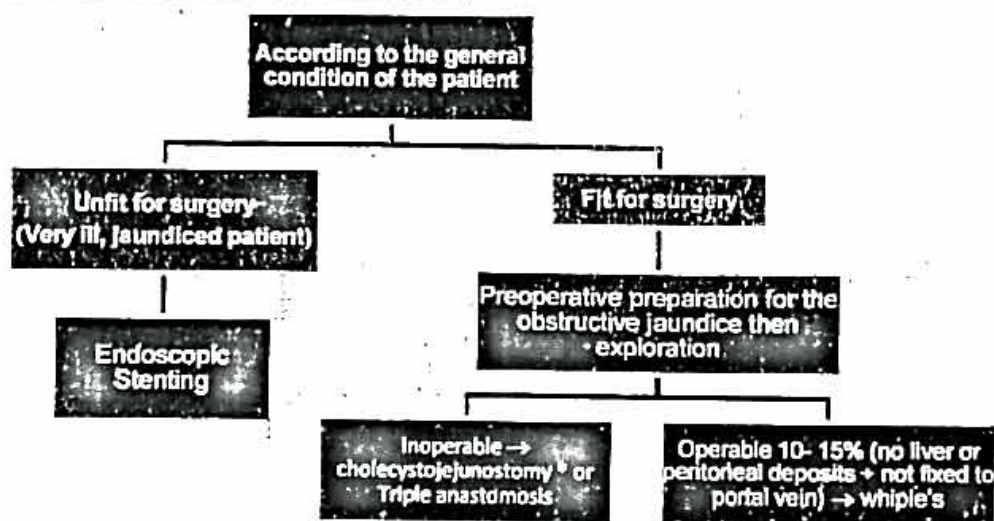
- CBC, CXR, KFTs

▪ What are the treatment options in this case?

A. Preoperative Preparations

1. Admission to hospital for few days until preparation is done:
2. Correct clotting dysfunction:
  - I.V vitamin K & patient should be checked before operation.
3. Guard against liver cell failure:
  - Broad spectrum antibiotics (e.g. cephalosporins) if there is evidence of cholangitis
4. Guard against renal failure:
  - Adequate hydration by I.V. fluids
  - I.V. mannitol (If urine output is not good enough)
  - Oral bile salts (May prevent renal failure & endotoxemia)

B. If Cancer Head Of Pancreas:



→ Whipple's operation (Pancreaticoduodenectomy)

- Removal of:
  1. Head & neck of the pancreas.
  2. The whole duodenum (as it shares the same blood supply as the head of pancreas).
  3. Antrum of the stomach (may not be done in pylorus preserving Whipple's operation).
  4. GB & CBD.

C. If Cancer Stomach:

- Operable Cases:

→ Radical operation is performed:

- 1) Removal of the tumor bearing area + safety margin 5 cm above + first 1.5 cm of the duodenum below.
- 2) Removal of omentum
- 3) Removal of L.Ns
- 4) Spleen
- 5) Tail of pancreas.

- Inoperable Cases

→ **Resectable:**

- Palliative gastrectomy (Best palliative option).

→ **Irresectable:**

- According to site of tumor:

1. If in pyloric region → **Anterior gastrojejunostomy.**
2. If in upper stomach → **Posterior gastrojejunostomy.**

→ **Radiotherapy & chemotherapy.** (not good at all)

D. If stones: ( See before )

## CASE 47

A 70 year old male presented with jaundice and anorexia of one month duration. He lost 8 kilograms in the last few weeks. On examination he was deeply jaundiced and cachectic. The liver was felt 3 fingers below the costal margin in the mid-clavicular line and was smooth and soft. The spleen was not felt and there was no ascites. Abdominal sonography revealed a distended gall bladder and dilated intra hepatic and cystic duct but no stones were present.

## KEYS

- A 70 year old male
- Jaundice and anorexia of one month duration.
- Lost 8 kilograms in the last few weeks.
- Deeply jaundiced and cachectic.
- Liver was felt 3 fingers below costal margin in mid-clavicular line & was smooth & soft.
- The spleen was not felt and there was no ascites.
- Abdominal U/S revealed a distended gall bladder & dilated intra hepatic & cystic duct but no stones were present.

- What is the likely diagnosis? State why? ( See before )
- What further investigations would you like to order? ( See before )
- How would you manage him? ( See before )



**CASE 48**

A 60-years old male presented by anorexia, loss of weight & painless progressive olive-green jaundice over last 3 months. Abdominal examination revealed hepatomegaly with palpable tender swelling protruding beyond lower liver edge.

**KEYS**

- A 60-years old male
- Anorexia, loss of weight
- Painless progressive olive-green jaundice over the last 3 months.
- Hepatomegaly with palpable tender swelling protruding beyond the lower liver edge.

- What is the provisional diagnosis? ( See before )
- What are the investigations would you order? ( See before )
- Discuss the Treatment? ( See before )

**CASE 49**

58-year-old man with a 50-pack-year smoking history presents to his primary care doctor after family members noted that his eyes were turning yellow. He notes that over the past 2 weeks, he has developed pruritus and clay-colored stools. He describes darkening of his urine and a 15-lb weight loss over the past 2 months. Vital signs are within normal limits. On examination, he appears jaundiced with scleral icterus. He has no abdominal pain and no palpable masses. He has no prior medical problems and is a construction worker.

**KEYS**

- 58-year-old man smoker
- His eyes were turning yellow over the past 2 weeks
- Pruritus and clay-colored stools.
- Darkening of his urine
- 15-lb weight loss over the past 2 months.
- He has no abdominal pain and no palpable masses.

- What is the provisional diagnosis?
  - Painless jaundice in a middle-aged or elderly person without overt liver disease should be assumed to be a malignancy until proven otherwise however D.D. of O.J. should be considered ( See before )
  - So it's a case of malignant obstructive jaundice

▪ What is the clinical picture & investigations of this case?

► Clinical picture of Cancer Head Of Pancreas:

1. Obstructive Jaundice:

- Painless (classic description), but pain is extremely frequent
- Progressive:
  - Except in periampullary carcinoma, 1 or 2 remissions may occur due to sloughing of a part of the tumor with passage of bile.
- Olive green
- Pruritus

2. Distended palpable GB in 50% (Courvoisier's law).

3. Enlarged liver (due to engorgement with bile).

4. Asthenia (common).

5. Anorexia & loss of weight.

► Investigations:

1. For diagnosis:

i. LFTs:

- a- Bilirubin: ↑ serum bilirubin mainly direct fraction
- b- SGOT & SGPT: No rise unless cholangiohepatitis occurs
- c- PT: Prolonged due to defect in vitamin K (Improved by I.V vitamin K)

ii. Stool:

- a- Clay colored, bulky, offensive
- b- No Stercobilinogen

iii. Urine:

- a- Dark colored, frothy
- b- No urobilinogen
- c- ↑ direct bilirubin

iv. ERCP → Biopsy & stent

v. PTC

vi. Barium meal (obsolete): widening of the C-curve of the duodenum

vii. Tumor Markers:

- Carcinoembryonic antigen (CEA).
- CA19-9 is useful in patients for whom pancreatic cancer is suspected as a method for confirmation and follow-up for response to treatment.
- Pancreatic oncofetal antigen (POFA).
- Pancreatic cancer associated antigen (PCAA).

2. For staging:

i. U/S:

→ Abdominal ultrasound:

- The examination is useful to:
  - Dilated extra- and intra-hepatic bile ducts.
  - Finds out gallstones which may be the cause of obstruction.
  - Liver metastases are readily diagnosed by ultrasound.
- Endoscopic U/S: Gives more information about the degree of invasion.

ii. CT scan: [Ideally it should be triphasic, spiral CT with thin cut (3 mm)].

- Shows the tumor, its local extent and liver metastasis.
- The tumor classically appears as a hypodense lesion.



iii. **Endoscopic retrograde cholangiopancreatography [ERCP], or percutaneous transhepatic cholangiography [PTC]**

- Exact delineation of the site of obstruction.
- Differentiate between malignant and stone obstruction of the bile duct.
- Placing a stent in the bile duct allows drainage of bile to relieve jaundice either as a preparation for surgery or permanently in very ill inoperable cases.

3. **For preoperative preparation:** CBC, CXR, KFTs

4. **For follow up:** Tumor markers

▪ **What is the treatment?**

→ **Preoperative Preparations:**

1. **Correct clotting dysfunction:**

- I.V vitamin K.

- Fresh blood transfusion.

2. **Guard against liver cell failure:**

- High intake of glucose

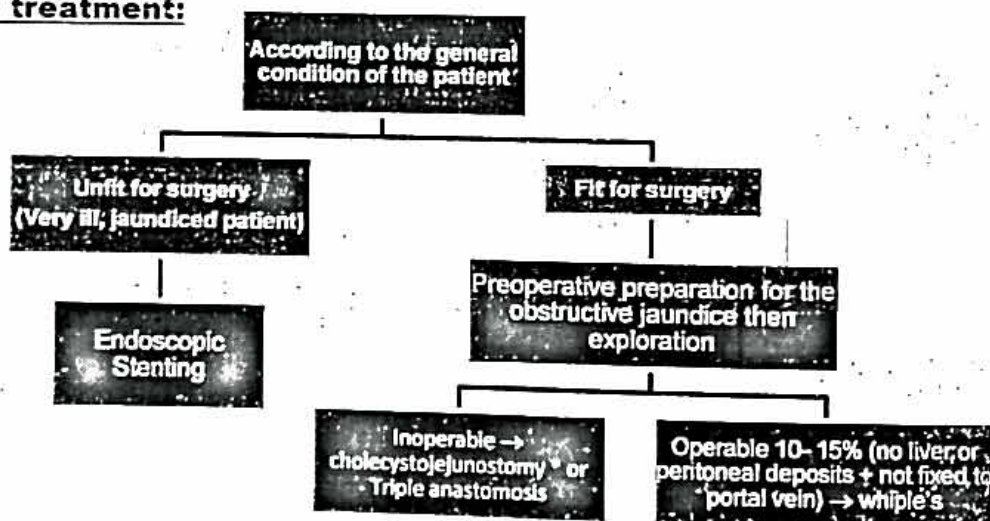
- Broad spectrum antibiotics.

3. **Guard against renal failure:**

- Adequate hydration by IV fluids.
- IV mannitol.

- Oral bile salts.

→ **Actual treatment:**



→ **Palliative treatment**

1. **Relieve jaundice + treat biliary sepsis**

- Surgical biliary bypass
- Stent placed at ERCP or percutaneous transhepatic cholangiography

2. **Improve gastric emptying:**

- Surgical gastroenterostomy
- Duodenal stent

3. **Pain relief**

4. **Symptom relief for quality of life**

- Enzyme replacement for steatorrhea
- Treatment of DM

5. **Consider chemotherapy**

## N.B.

### Manifestations suggest inoperability:

- Patient unfit for surgery
- Metastasing tumors
- Wide local spread
- Involvement of the superior mesenteric artery (SMA) and vein, hepatic artery, and portal vein (PV) should be assessed.
- Direct arterial involvement is most often considered a contraindication to surgical resection.
- In patients considered "borderline" resectable due to either long segment venous involvement
- Given the high recurrence rate of pancreatic cancer even for patients with optimal pathology, all patients with appropriate performance status should be considered for adjuvant chemotherapy ± radiation.
- Ideally, adjuvant therapy should be started within 6 to 10 weeks of the date of surgical resection
- Prognosis:
  - Extremely poor → 5 years survival rate is < 5 %.
  - Operative mortality 10%
  - Better prognosis in peri-ampullary carcinoma → 30%.

## CASE 50

A 45 year old female underwent laparoscopic cholecystectomy for calcular cholecystitis (multiple small stones). She had a smooth post-operative course and the patient was discharged on the second post-operative day. The patient returned to the 4th postoperative day with yellowish discoloration of sclera and pain at right upper abdomen. On examination, abdomen was lax with normal bowel sounds.

## KEYS

- A 45 year old female
- Underwent laparoscopic cholecystectomy for calcular cholecystitis (multiple small stones).
- Smooth post-operative course and discharged on the second post operative day.
- 4<sup>th</sup> postoperative day with yellowish discoloration of sclera & pain at right upper abdomen.
- Abdomen was lax with normal bowel sounds

### What are the possible causes of the previous scenario?

→ It's a case of post-operative jaundice most probably missed stone however other D.D. should be excluded:

#### 1. Hemolytic:

- Immune:
  - ✓ Autoimmune (drugs): e.g. penicillin.
  - ✓ Alloimmune: Incompatible blood transfusion. ( no history of transfusion)
- Blood accumulating in the peritoneum. ( Abdomen lax )
- Pulmonary infarction. ( Smooth post-operative course )

#### 2. Hepatocellular:

- Liver damage:
  - ✓ Operative stress upon liver disease.



- ✓ Liver hypoxia during operation.
- Toxic: Anesthetic toxicity as fluthane.
- Infections:
  - ✓ Viral hepatitis.
  - ✓ Septicemia.

### 3. Obstructive:

- Leakage of bile into the peritoneal cavity. ( abdomen lax )

#### **N.B.**

Smooth post-operative course and the abdomen was lax with normal bowel sounds exclude the previous causes

- Stricture of the CBD.
- Missed stone
- How can you reach the diagnosis? ( See before )
- How can you manage this case? ( See before )

## **CASE 51**

A 55 years old male patient presented suffering from abdominal distention & absolute constipation for 3 days & complains of lower abdominal pain, vomited twice. He has a history of recent progressive constipation in last few months

#### **KEYS**

- A 55 years old male
- Abdominal distention and absolute constipation for three days.
- Lower abdominal pain, vomited twice.
- History of recent progressive constipation in the last few months

## **CASE 52**

A 67 years male with 4 days of history of central abdominal colics , distension & absolute constipation. He gave a history of changing bowel habits in the last 2 years. He is dehydrated with vague Lt. Iliac mass.

#### **KEYS**

- A 67 years male
- With 4 days of history of central abdominal colics
- Distension
- Absolute constipation.
- He gave a history of changing bowel habits in the last 2 years.
- He is dehydrated with vague Lt. Iliac mass.

▪ What is the diagnosis of this case?

- Progressive constipation in old male is cancer colon until proved otherwise.
- Clinically it is a case of cancer colon (mostly left side, usually presented by change in bowel habit and IO) complicated by acute intestinal obstruction.
- Other causes of IO in old age should be excluded such as volvulus of sigmoid colon & diverticulitis.

▪ What investigations are needed in this case?

→ Your first concern will be I.O. so the following investigations should be done:

► For diagnosis of IO

1. Plain X-Ray of the abdomen:

- Erect: multiple fluid levels
- Supine: According to distended segment:
  - Jejunal loop → mucosal folds (Valvulae conniventes) crossing from one side of the lumen to the other & regular interval.
  - Ileal loop → featureless with no mucosal pattern.
  - Colon → haustrations do not reach the other side of the lumen.
  - If the ileocaecal valve is incompetent all the loops will be seen; if the valve is competent only the colon will be seen, this is closed loop obstruction in which the caecum liable for rupture

2. U/S: May show Distended bowel loops

3. Barium enema: Can assure the diagnosis of obstruction and carcinoma

4. CT scan with contrast:

- For diagnosis of I.O. and carcinoma, it will show transition point between the distended part and the collapsed part
- Will show the presence of metastasis in the liver or invasion to surrounding structures.

► For complications & preoperative preparation

→ To assess the general condition

1. CBC: Hemoconcentration and leucocytosis.
2. KFTs: Pre-renal failure.
3. Serum electrolytes
4. LFTs, FBS & ECG

► For staging

1. Endoluminal (trans-rectal) U/S/ MRI → Detects depth of local infiltration.

2. Abdominal U/S and CT scan → Metastasis to LNs, liver and abdomen.

3. Chest X-Ray or CT scan

► For follow up

1. Tumour Markers:

- Carcino Embryonic Antigen (CEA) → it is not specific & is of prognostic rather than diagnostic value as it drops after successful TTT, detect recurrent cancer colon if it rises again after relief of the obstruction

2. Bone scan

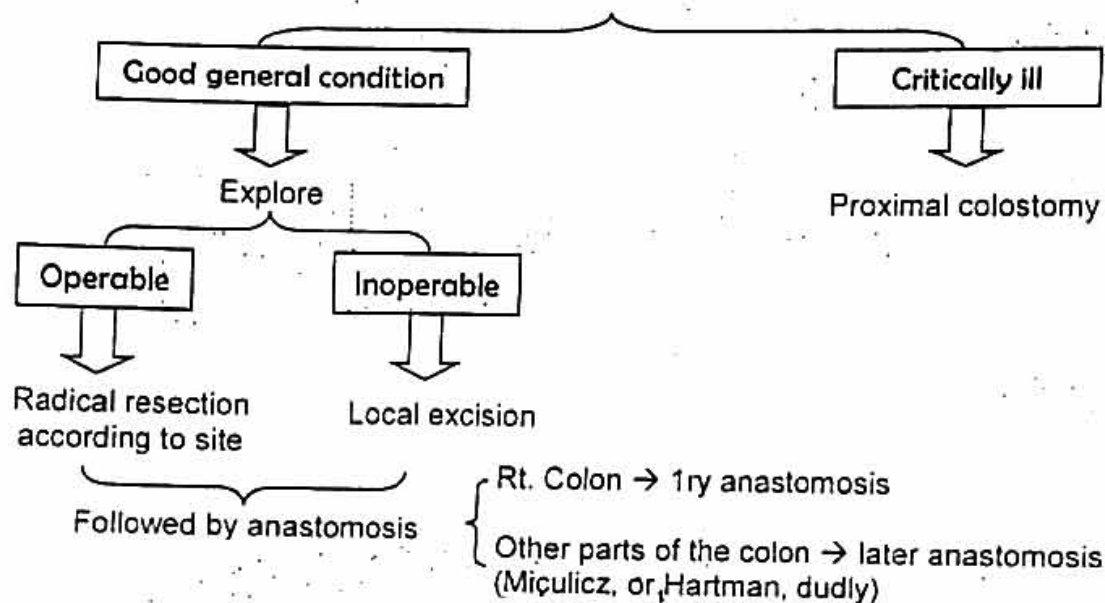
3. IVU → Possibility of involvement of ureters.

4. PET scanning → Malignant nodules elsewhere.

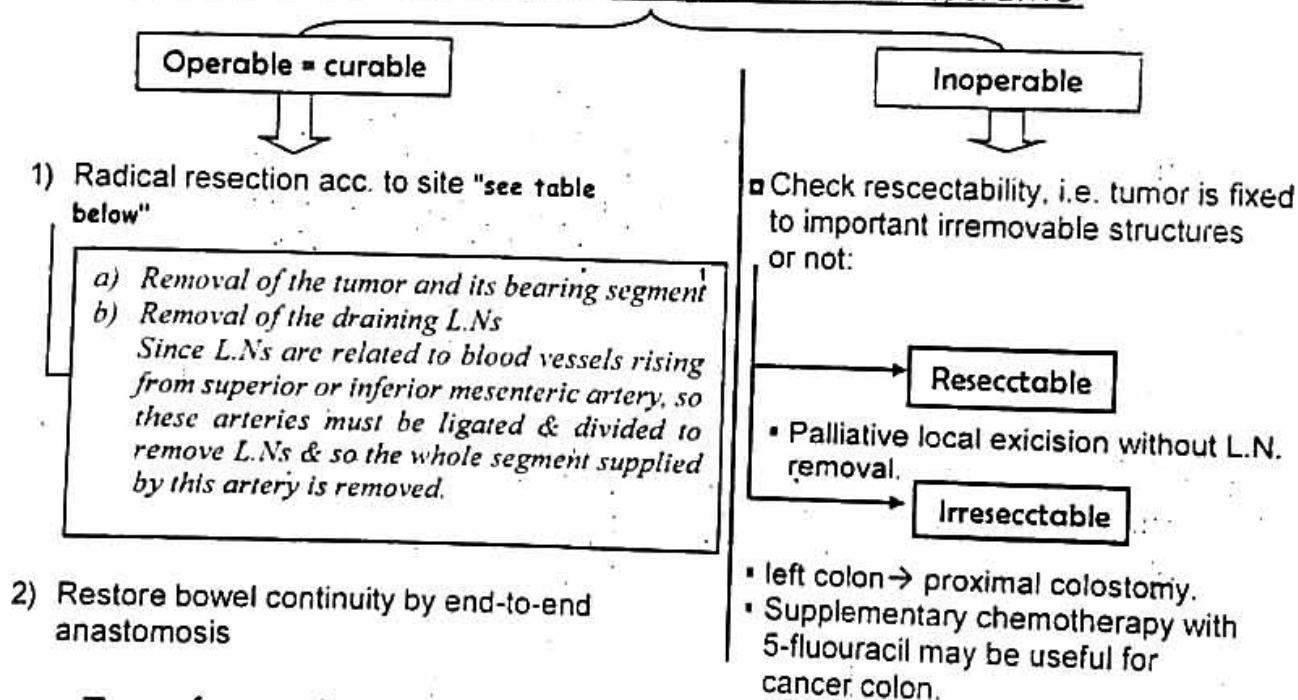


▪ What are the management options in this case?

1. Resuscitation & monitoring.
2. According to general condition of the patient



- Operability is checked by C/P, investigations & intra-operative:



- Type of resection according to site:

Site	Operation	Divided vs.
Descending colon	Lt. hemicolectomy	Inferior mesenteric vs.
Sigmoid colon	Sigmoid colectomy	Sigmoid vs.

## CASE 53

A 63 male presented with lower abdominal pain of 4 days duration, absolute constipation with loss of weight. O/E distended soft abdomen. X-ray revealed large bowel obstruction.

### KEYS

- A 63 male
- Lower abdominal pain of 4 days duration
- Absolute constipation
- Loss of weight.
- O/E distended soft abdomen.

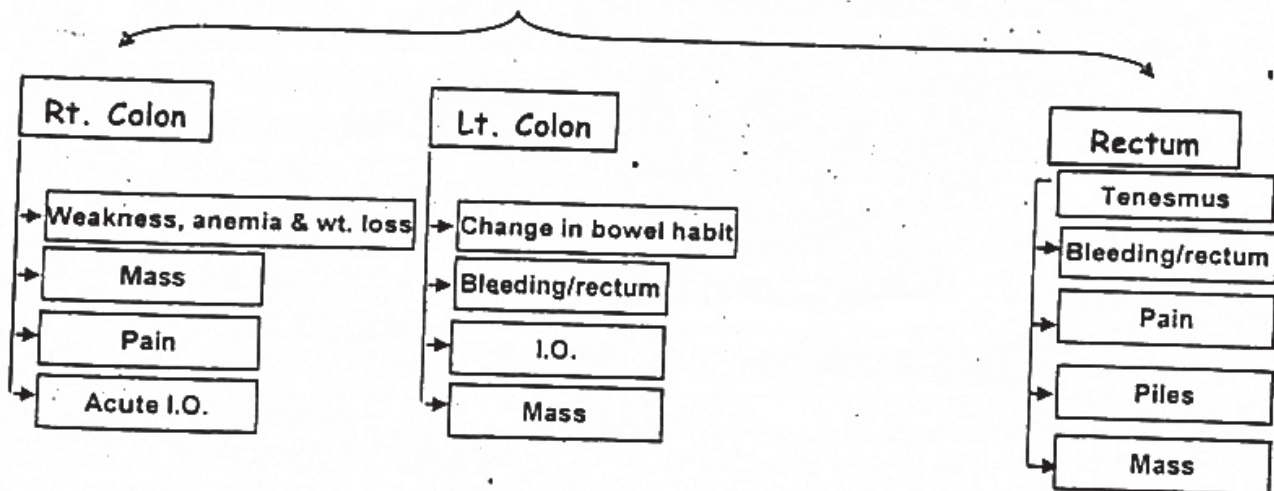
### • Discuss the differential diagnosis?

#### → **Intestinal obstruction in an old,**

- 1- Cancer colon (progressive constipation) mostly left side
- 2- Volvulus of the pelvic colon (non-progressive constipation)
- 3- Diverticulitis

#### 1. Cancer colon:

→ Any  $\delta > 40$  years with progressive constipation → Cancer colon till proved otherwise



#### 2. Volvulus of the pelvic colon:

→ **Elderly chronically constipated male with repeated episodes of abdominal pain**

#### 1. Symptoms:

- History of episodes of colicky pain relieved by passage of large amount of gases & stool.
- Presents by:
  - **Pain:** Sudden severe colicky pain.
  - **Marked distension:** In the flanks from Lt. side towards the umbilicus.
  - **Constipation:** Absolute.
  - **Vomiting:** Delayed for 1-2 days.



## 2. Signs

### - Inspection:

- Distension → early in the Lt side for 2-3 hrs → central → might cross umbilicus to Rt. hypochondrium.
- Visible peristalsis.

### - Palpation:

- Tense balloon of the volvulus can be felt → going towards umbilicus.

### - Percussion: Tympanic abdomen.

### - Auscultation: mad abdomen.

### - DRE: Empty rectum.

## 3. Diverticulitis:

→ There is long history of constipation then there is symptoms & signs as left appendicitis.

### ▪ What is the most likely diagnosis?

→ Clinically it is cancer colon, mostly left side complicated by acute I.O.

### ▪ Specific investigations?

( See before )

#### 1. Plain X-Ray of the abdomen

- Omega sign ( $\Omega$ ): There will be a very big loop distended with gas & occupying nearly the whole abdomen

#### 2. CT scan:

- Best investigation in acute diverticulitis, Volvulus swirl sign.

### ▪ Immediate and subsequent management?

( See before )

## CASE 54

A 60 years old female presented to the emergency room with recurrent attacks of abdominal colics & distension. Attacks were relieved with passage of large amount of flatus. On examination there was localized tenderness & rigidity over the Lt. iliac fossa with a hyper-tympanic note.

### KEYS

- A 60 years old female
- Recurrent attacks of abdominal colics & distension.
- Attacks were relieved with passage of large amount of flatus.
- On examination there was localized tenderness & rigidity over the Lt. Iliac fossa with a hyper-tympanic note.

### ▪ Discuss the Management?

#### ► Type of patient

- Elderly chronically constipated male with repeated episodes of abdominal pain

▪ What is the pathogenesis of the condition?

- Etiology

- Congenital (Preformed) sac: Due to unobliterated processus vaginalis or it may be obliterated by weak tissue → herniates later in life.

- Pathology

- Defect: Stretched deep inguinal ring lateral to inferior epigastric artery.
- Sac: Present inside cord coverings antero-lateral to vas & vessels.
- Contents: Small intestine, omentum or both (or other contents).

- Coverings:

○ In inguinal region:

- 1- Internal spermatic fascia
- 2- Cremasteric muscle & fascia
- 3- External oblique aponeurosis

- 4- Camper's & Scarpa's fascia
- 5- Skin

○ In the scrotum:

- 1- Internal spermatic fascia.
- 2- Cremasteric muscle.
- 3- External spermatic fascia

- 4- Dartos muscle
- 5- Skin.

▪ What is the most likely diagnosis and why?

- Surgery is the standard TTT of hernia
- Operation can be performed at any age provided a skilled anesthetist is available.
- If strangulation occurs & neglected → testicular atrophy may occur
- It is important to explore the other side
- In infants the operation can be performed through the external ring without the need to open the inguinal canal.
- Herniotomy alone is performed with no need to herniorraphy.  
(It includes excision of the hernial sac from the neck after reduction of the contents.)
- Recurrence is rare & is due to failure to ligate the sac at the proper neck.
- + Write management of strangulation in brief.

**CASE 7**

Recommendations

طالة  
صبار الكلى  
طالة  
حبر

A 59 year old male with a history of type 2 diabetes, hypertension and a 30 pack/year smoking history underwent a left colectomy for an obstructing colon cancer. He tolerated the procedure well except for some hypotension in the operating room due to bleeding. On postoperative day 5, he was febrile to 38.7 c was found for which he was started on cefazolin. On postoperative day 6, he was getting out of bed when he noticed the abrupt onset of copious serosanguinous drainage from the wound. And felt something gives away

**KEYS**

- A 59 year old male, diabetic, hypertensive and smoker
- Underwent a left colectomy for an obstructing colon cancer.
- He tolerated the procedure well except for some hypotension in operating room due to bleeding.
- On postoperative day 5, he was febrile to 38.7 c was found for which he was started on cefazolin
- On postoperative day 6, he noticed the abrupt onset of copious serosanguinous (red-sign) drainage from the wound and felt something gives away



### ► Symptoms

- **History of episodes of colicky pain relieved by passage of large amount of gases & stool.**
- **Presents by:**
  - Pain: Sudden severe colicky pain.
  - Marked distension: In the flanks from Lt. side towards the umbilicus.
  - Constipation: Absolute but bleeding per rectum may be present.
  - Vomiting: Delayed for 1-2 days.

### ► Signs

- Inspection:
  - Distension → early in the Lt side for 2-3 hrs → central → might cross umbilicus to Rt. hypochondrium.
  - Visible peristalsis.
- Palpation:
  - Tense balloon of the volvulus can be felt → going towards umbilicus.
- Percussion: Tympanic abdomen.
- Auscultation: Mad abdomen.
- DRE: Empty rectum.

#### **N.B.**

Neglected cases show evidence of peritonitis:  
Rigidity, guarding, tenderness & Rebound tenderness

### ▪ What is the D.D of this case?

#### → **Intestinal obstruction in an old, chronically constipated:**

- 1- Cancer colon (progressive constipation) mostly left side
- 2- Volvulus of the pelvic colon (non-progressive constipation)
- 3- Diverticulitis

### ▪ How to investigate this case?

#### ► For diagnosis

##### 1. Plain X-Ray of the abdomen:

- Omega sign ( $\Omega$ ) : There will be a very big loop distended with gas & occupying nearly the whole abdomen

##### 2. Tripe contrast CT scan

- show swirl sign

#### ► For complications:

1. CBC: Anemia.
2. KFTs: Pre-renal failure.
3. Serum electrolytes.

### ▪ How to treat this case?

#### ► Preoperative preparation "resuscitation"

- NG suction "Ryle".
- IV line
- Catheter.
- Monitoring.

#### ► Conservative Treatment

##### ▪ Indications:

- Early non-complicated cases (i.e. no evidence of gangrene).

##### ▪ Method:

- A rectal tube is passed through a sigmoidoscope to untwist the sigmoid loop.
- If successful: the tube is left in place and the patient is prepared for later elective resection of the long sigmoid to prevent recurrence.

- Success is confirmed by: Gush of gases & fluid stools.

► **Surgery**

▪ **Indications:**

- Failure of the conservative treatment.
- Late complicated cases.

▪ **Method:**

- 1- If the colon is viable and short:
  - Untwist the colon.
  - Fix to the posterior abdominal wall (colopexy)
- 2- If the colon is viable & long:
  - Untwist the colon.
  - Mikulicz or Hartmann's method.
- 3- If the colon is gangrenous:
  - Resection of gangrenous bowel
  - Mikulicz or Hartmann's method

## CASE 55

A 50-years-old male presented with bleeding per rectum, tenesmus, mucous with stool. On P/R examination, you found an ulcerated mass.

### KEYS

- A 50-years-old male
- Bleeding per rectum, tenesmus, mucous with stool.
- On P/R examination, you found an ulcerated mass.

- What is your diagnosis? (Cancer rectum)
- Discuss the Management? ( See before )

## CASE 56

A 75-years-old male presented with progressive constipation & recurrent attacks of fresh bleeding per rectum. Abdominal examination reveals some distension.

### KEYS

- A 75-years-old male
- Progressive constipation
- Recurrent attacks of fresh bleeding per rectum.
- Abdominal examination reveals some distension.

- Proceed to the most probable diagnosis by Clinical examination, Investigations & Treatment. (Cancer colon mostly left side)

## CASE 57

A 54 year old male presented to the outpatient department with tenesmus, bleeding per rectum and the passage of mucous. Abdominal examination was normal. Rectal examination revealed an ulcerating mass in the anterior wall with blood coming out on the examination gloves.



**KEYS**

- A 54 year old male
- Tenesmus, bleeding per rectum and the passage of mucous.
- Abdominal examination was normal.
- Rectal examination revealed an ulcerating mass in the anterior wall with blood coming out on the examination gloves.

- What is your diagnosis? ( Cancer rectum )
- What is the differential diagnosis of bleeding per rectum?
- How would you investigate and treat this case?

**CASE 58**

A 65-years-old male presented with progressive constipation with passing red blood in stools infrequently. On examination a hard mass felt in the Lt. iliac fossa. P.R examination was free.

**KEYS**

- A 65-years-old male
- Progressive constipation with passing red blood in stools infrequently.
- Hard mass felt in the Lt. Iliac fossa.
- P.R examination was free.

- What is the diagnosis? ( Cancer colon left side )
- What are the investigations would you order?
- Discuss the Treatment?
- Mention the differential diagnosis? (Mass in Lt. iliac fossa, B/R) (See before)

**CASE 59**

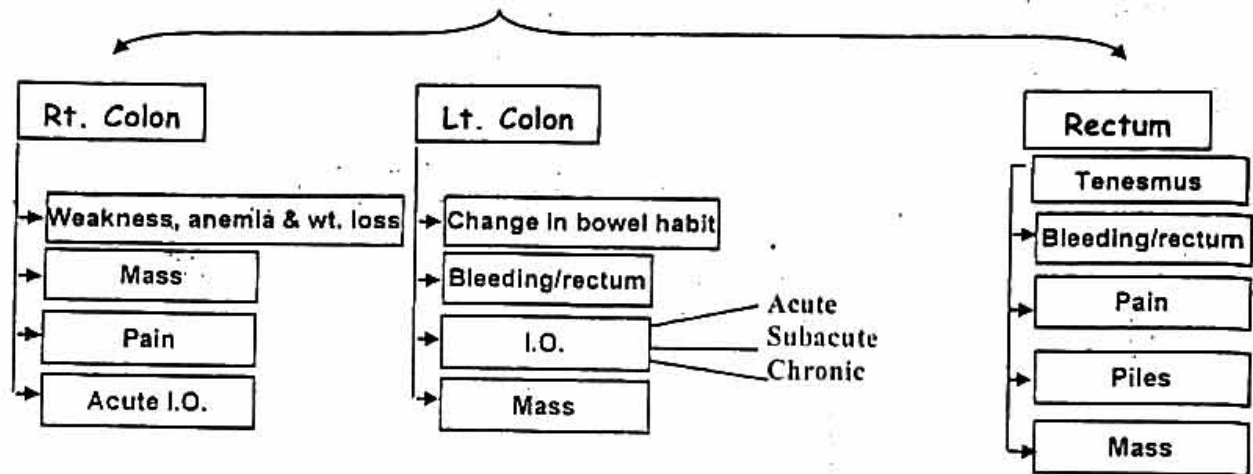
A 70-years-old male patient gives a history of change of his bowel habits, loss of weight & fresh bleeding per rectum. Rectal examination is free.

**KEYS**

- A 70-years-old male
- History of change of his bowel habits.
- Loss of weight
- Fresh bleeding per rectum.
- Rectal examination is free.

▪ Discuss diagnosis?

→ Any ♂ > 40 years with progressive constipation > 2wks → Cancer colon till proved otherwise



► Left Colon Cancer:

1. Change of bowel habits: (It is the most important presentation)
  - Usually progressive constipation or constipation alternating with diarrhea or diarrhea.
  - Spurious diarrhea [early morning slime] (overflow diarrhea) may be present: This occur with constipation where faeces can't be expelled & faecal fluid flow around the block.
2. Bleeding per rectum:
  - Common cause of fresh bleeding/rectum
  - Not a common cause of massive bleeding/rectum
3. Intestinal obstruction:
  - Either acute, subacute or chronic.
  - Presents by progressive constipation, severe abdominal distension & colicky lower abdominal pain but vomiting is late. Sigmoid colon is a very common cause of I.O. in elderly patients
4. Mass on the Lt. side of abdomen: (Rare presentation)
  - Rare presentation as the lesion is usually infiltrating type.
  - If a mass is palpable, it's due to impacted stools above obstruction

► Rectal Carcinoma:

1. Bleeding per rectum: Usually slight; rarely massive.
2. Tenesmus: May be present
3. Usually painless: Unless spread outside the wall (to sacral plexus or infiltrated the anal canal).
4. Sometimes, may be presented by piles (bleeding/rectum)
5. DRE: Palpable lesions if within 10 cm from anal verge. Higher lesions can't be felt.

► Right Colon Cancer:

1. Usually vague with unexplained loss of weight & appetite, anemia & weakness.
2. Hard mass in the right side of abdomen may be present.
3. May present with recurrent attacks of pain in the right iliac fossa.
4. Rarely, acute I.O. if the lesion obstructs the ileocaecal valve.



## How to investigate this case?

### For diagnosis

- Endoscopy** (Sigmoidoscopy if < 60cm from anus, colonoscopy if more)
  - It's investigation of choice for old patients with altered bowel habits or rectal bleeding.
  - Biopsy is taken from suspicious lesions (which is mandatory).
- Barium enema**
  - The cauliflower tumor appears as a fixed irregular filling defect.
  - Annular strictures of the left colon show a characteristic "apple core appearance".

### For staging

- Endoluminal (trdans-rectal) U/S/ MRI** → Detects depth of local infiltration.
- Abdominal U/S and CT scan** → Metastasis to LNs, liver and abdomen.
- Chest X-Ray or CT scan**
- Bone scan**
- IVU** → Possibility of involvement of ureters.
- PET scanning** → Malignant nodules elsewhere.

### For preoperative preparation

- **CBC** (Microcytic hypochromic anemia) - **KFTs** - **LFTs** - **FBS** - **ECG**

### For follow up

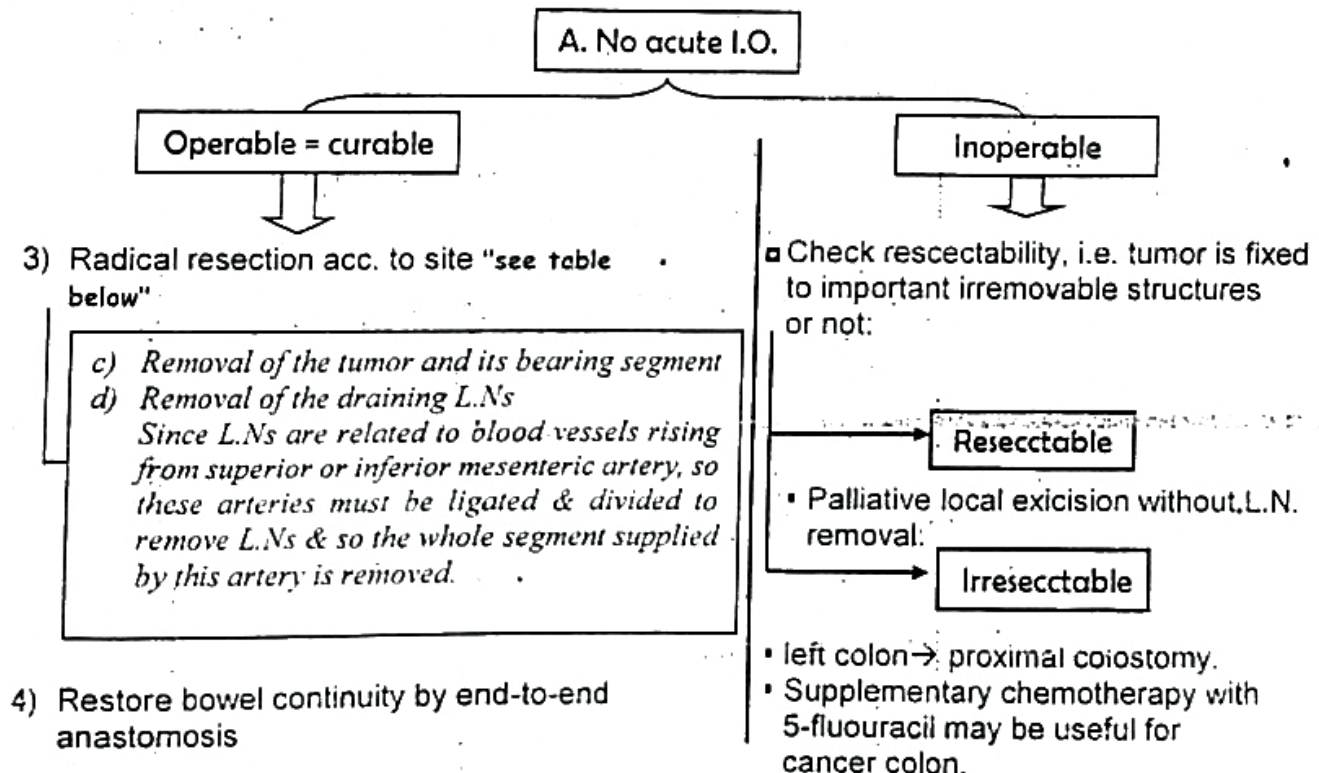
- Tumour Markers:** Carcino Embryonic Antigen (CEA) →
  - It's not specific & is of prognostic rather than diagnostic value as it drops after successful TTT.
  - Detect recurrent cancer colon if it rises again

## What is the treatment of this case?

→ **Surgery is the main line of treatment**

→ **It's the only curative measure & best palliative option**

→ **Management depends on the presentation:** A. No acute I.O. B. Acute I.O.



- Type of resection according to site:

Site	Operation	Divided vs.
Caecum	Rt. Hemicolectomy	Ileocolic and Rt. colic vs.
Ascending colon	Extended Rt. Hemicolectomy	Ileocolic vs. Rt. Colic vs. Middle colic vs.
Transverse colon	Transverse colectomy	Middle colic vs.
Descending colon	Lt. hemicolectomy	Inferior mesenteric vs.
Sigmoid colon	Sigmoid colectomy	Sigmoid vs.
Upper 1/3 of rectum	Anterior restorative resection	Inferior mesenteric vs. (Lt. colic vs. maybe left)
Lower 1/3 of rectum	Abdominoperineal resection with terminal colostomy	Inferior mesenteric vs. (Lt. colic vs. maybe left)
Middle 1/3 of rectum	▪ <u>Now:</u> Anterior restorative resection ▪ <u>In past:</u> Abdominoperineal resection with terminal colostomy	See above

## CASE 60

A 71-year-old woman with a significant smoking history, not alcoholic presents to the emergency department (ED) with 24 hours of abdominal pain, nausea, vomiting, diarrhea and Bleeding per rectum. She was discharged from the hospital 1 week prior after an elective coronary artery bypass graft, which was significant only for an episode of new onset atrial fibrillation. In the ED, her vitals are as follows: temperature: 38.1°C, heart rate: 101 and irregular, blood pressure: 148/67, respiratory rate 16. On physical examination, she is clearly uncomfortable. She underwent open cholecystectomy, open appendectomy, two prior cesarean sections and total abdominal hysterectomy. Her abdomen is distended, and diffusely and impressively tender to palpation throughout.

### KEYS

- A 71 year-old woman smoker, non alcoholic
- 24 hours of abdominal pain, nausea, vomiting, diarrhea and Bleeding per rectum.
- 1 week ago underwent elective coronary artery bypass graft.
- Episode of new onset atrial fibrillation.
- Temp: 38.1°C, heart rate: 101 and irregular, blood pressure: 148/67, respiratory rate: 16
- She underwent open cholecystectomy, open appendectomy, two prior cesarean sections and total abdominal hysterectomy (exclude these organs from causes of acute abdomen)
- Her abdomen is distended, and diffusely and impressively tender to palpation throughout.



▪ What's your diagnosis and differential diagnosis?

- Clinically it's a case of acute abdomen most probably acute mesenteric vascular occlusion mostly embolic type however other cause of acute abdomen should be excluded
- Acute abdominal pain can be a diagnostic challenge to clinicians as the presenting symptoms for a variety of etiologies are often non specific and overlapping.
  - The differential diagnosis includes peptic ulcer disease with perforation, acute pancreatitis, aortic dissection, myocardial infarction, acute diverticulitis, small bowel obstruction, and gastroenteritis. And not applicable to this patient given her past surgical history, the differential also includes cholecystitis and appendicitis

▪ How do you proceed in the diagnosis of such case?

► C/P

- It is common in the elderly due to thrombosis (on top of atherosclerosis).
- It may occur in young patients with source of embolism e.g. AF.

► Symptoms

1. Pain: Severe (acute abdomen) (out of proportion to physical signs and not relieved by NG suction or narcotics).
2. Bleeding per rectum: When mucosal infarction has occurred.
3. Vomiting and diarrhea: May be present.
4. Shock and toxemia: In late cases patient

► Signs

1. Early: Little physical signs
2. Late: Peritonitis & blood loss leading to:
  - Shock and toxemia
  - Guarding, tenderness and rebound tenderness.

► Investigations

**N.B.**

- There is no specific test, the only key for diagnosis is to put the condition in mind especially if the history is suggestive e.g. patient with AF or old age with atherosclerosis

1. For diagnosis:

▪ Mesenteric angiography or duplex scan:

- The value is controversial as it may delay surgical interference.
- Angiography has been the historic gold standard and has the benefit of also allowing for simultaneous endovascular revascularization options

▪ CT angiography (CTA)

- Become the most important diagnostic test for acute mesenteric ischemia (AMI).
- CTA has the advantages of being more readily available and rapid.
- It also permits simultaneous evaluation of the bowel and the vasculature, as well as allowing for a more thorough evaluation of the abdominal cavity, which may rule out other etiologies, as the diagnosis is often in question prior to performing the CTA.

▪ Plain X-Ray:

- Multiple air - fluid levels.
- Late cases: Intestinal necrosis (intraluminal & intramural gas).

2. For complications: "To assess the general condition of the patient"

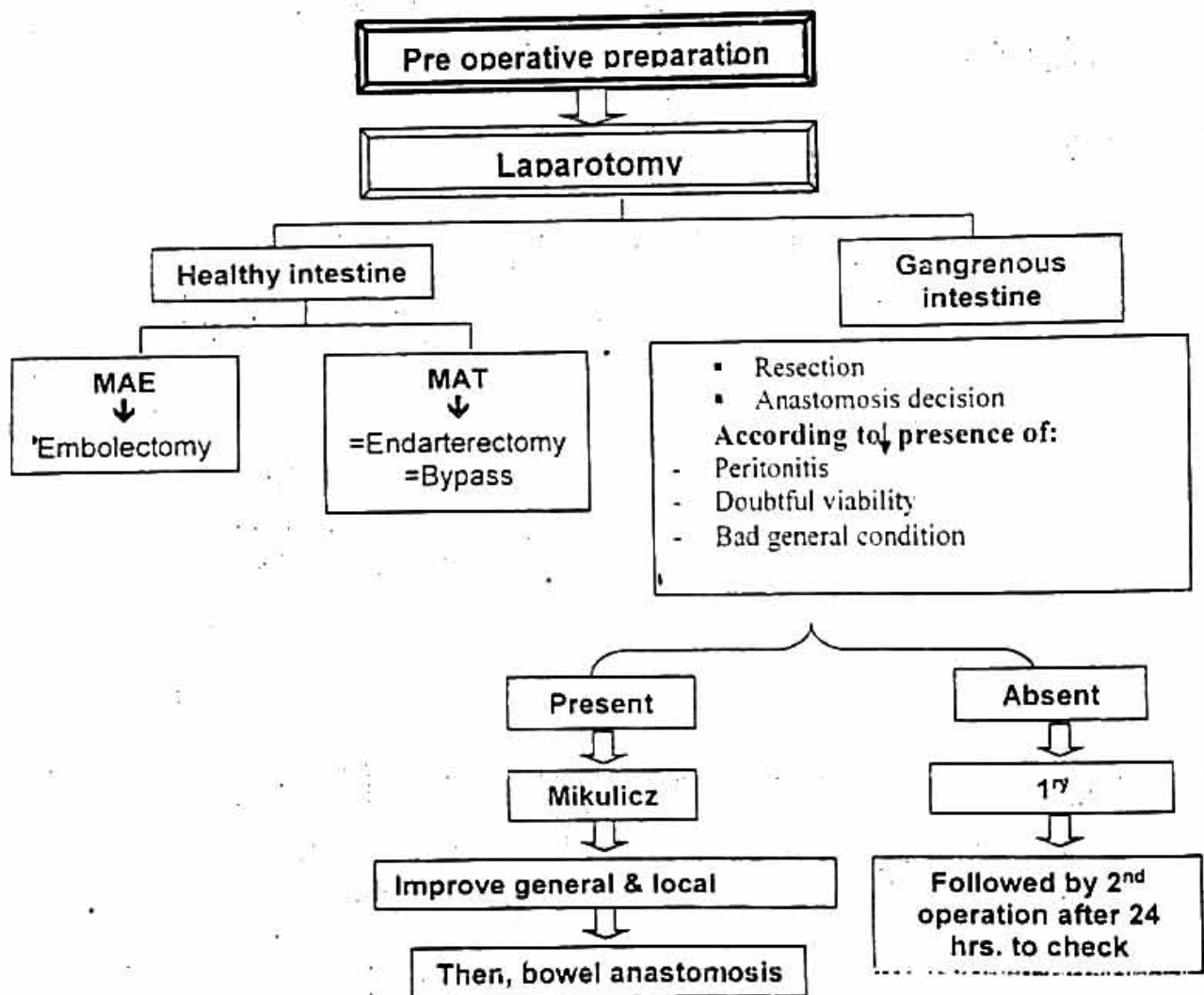
- **CBC:**
  - Marked ↑ in TLC may be used to monitor progress of the disease.
  - ↑ HCT except with massive blood loss.
- **KFTs:** Pre-renal failure.
- **Increased serum amylase:** Serum amylase ↑ in 50% of pts with MVO (but not reaching levels as high as those of acute pancreatitis)
- **Serum phosphate level:** May be elevated but not specific for bowel ischemia.
- **Metabolic acidosis:** Late and suggests bowel necrosis.

**N.B.**

- Unfortunately, no specific, rapidly available serum marker exists for AMI
- Most of markers that do rise in AMI only do so after transmural bowel infarction has already occurred.
- AMI causes a significant elevation in the white blood cell count, and lactic acidosis and serum amylase are often seen later in the course of the disease

3. For the cause: e.g. ECG or echo, US (routine in cases of acute abdomen)

- What's the treatment of this case?  
→ **Urgent surgery is the key of survival.**





### ► Preoperative Preparation:

1. IV fluids: For rehydration.
2. IV antibiotics.
3. Ryle: For NG decompression
4. Heparin: Continuous infusion for thrombo-embolic disease to prevent clot extension and DIC. It is interrupted during surgery.
5. Infusion of papaverine directly: Improves intestinal viability if arteriographic findings are diagnostic of MAE

### ► Laparotomy

#### 1. Gangrenous intestine:

- Resect the gangrenous part.
- Anastomosis decision, according to presence of :
  - 1- Peritonitis with friable tissue.
  - 2- Doubtful viability of the remaining intestine.
  - 3- Patient with bad general condition.
- If present → Stoma & ileostomy bag until improvement of general & local conditions then restore bowel continuity.
- If absent → Primary anastomosis followed by second look operation after 24 hrs. to check viability.

#### 2. Viable intestine:

- Mesenteric arterial embolic occlusion: Embolectomy.
- Mesenteric arterial thrombotic occlusion: Thromboendarterectomy or bypass graft then post-operative anticoagulants for 3 months.
- Mesenteric venous thrombosis:
  - ✓ Diagnosed at operation by edema of mesentery and extrusion of clots from mesenteric veins when they are cut.
  - ✓ Treated by Resection of gangrenous intestine

### ► Postoperative care

- The patient is given postoperative heparin and discharged under oral anticoagulants for at least 3 months to prevent recurrence.
- Sedation, NPOI, IV fluids

### ► Prognosis

- AMI is a relatively uncommon diagnosis
- However, maintaining a high index of suspicion is critical because mortality is very high with this disease process and a delay in diagnosis and treatment can be fatal.
- Mortality rate of:
  - Mesenteric venous occlusion: 30%
  - Mesenteric arterial occlusion: 45%
  - Mesenteric thrombosis > mesenteric embolism
- Resection of more than 70 % of small intestine leads to short bowel syndrome

#### **N.B.**

- An embolic event, usually to the SMA, is the most common cause of AMI, accounting for approximately half of all cases. Emboli tend to lodge in the SMA distal to the takeoff of the middle colic artery, which causes ischemia of the distal jejunum through the ascending colon, with sparing of the proximal jejunum and the transverse colon
- Arterial thrombosis accounts for 20% of AMI cases. Many of these patients have extensive atherosclerotic disease in the mesenteric vasculature. A thorough history will often reveal abdominal pain after meals, weight loss, and food avoidance. Unlike in SMA embolism, which tends to occur slightly more distal, SMA thrombosis typically occurs at the origin of the vessel, which creates ischemia from the mid duodenum to the splenic flexure so the prognosis of thrombosis is worse than embolism



## CASE 61

A 61 year old man with a history of morbid obesity hypertension diabetic underwent resection anastomosis of a loop of the intestine one week ago. The patient presents now with a non healing abdominal wound that for the past 2 days is draining increasing amounts of foul smelling fluid. He complains of pain at the wound site and skin irritation from the drainage, but denies fever chills nausea or vomiting. The patient is afebrile and vital signs are normal. He weighs 140 kg. Mucous membranes are noted to be dry. O/E reveals a 12x12 cm open, granulating wound in the mid abdomen with two sinus tracts from which is expressed 600 ml /day a thin foul smelling light brown fluid. Normal white blood cell and platelet counts and hemoglobin. Potassium and chloride are somewhat low at 3.4 and 95 mmol/L, respectively, the remainder of the electrolytes is normal, but BUN and creatinine are elevated at 32 and 1.5 mg/dL, respectively. Liver function tests are within normal limits but the albumin is low at 3.0 g/dL. CT scan shows no evidence of abscess, inflammation, or wound infection. However, there is a loop of bowel that is in close approximation to the skin surface.

### KEYS

- A 61 year old man obese hypertensive diabetic
- Underwent resection anastomosis of a gangrenous loop of the intestine one week ago
- A non healing abdominal wound that for the past 2 days is draining increasing amounts of foul smelling fluid
- Pain at the wound site and skin irritation from the drainage
- Denies fever chills nausea or vomiting
- The patient is afebrile
- Mucous membranes are noted to be dry.
- O/E reveals a 12x12 cm open, granulating wound in the mid abdomen with two sinus tracts from which is expressed 600 ml /day a thin foul smelling light brown fluid
- Normal white blood cell and platelet counts and hemoglobin.
- Potassium and chloride are the remainder of the electrolytes is normal.
- BUN and creatinine are elevated.
- Liver function tests are within normal limits but the albumin is low
- CT scan show no evidence of abscess, inflammation, or wound infection
- However, there is a loop of bowel that is in close approximation to the skin surface

### ▪ What's the most probable diagnosis & explain why?

- Clinically it's a case of enterocutaneous fistula (intestinal fistula). External type connects intestine to skin. High output fistula > 500 ml /day complicated by dehydration and malnutrition.
- Postoperative abdominal wound drainage most often signifies the presence of infection, seroma, hematoma, or enterocutaneous fistula.
- Foul-smelling, purulent discharge in this patient most likely indicates a deep-space wound infection, or a gastrointestinal fistula with drainage of bowel contents.
- The majority of enterocutaneous fistulas develop postoperatively (80%), following surgery for inflammatory bowel disease (IBD), cancer, or bowel obstruction.
- Presentation is usually during the first 5 to 7 postoperative days.
- Serum laboratory studies are important to evaluate for signs of infection, electrolyte disturbances, and malnutrition.



- no fever with normal white blood cell exclude wound infection
- Potassium and chloride are somewhat low the remainder of the electrolytes are normal, but BUN and creatinine are elevated indicate that the patient is suffering the effects of fluid loss and dehydration and will need resuscitation.
- Liver function tests are within normal limits but the albumin is low at 3.0 g/dL. Suggests that the patient also may be malnourished despite his obesity.
- The CT scan will evaluate for abscess or and assess the source and anatomy of a possible fistula.
- No evidence of abscess, inflammation, or wound infection on CT scan. However, there is a loop of bowel that is in close approximation to the skin surface, which may indicate the presence of an enterocutaneous fistula

▪ What is the etiology of this condition?

▶ Acquired: (TIT)

1. Trauma:

- Following abdominal operations (80 % of cases): Due to either:
  - Unrecognized intestinal injury
  - Failure of intestinal anastomosis: Due to
    - i. Poor vascularity
    - ii. Anastomosis under tension
    - iii. Anastomosis in presence of sepsis
    - iv. Distal obstruction
    - v. Presence of generalized disease (hypoproteinemia, impaired healing)
    - vi. Lack of proper surgical technique.
- Abdominal trauma as in RTA

2. Inflammation

- Colonic diverticulitis
- Crohn's disease
- Radiation enteritis

3. Tumour

▪ What investigations are needed in this case?

▶ Aim of investigation is to detect:

- Level of fistula
- Presence of bowel disease
- Presence of distal obstruction
- Presence of intraperitoneal sepsis
- To detect complications

▶ These investigations are:

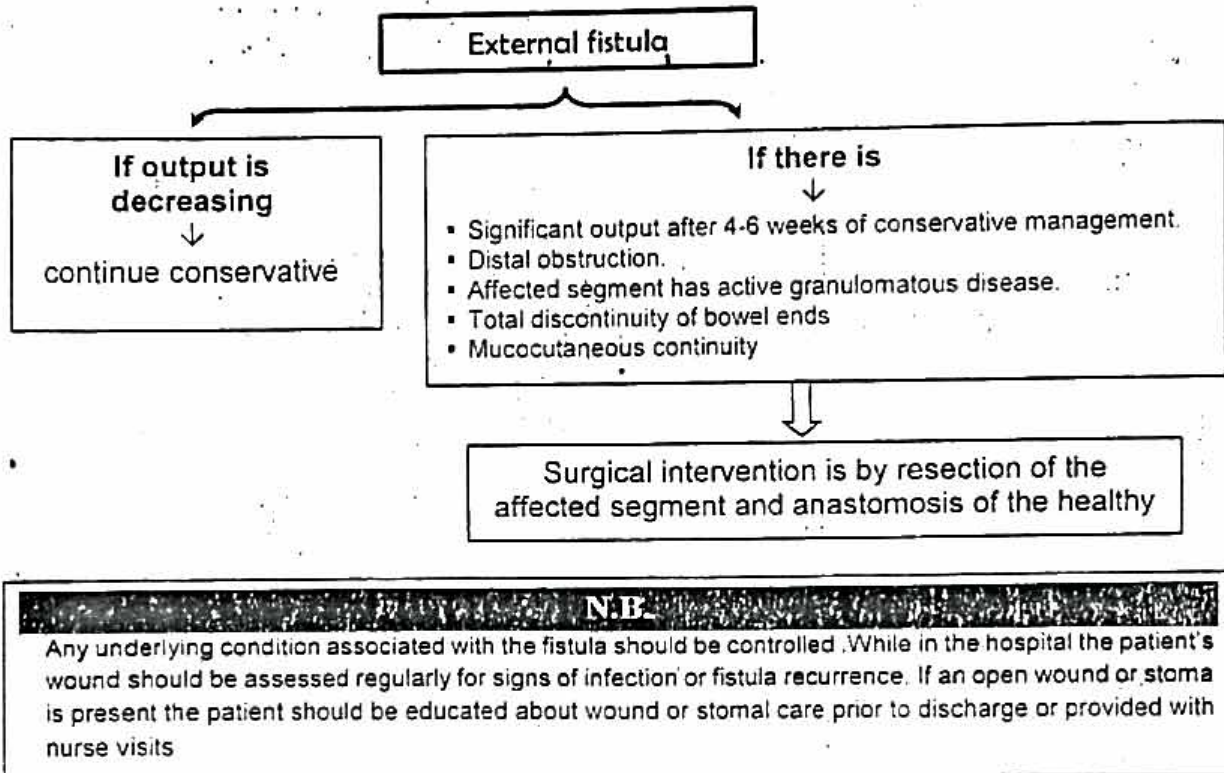
- |  |                              |
|--|------------------------------|
| 1. Barium meal follow up                       | 4. Serum electrolytes & KFTs |
| 2. Fistulogram                                 | 5. Serum albumin             |
| 3. U/S or C.T abdomen to detect abscess cavity |                              |

▪ What are the management options?

— Spontaneous closure occurs in 70-80% of cases if:

- Nutritional status is maintained
- Sepsis is eradicated
- Distal obstruction (if present) is relieved

1. Resuscitation:
  - IV fluids. Blood transfusion may be needed.
2. Skin protection:
  - Start as early as possible
  - Adhesive cover and collection bag are applied to skin around fistula
3. Nutritional support:
  - If high output fistula or proximal → Parenteral nutrition
  - If low output fistula or distal → Enteral nutrition
4. Eradication of sepsis.



## CASE 62

A 30 years old man presented with recurrent colicky abdominal pain, vomiting & constipation. General examination revealed pulse of 100/min. ABP 120/80 mmHg, Temp. 37°C. Abdominal examination revealed distension & a scar of appendectomy operation

### KEYS

- A 30 years old man
- Recurrent colicky abdominal pain, vomiting & constipation.
- Pulse of 100/min. ABP 120/80, Temp. 37°C.
- Distension & a scar of appendectomy operation



## ▪ Discuss the Management?

→ **Clinically It's a case of Adhesive IO**

### ▶ Etiology

- Post-operative (most common) especially appendicitis

### ▶ Clinical Picture

- Presence of scar or history of previous operations + C/P of IO

### ▶ Investigations

#### 1. For diagnosis:

##### ▪ Plain X-Ray of the abdomen:

- Erect: multiple fluid levels.
- Supine: According to distended segment:
  - Jejunum → mucosal folds (Valvulae conniventes) crossing from one side of the lumen to the other & regular interval.
  - Ileum → featureless with no mucosal pattern.
  - Colon → haustrations do not reach the other side of the lumen.

- U/S: May show distended bowel loops.

- CT scan with contrast: Has 80-90 % sensitivity in diagnosis of I.O.

#### 2. For complications: To assess the general condition

- CBC: Hemoconcentration and leucocytosis.
- KFTs: Pre-renal failure.
- Serum electrolytes

### ▶ Treatment

→ **The treatment of adhesive obstruction is mainly conservative "specially in recurrent cases"**

#### 1. I.V fluids

#### 2. N.G. suction

#### 3. Close observation to judge success of treatment by:

- a. Resolution of pain & distention
- b. Passage of flatus
- c. Clear gastric aspirate

### → **Surgical treatment**

#### ➢ Indications:

- There is suspected strangulation or gangrene
- Failure of conservative treatment e.g. No response in 48 hrs.

#### ➢ Principles:

1. Resuscitation & monitoring if needed
2. Divide adhesions
3. Assess bowel viability & deal accordingly
  - Viable or not
  - Small Vs. large
  - Rt. Colon Vs. Lt. Colon

### N.B.

- Sixty-five to eighty-five percent of partial small bowel obstructions will resolve with conservative management.
- The old dictum of "never let the sun rise nor set on a bowel obstruction" is still true for complete small bowel obstruction.
- Indications for immediate operation include: peritonitis, sepsis, hemodynamic instability, acidosis, or radiographic evidence of small bowel compromise, such as pneumatosis, perforation, signs of bowel ischemia, internal hernia, or volvulus.
- Physical findings suggesting the need for early operation are fever, tachycardia, and pain out of proportion to physical findings.

## CASE 63

20 years female presents after delivery with 3 weeks history of bright red rectal bleeding associated with painful defecation.

### KEYS

- 20 years female
- 3 weeks history of bright red rectal bleeding associated with painful defecation.

- What is the most likely diagnosis?
  - Hemorrhoids which may be associated with fissure (NB: internal piles is a painless condition)
- What is the precipitating factor?
  - occur with Pregnancy:
    - Due to raised intra-abdominal pressure (straining /constipation) and the relaxing effect of progesterone.
    - If piles persist after pregnancy 3 months, it is considered primary piles.
- What are the grades of the disease?
  - Clinical Degrees of Piles According to Prolapse
    - First degree
      - The patient has only bleeding but no prolapse of piles, diagnosed only by proctoscope as it is not felt by DRE. It is not reaching level of dentate line.
    - Second degree
      - The piles prolapse only during defecation, but they are spontaneously reduced at the end of defecation.
    - Third degree
      - There is prolapse of piles during defecation and patient has to reduce it manually.
    - Fourth degree
      - There is permanent prolapse of piles



## ▪ Discuss the lines of the treatment?

### ► Treatment of uncomplicated cases:

#### → Primary Hemorrhoids

##### ► For first and second degrees:

##### ▪ Conservative TTT:

1. High fiber diet
2. Small doses of laxative.
3. Suppositories that contain decongestant.
4. Avoidance of straining during defecation.

##### ▪ Injection sclerotherapy:

- Indication: Bleeding 1st & 2nd degree hemorrhoids
- Idea: injection of irritant material (e.g. 5% phenol in almond oil) in the submucosa to induce fibrosis causing obliteration of venous plexus and pulling up of the prolapsed cushions.

It may be complicated by pain & abscess formation.

##### ▪ Rubber band ligation (good for large 2nd degree piles)

- Placing a rubber band around the piles → ischemic necrosis & separation.

##### ▪ Selective haemorrhoidal artery ligation.

##### ▪ Photocoagulation.

##### ▪ Cryosurgery (not done now)

##### ► For third and fourth degrees:

- Hemorrhoidectomy: excision of the hypertrophied cushions with the overlying redundant skin.
- Healthy muco-cutaneous bridges should be left to avoid postoperative stenosis.
- Recently stapled hemorrhoidectomy allows excision without stricture.

### ► Treatment of complicated cases:

#### ► Strangulated piles

1. If the case is diagnosed early → surgical intervention under antibiotic coverage (To avoid bleeding)
2. If the case is diagnosed late, the tissues are friable & edematous → conservative measures: (To avoid 2<sup>nd</sup> infections)
  - a. Rest in bed
  - b. Antibiotics
  - c. Analgesics
  - d. Frequent warm baths
  - e. Decongestive ointments (as glycerine + tannic acid) & local compresses by lead subacetate lotion

## ▪ What are the complications of haemorrhoidectomy?

### ► Complications:

#### ► Early:

##### ▪ Hemorrhage:

- Reactionary.
- Secondary (Treated by packing).

##### ▪ Acute urinary retention (Due to reflex spasm of external urethral sphincter, don't rush for catheter).

##### ▪ Constipation (Due to pain during defecation).

#### ► Late:

##### ▪ Anal stenosis.

##### ▪ Recurrence.

##### ▪ Incontinence with sphincter damage.



## CASE 64

A 70 year old man has been complaining of passage of early morning bloody diarrhea presented to the outpatient clinic. The patient gives history of constipation for the last six months to which he was taking increasing doses of laxatives. On P/R examination a mass was found with an everted ulcerated edge that is approximately found 5 cm from anal verge.

### KEYS

- A 70 year old man
- Passage of early morning bloody diarrhea.
- Constipation for the last six months to which he was taking increasing doses of laxatives.
- On P/R examination a mass was found with an everted ulcerated edge that is approximately found 5 cm from anal verge.

- What is the possible diagnosis?
- How will you confirm the diagnosis?
- How will you manage this patient?

## CASE 65

68 year old female presented with a three month history of watery diarrhea. Physical examination revealed a large cauliflower lesion 4 cm above the anal verge. Laboratory studies revealed potassium of 2.8 mEq/L

### KEYS

- 68 year old female
- Three month history of watery diarrhea.
- Large cauliflower lesion 4 cm above the anal verge.
- potassium of 2.8 mEq/L. ( L )

- What is your provisional diagnosis?
  - It's a case of villous adenoma of anorectal junction
  - D.D.: Chronic diarrhea, hypokalemia & rectal mass
- What are the investigations you would like to do for this patient?
  1. Endoscopy : Colonoscopy reaching up to caecum:
    - Biopsy is taken from suspicious lesions mandatory).
  3. Barium enema
    - better a double contrast barium enema
    - The cauliflower tumor appears as a fixed irregular filling defect.



- Can detect or exclude 2<sup>nd</sup> higher tumor if rectal cancer is suspected.

4. **Biopsy:**

- is taken from suspicious lesions mandatory during colonoscopy

▪ **How are you going to treat this patient?**

→ **According to SSAT (The Society for Surgery of the Alimentary Tract)**

**Patient Care Guidelines, Management of Colonic Polyps and Adenomas**

- In order to minimize the risk of future malignancy, polyps should be completely removed or destroyed.
- Most polyps can be removed during colonoscopy using electrocautery techniques.
- Small polyps (0.5 cm or less) can be treated by biopsy and fulguration.
- Most pedunculated polyps are amenable to snare polypectomy using electrocautery.
- Sessile polyps larger than 2 cm usually contain villous features, have a higher malignant potential, and may recur following colonoscopic polypectomy, so open polypectomy may be needed.
- Follow-up endoscopy should be done in 3-6 months to confirm complete resection.
- Any patient with suspicious lesions or lesions proved to be malignant should undergo elective radical surgery.
- This case if proved to be malignant (lesion 4 cm above the anal verge) so the operation will be (AbdominoPerineal Resection)

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## Plastic cases

1- A 45 years old male, weighting 70 kg, sustained a flame burn in a closed room, resulting in a 30 % intermediate burn

### Discuss

- a- Diagnosis of depth & extent,
- b- 1st aid & hospital management
- c- Early & late complications & possible cause of death

## Answers

a- 1- According to the extent (in relation to total body surface area "TBSA"):

A major burn

- More than 30 % of the body surface area.
- An intermediate burn
- 15 - 30% in adults.
- 10 - 30% in children.

A minor burn

- Less than 15 % in adults.
- Less than 10 % in children.

This is estimated by:

a- Rule of 9:

- This method is easy but not accurate in children due to large size of the head in relation to the rest of the body.

b- Lund and Browder charts:

- More accurate in all age groups
- Correlation between age, area, depth of burn.

2- According to the depth:

	1 <sup>st</sup> degree	2 <sup>nd</sup> degree	3 <sup>rd</sup> degree
<b>Damage</b>	Only the Epidermis : erythema of skin usual example is sunburn.	Epidermis + portion of dermis.	Complete destruction of epidermis and dermis.
<b>Healing</b>	Heal rapidly	<ul style="list-style-type: none"> <li>- Epidermal regeneration can occur from remnants of hair follicles and sweat glands in dermis provided that no infection.</li> <li>- If infection : destruction of epithelial remnants : 3<sup>rd</sup> degree.</li> </ul>	<ul style="list-style-type: none"> <li>- No healing only migration of Epithelium from edges of burnt area</li> <li>- separation of eschar by 3<sup>rd</sup> week</li> <li>- Skin graft is needed</li> </ul>
<b>Appearance</b>	<ul style="list-style-type: none"> <li>- Forms blisters surrounded by erythema.</li> <li>- Their surface is moist due to exudation of plasma.</li> </ul>		<ul style="list-style-type: none"> <li>- White or black eschar</li> <li>- The area is dry</li> <li>- Possible visible Thrombosed S.C Vs</li> </ul>
<b>Presence of pain</b>	<ul style="list-style-type: none"> <li>- Painful</li> <li>- Sensitive to air (can be elicited by pinprick test)</li> </ul>		<ul style="list-style-type: none"> <li>- Painless (due to loss of terminal nerve endings.</li> </ul>



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## b- 1<sup>st</sup> aid and hospital management :

A- Definitive treatment of minor burn *Can be treated as out patients by:*

- Clean with antiseptics solution as Savlon® or Betadine®.
- Dressing using proper local chemotherapeutic as Silver Sulphadiazine Ointment  
+ Vaseline gauze dressing
- Give analgesic and prophylactic systemic antibiotic.
- Repeat the dressing for 2 weeks till healing.

B- Definitive treatment of major burn

### I. First aid

- Move the patient from the source of burn (**stop, drop & roll**) and remove the patient's clothes.
- Airway: maintained
- Breathing: maintained.
- Circulation: maintained.
- Drugs: IV analgesics (as 50mg pethidine), antitetanic immunoglobulins. Intramuscular injections are avoided as absorption is poor.
- Exposure: remove any clothes.

Fluid (run) water: at room temperature immediate immersion in cold water or

- Tap water can be poured over the burnt area for 15 minutes to limit the depth of burn, decrease edema, relieve pain and decrease micro-vascular damage.

Ice cold is contraindicated → ↑ tissue damage

### II. Admission & Resuscitation

- Admission of the patient to burn unit of hospital.
- Resuscitation and monitoring:
  - Wide bore IV cannula is inserted rapidly before the veins get collapsed to give IV fluid therapy and IV antibiotics.
  - A Foley's urethral catheter is introduced to check urine output.
  - Ryle tube suction and nothing by mouth in the first 48 hours then oral feeding should be started gradually after that.
  - Monitoring:
    - Vital signs: urine output, cvp, consciousness level.
    - Laboratory tests to be done : complete blood picture, arterial blood gases, serum electrolytes, liver and kidney function tests.
    - Calculate total burn size and estimate the depth of the burn wound.
    - Medications :
      - a. Tetanus vaccine or immunoglobulin.
      - b. Antibiotics: better to use broad spectrum antibiotics.
      - c. Analgesics: IV morphine to avoid neurogenic shock.
      - d. Anti-ulcer measures in the form of antacids to protect against the development of Curling's ulcer.

### III. Fluid Therapy

➔ According to Parkland formula (commonly used)

1- Amount: 4 ml / % of burnt area from TBSA / kg body wt.

1st 8 hrs ½ total amount	
2nd 8 hrs ¼ amount	3rd 8 hrs ¼ amount

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1<sup>st</sup> day:

2<sup>nd</sup> day:

give 1/2 dose in the 1<sup>st</sup> day

+

0.5 cc colloid / kg / %burn area

2- Rate : 50 – 70 cc/hr

➔ Other Formula

▪ Evan's formula:

- 1<sup>st</sup> day: 1 ml/kg/% burnt area saline + 1 ml/kg/% burnt area colloid

- 2<sup>nd</sup> day: 0.5 ml/kg/% burnt area saline + 0.5 ml/kg/% burnt area colloid

3- Types of fluids

1- Crystalloids : saline or ringer lactate

2- colloids : 1/2 crystalloids + 1/2 colloids especially in deep burns

4- Route :

a- In burns < 20% TBSA (adults) or < 10% TBSA (children), fluid therapy can be given by the oral route.

b- In burns that are 20 – 30% TBSA, the oral route is supplemented by IV fluids.

c- In burns > 30% TBSA, fluid therapy is given via the IV route.

**Monitoring** : The adequacy of intravenous resuscitation is judged by:

1. Regular check-up of vital signs.

2. Urine output should be 0.5-1ml/kg/hour

3. C.V.P. in critical cases.

➔ Nutrition

▪ It shouldn't be neglected.

▪ Patients who have extensive burns are liable to have a serious catabolic status due to the combined effects of anorexia, extensive water and consequently caloric losses and due to sepsis, if present.

▪ Introduction of intravenous hyperalimentation has made it easy to correct this problem and to support the patient nutritionally during the critical period.

#### IV. Local treatment of major burn

The aim is to avoid infection

1- Escharotomy: is circumferential burns in limbs and chest, the constricting eschars (adherent necrotic tissue) have to be released immediately.

2- Fasciotomy: in deeper burns may be limb salvage.

3- Cleaning and removing loose skin and initial conservative debridement.

4- Topical antimicrobial agents:

- The ideal should be in water soluble base, not painful, not allergic, not toxic and bactericidal.

The 3 most commonly used are silver sulphadiazine, silver nitrate solution and mafenide acetate.

5- After application of local cream, the wound is managed by either

exposure method or by occlusive method.

#### c- early , late complications and causes of death :

Systemic:

1. Shock

Immediate	Early	Late
<u>Neurogenic</u> from severity of pain	<u>Hypovolemic</u> due to under correction of lost fluid	<u>Septic</u> after 1 week from infection



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## 2. Pulmonary complications:

Immediate	Early	Late
<u>Asphyxia</u> Due to inhalation of heat or noxious gases. The result is Bronchospasm.	<u>Pneumothorax</u> <u>Pneumonia</u> <u>Pulmonary embolism</u>	<u>Respiratory failure type II</u> Hypoxia, hypercapnia (ARDS)

## 3. Cardiovascular complications:

- a- Acute left ventricular failure.
- b- Congestive heart failure.
- c- Arrhythmia (especially in electrical burn).
- d- Myocardial infarction (either due to stress or hypovolemia & ↑ viscosity).

## 4. Renal complications:

- a- Acute tubular necrosis (acute cortical necrosis) due to release of cytokines & ILs.
- b- Myoglobinuria & hemoglobinuria (especially with electrical burn).
- c- ARF (due to hypovolemic shock → leading to water & electrolyte imbalance).

## 5. Gastro-intestinal complications:

- a. Adynamic ileus: Acute gastric dilatation due to severe sympathetic stimulation & release of cytokines & ILs. Usually occurs early and may necessitate the insertion of a nasogastric tube.
- b. Curling's Ulcer: due to stress → splanchnic vasoconstriction → Ischemia → destruction of mucosa.
- c. Liver dysfunction: due to ischemia & toxins.
- d. Recently acute ulceration of the colon may occur and it is suggested to be due to fungal infection.

## 6. Multiorgan failure:

Often follows pulmonary insufficiency or sepsis → death.

## 7. Psychological complications:

## 8. Septic complications:

- Urinary tract infection.
- Burn wound sepsis.
- Pneumonia.
- Septic shock.
- Septic thrombophlebitis

## 9. Endocrine system complications:

- ↑ Catecholamines from stress.
- ↑ Cortisol and ADH → Na & H<sub>2</sub>O retention.
- ↑ Protein catabolism → -ve nitrogen balance + ↑ glycogenolysis.

## Local complications:

### 1. Early local complications:

#### 1. Infection:

- The primary cause of death in burnt patients due to immunosuppression.
- It occurs usually between 4 – 7 days post-burn.
- It may be bacterial, viral or fungal.
- It may be either exogenous or endogenous sources.

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- Infection may lead to the development of septicemia and septic shock.
- Treatment by proper local burn wound care (discuss).
- The value of systemic antibiotics in the prevention of infection is doubtful.

2. **Constricting eschars:**

- In deep circumferential burns of the limbs → Ischemia or the chest → dyspnea due to restriction of chest expansion.
- It should be treated by urgent escharotomy (not painful as nerves are damaged).

3. **Suffocation:**

- Due to edema in burns of the face and neck and may need urgent tracheostomy.

4. **Compartment syndrome:**

- Due to edema of the subcutaneous tissue.

II. **Delayed (late) local complications:**

- 1- **Scarring and loss of quality of skin.**
- 2- **Presence of raw skin areas due to 3rd degree burns.**
- 3- **Pigmentary skin changes in the form of hypo/hyper-pigmentation**
- 4- **Contractures:** across joints.
- 5- **Scar formation:** (hypertrophic or keloid)
- 6- **Malignant transformation:** (Marjolin's ulcer) in long-standing unstable scars is rare.

Dr. Nataraj



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2- A 70 kg, 23 years old female presented to the emergency room with a burn due to a fire occurred in her house, that affected the ant. aspect of the Rt. Leg & the Ant. aspect of the abdomen & chest. On examination, she had a history of smoke inhalation due to her entrapment in her house and locally, the burnt area was erythematous with blisters & was sensitive to pinpricking.

- a- How much fluids will she require in the 1<sup>st</sup> & 2<sup>nd</sup> 24 hours.
- b- Discuss the effect and complications of smoke inhalation.

### Answers:-

A- The extent of burn = ant. Aspect of right leg + ant. Aspect of abdomen and chest  
= 9 + 18 = 27 % TBSA

- parkland formula = ( % of burnt area of TBSA × Kg body weight )  
= 27 × 70 = 1890

→ × 4 ml in 1<sup>st</sup> day  
→ × 2 ml in 2<sup>nd</sup> day

1- in the first day we give = 1890 × 4 = 7560 ml fluids ... give saline or ringer lactate ( better )

- 1/2 total amount in the 1<sup>st</sup> 8 hrs .
- 1/4 total amount in the 2<sup>nd</sup> 8 hrs .
- 1/4 total amount in the 3<sup>rd</sup> 8 hrs .

2- in the second day we give = 1/2 the dose along the 24 hrs = 3780 ml fluids  
+ 0.5 cc colloid × ( 1890 )

**NBs:** - the loss of intravascular fluids from the microcirculation is often called **LEAKY CAPILLARY SYNDROME**. This is initiated by the release of proinflammatory mediators and reactive oxygen species from the nonviable burned tissue. The overall biologic effect of these mediators include microvascular changes consistent with capillary leak syndrome, vascular stasis and decreased cardiac output .  
- the most commonly used fluid for burn resuscitation is **LACTATE RINGER** . avoid normal saline because large volumes of saline is associated with development of hyperchloremic metabolic acidosis.

b- in addition to the diagnosis of burn the patient might also develop :

- 1- toxic asphyxiation .
- 2- airway obstruction .
- 3- smoke inhalation .
- 4- circumferential limb burns of the torso preventing respiration .
- 5- limb-threatening limb ischemia from circumferential limb burns .

#### \* smoke inhalation injuries :

- the leading cause of death from structure fires is complications of smoke inhalation. However , smoke injury when it's the only injury has a mortality of < 10% . when combined with burn injuries the mortality of smoke inhalation increases to 20 %

#### \* Carbon monoxide (CO)

- colorless, odorless gas that binds with hemoglobin more than 210 times stronger than oxygen forming (carboxyhemoglobin).
- C/P: nonspecific symptoms including headaches, nausea, and dizziness. In most severe cases patient will experience weakness, seizures, coma, arrhythmias, hypotension and eventually death.

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- TTT: application of 100% oxygen ( hyperbaric oxygen is theoretically better but remain controversial and of questionable benefit to such critically injured patients= smoke inhalation with CO toxicity )

**NB:** why hyperbaric is theoretically better?? : on room air the half-life of carboxyhemoglobin is 250 min , on 100% oxygen by endotracheal tube it's reduced to 60 min, with hyperbaric oxygen at two atmospheres it's reduced to 27 min

### # Hydrogen cyanide (HCN)

- HCN is produced from the burning of many materials in the environment.
- it poisons cellular respiration at the level of electron transport chain or oxidative phosphorylation leading to anaerobic metabolism and lactic acidosis.
- diagnosis is based on history and nonspecific metabolic findings such as lactic acidosis and increase in oxygen saturation on the venous blood gas. Confirmatory test is plasma cyanide level ( usually not done)
- TTT:
  - treatment of suspected cases should start rapidly to avoid neurologic complications or death, even in absence of confirmatory tests , based on history and nonspecific metabolic findings.
  - treatment include the use of hydroxocobalamin (Cyanokit) which is an analogue of Vit. B12 , this antidote chelates the cyanide, it has specific side effect which is red discoloration of skin and urine.

### \*During Burn excision :

- the timing of surgery with patients with smoke inhalation is complicated by the " HONEY MOON " period experienced by these patients.
- With smoke inhalation the patient will have a period of 48 to 72 hrs prior to developing significant pulmonary problems that may complicate transporting to the operating room, as well as increasing the hazards of performing such an operation. Therefore, in patients with smoke inhalation, one should attempt to surgically excise as much as burn as safely possible prior to the respiratory status deteriorating .
- burn excision can be associated with considerable blood loss, therefore attempts to limit hemorrhage should be made. Tourniquets and topical haemostatic agents should be deployed whenever feasible.

once  
ان الكيان عنده  
Deep burn

340 or more

في فترة الحسنة  
من عيار بوليفر  
-



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3- A 37 year old women noted a pigmented lesion on her left arm approximately 3 months ago . she sought the attention of dermatologist who performed an excisional biopsy of the lesion. pathology was consistent with malignant melanoma ,Clark level II , with a Breslow depth of 0.8 mm without ulceration . the tumor mitotic rate was measured at 2 mitoses / mm<sup>2</sup> . margins from the biopsy were negative but close ( <1mm). her physical examination only reveals a well-healed scar at the biopsy site with no palpable lymphadenopathy.

4- during the routine physical examination of a 30 year old white male patient , you discovered a 1.5 cm pigmented skin lesion on the posterior aspect of his left shoulder this lesion is not indurated , has ill-defined borders and is without surrounding erythema . examination of the patient's left axilla and neck reveals no identifiable abnormalities . no other pigmented skin lesions are observed during the physical examination. According to the patient's wife the skin lesion has been present for the past several months and she believes it has increased in size and become darker during this time , the patient is otherwise healthy.

### Answer :

#### key:

pigmented lesion, ill-defined border, increasing in size and darkening( progressive coarse), short duration, histopathological detection

a- the diagnosis is malignant melanoma of ( mention the site).

DD:

- 1- granuloma.
- 2- Pigmented basal cell carcinoma.
- 3- Hemangioma
- 4- Compound or junctional naevus

} differentiated by biopsy.

skin malignancy

↳ Histopathological  
Diagnosis  
skin biopsy is  
a must

b- diagnosis: ( clinical + investigation )

C/P of malignant melanoma

complete history and physical examination focusing on the characteristics of the lesion as well as the status of the regional lymph nodes .

#### ► Symptoms

- 1- Denovo lesion.
  - 2- Malignant changes in benign naevus.
- Rapidly growing, itching, pain, change of color, hemorrhage or ulcer.
- 3- Occult presentation.
  - 4- Transit metastasis → Enlarged micro-metastasis after removing of the 1<sup>st</sup> tumor.

#### ► Signs

1. Nodule or ulcer of variable colors (from amelanotic to black)
- 2. Satellite lesions may be seen. ( per meathar (بتنثرات) ) → Malignant Melanoma.
- 2- Regional L.N. or liver metastasis lymphatic

NB: The only sure method of diagnosis is histological examination, however malignant melanoma can be suspected clinically with A, B, Cs of melanoma

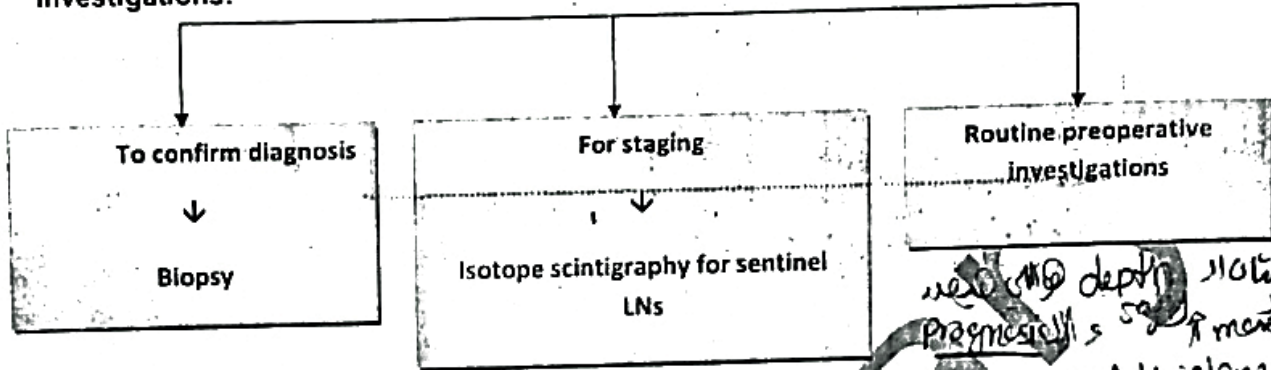


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# # the ABCDEs of melanoma recognition :

- A. Asymmetry .
- B. Border irregularity .
- C. Color variation .
- D. Diameter of > 6mm
- E. Evolution ( change in lesion )

## Investigations:



### → : How to take biopsy?

- 1- The line of incision should confirm to the possible subsequent excision.
- 2- Safety margin should be 3 mm.
- 3- Biopsy should include the whole skin and subcutaneous tissues to allow pathologist to determine Clark's level and Breslow thickness.
- 4- Paraffin section is better than frozen section.

## Treatment

Surgical excision of the 1ry lesion with adequate safety margin of skin and SC tissues but not including deep fascia

### A- Operable:

#### 1. For 1ry tumor:

- < 1mm → 1cm safety margin.
- 1 - 4 mm → 2 cm safety margin.
- > 4mm → 3 cm safety margin.

**NB:** wide excision done by itself ( i.e. without an accompanying lymph node biopsy or dissection ) can often be performed under local anesthesia with intravenous sedation if necessary .

#### 2. For draining LNs:

- Prophylactic dissection of LNs is no more performed.
- Radical dissection is performed if they are large & firm, but if not frankly malignant by clinical examination → FNABC is performed.

### B- Inoperable tumor (stage 4)

- Metastasis is treated by interferons, chemotherapy and interleukin-2.

## Prognosis:

- the status of the regional lymph node is the most important prognostic factor for survival .
- Prognosis of malignant melanoma depends on type, rate of growth and depth of the tumor as depth ↑ prognosis become more worse.

Resistant to irradiation ← malignant melanoma → Immunotherapy, Surgical excision, Chemotherapy



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**II- Breslow classification ✓** (more used because it is better in predicting prognosis)

- 1- Skin infiltration  $< 0.75$  mm.
- 2- Skin infiltration  $0.75 - 1.5$  mm.
- 3- Skin infiltration  $1.75 - 4$  mm.
- 4- Skin infiltration  $> 4$  mm.

\*- in patients with stage IV disease at presentation, elevated serum values of LDH are associated with reduced survival rates.

**\*histopathological factors associated with melanoma prognosis :**

- |  |                                     |
|--|-------------------------------------|
| 1- tumor thickness .   | 2- ulceration .                     |
| 3- phase of the tumor growth ( radial versus vertical growth phase ) |                                     |
| 4- mitotic rate .  | 5- angiolymphatic invasion .        |
| 6- regression .  | 7- tumor infiltrating lymphocytes . |
| 8- solar elastosis .   | 9- satellitosis.                    |

**\*Follow up :**

- Patients with history of melanoma. those patients should be followed up every 3 to 6 months for the first 3 years and annually thereafter.
- this schedule is influenced by a variety of factors such as the stage of primary melanoma, number of lymph nodes involved , any prior history of melanoma , the presence of multiple atypical moles, or a family history of the disease.
- routine self skin examination and assessment of lymph nodes is of great value, since many patients presenting with recurrence find the disease themselves.

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5- A 65 year old white male presents with slowly enlarging, tender 1.5 cm hyperkeratotic erythematous nodule on his left forearm. the patient first noticed the lesion about 3 months ago. he has severe photodamage ( atrophic skin with numerous lentigines and senile purpura ). because of his occupation as a farmer, he has a chronic history of significant sun exposure. previous medical history is significant for actinic keratoses on the face and hands, which have been treated with cryotherapy. family history is significant for melanoma in his father.

### Answers:

**key:** - 65 year old, white male.

- slowly enlarging
- tender 1.5 cm hyperkeratotic erythematous nodule
- 3 months duration
- had severe photodamage.
- occupation as a farmer
- significant sun exposure
- history of actinic keratoses on the face and hands
- family history is significant for melanoma in his father.

a- the diagnosis is squamous cell carcinoma in the left forearm.

DD:

- 1- Rodent ulcer.
- 2- Chancre.
- 3- Malignant melanoma.
- 4- Keratoacanthoma.
- 5- Septic granuloma.

Differentiated by biopsy.

### Clinical Picture

▪ Type of patient:

- ♂ > 40 years
- Fair colored people
- Farmers & sailors

▪ Nodule

- Painless nodule → Ulcer resistant for ttt.

▪ Ulcer

- Rapidly growing

- Characters :

1. Shape → Rounded, oval or irregular.
2. Number → usually single but may be multiple
3. Base → Indurated and it becomes rapidly fixed to underlying tissue
4. floor → necrotic.
5. Edge → everted
6. Margin → early soft & late indurated.
7. L.N. → Early: enlarged & soft (due to infection), 2ry infection may occur

and there may be blood stained discharge.

late: hard due to infiltration

▪ Lymph Nodes

- Enlarged in
  - o 2ry infection → elastic & tender
  - o Metastasis → Hard & fixed



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### Complications

1. Infiltration of the surrounding (Direct > lymphatic > blood)
2. Secondary infection
3. Hemorrhage
4. distant metastasis & cachexia

### NB: Metastasis of squamous cell carcinoma

- In a patient with Marjolin's ulcer the scarring makes lymphatic spread late
- features associated with increased metastatic potential are tumor diameter greater than 2cm and tumor depth more than 2 mm.
- the overall metastatic rate of solar induced squamous cell carcinoma is < 5%.
- squamous cell carcinoma of the scalp, ears, and lips have a higher metastatic rate of approximately 10% to 15%.

### Investigations

1. **Biopsy** → excisional or incisional
2. **X-ray** → To detect bony involvement
3. **sentinel L.N study**: affected L.Ns
4. **CT scan**.

### Treatment

- Two modalities of treatment are available (Surgical and radiological).
- \* the mainstay of treatment for squamous cell carcinoma is excision with histopathologic confirmation of clear or negative margins.

### A -Surgical

#### ■ Indications of surgery:

- a. Small lesions.
- b. Infiltration of cartilage or bone.
- c. Radioresistant lesions.
- d. Marjolin's ulcer.
- e. Block dissection of metastatic LNs.

1- Excision with safety margin is at least 2 cm except in the face where it is 1 cm.

2- Better to be elliptical for cosmetic closure of the wound.

3- The raw area is covered by Skin graft or by Primary closure

### B - Irradiation

- The main indication of radiotherapy is for tumors of the head and neck particularly for poorly differentiated tumors.

### If LNs enlarged by metastasis (SCC only)

1- If LNs are close to tumor → excised with 1ry lesion in 1 block.

2- If LNs are away from tumor → block dissection later on (after 2 wks), to avoid postoperative lymphedema and picking up of micrometastasis.

3- No prophylactic block dissection in skin malignancy.

### Prognosis

- 90% 5 year cure rate.

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6- a 62 years-old male patient referred from ENT clinic to your outpatient clinic complaining of pain in his ear, the patient is sitting with cotton wool in his ear and blood stained saliva dripping from his mouth, on examination, the patient has ulcer with everted edge on the lateral side of his tongue, also you noticed swellings in the sub-mandibular region and upper lateral side of the neck.

- a- what is your diagnosis and DD ?
- b- How can you diagnose such a case ?
- c- How can you treat this patient ?

### Answers:

**Key:** - a 62 years-old male patient.

- referred from ENT clinic.
- pain in his ear.
- the patient is sitting with cotton wool in his ear.
- blood stained saliva dripping from his mouth.
- ulcer with everted edge on the lateral side of his tongue.
- swellings in the sub-mandibular region and upper lateral side of the neck.

**a- the diagnosis is cancer tongue complicated by spread to sub-mandibular and upper deep cervical lymph nodes.**

However other causes of ulcers in the mouth should be excluded:

#### i-Trauma:

- Minor physical injuries e.g. sharp tooth, ill-fitting dentures
- Chemical injuries e.g. Aspirin, alcohol with prolonged contact

#### ii-Infection :

- Viral: the commonest is herpes simplex virus ( associated with unilateral eruption, don't cross the midline, extremely painful )
- Bacterial: e.g. TB., syphilis or opportunistic by the nasal bact. flora
- Fungal: e.g. cryptococcus
- Protozoal: E.histolytica

#### iii-Immunology :

- Aphthous ulcer ( very common, superficial small yellow ulcer surrounded by red hyperemic area, heals within 1 to 2 weeks but recurrence is common )
- immunodeficiency as in HIV
- autoimmune, allergy

#### iv-Dietary: malnutrition e.g. Vit. C deficiency, Vit. B12 deficiency.

#### v-Cancer:

basal cell carcinoma, sq. cell carcinoma, melanoma ( raised everted edges, usually starts as a mass, definitive diagnosis by biopsy )

#### vi-Medical conditions ass. with mouth ulcers: e.g.

Behcet's ds  
Celiac ds  
Chron's ds  
Gingivostomatitis  
Leukoplakia

Systemic lupus  
Ulcerative colitis  
Oral thrush  
Infectious mononucleosis  
Oral lichen planus



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b- diagnosis = ( clinical picture + investigation )

### Clinical Picture

The classic clinical picture of tongue cancer is that an old man sitting in the outpatient clinic with cotton wool in his ear, and blood stained saliva dribbling from the mouth

### Early cases

- Symptomless .
- The patient may complain of persistent ulcer with indurated base and everted edge.

### Late presentation.

- Pain : 1- Tongue: - 1st : due to infection  
- Later : due to lingual nerve affection .
- 2- Ear : referred by auriculo-temporal nerve .
- 3- On swallowing: tumors of posterior 1/3
- Salivation: It may be blood stained and smells badly.
- Difficult speaking.
- Enlarged cervical LNs.
- Ankyloglossia.

### Complications

- Inhalation pneumonia.
- Cachexia due to starvation.
- Infection and secondary haemorrhage.
- Asphyxia.

### Investigations

- Biopsy.
- FNAC of suspected cervical LNs.
- CT of neck and mandible.

### c- Treatment :

- ➔ Surgery and radiotherapy are the main lines of treatment.
- ➔ Chemotherapy is used as an adjuvant in some cases.

#### A. Radical treatment of early cases

#### Surgery

##### ► Indications:

1. Small growths T, T1 and T2.
2. Incomplete regression or recurrence after radiotherapy.
3. Cancer on top of a precancerous lesion as leukoplakia.
4. Presence of the tumor very close to the mandible or infiltrating it.

##### ► Preoperative preparation

- Care of teeth and oral hygiene.
- Preoperative irradiation by 4000 rad may be advised.

### Resection procedures

	Resection procedure	Safety margin	Defect closure
CIS	Excision	1 cm on sides & 0.5 cm in depth	Advancement mucosal flap on floor of the mouth
Anterior 2/3	Partial glossectomy, hemiglossectomy or near total glossectomy	1.5 cm	Pectoralis major myocutaneous flap
Posterior 1/3	► Total glossectomy (difficult access) → needs median mandibulotomy. ► Irradiation		Pectoralis major myocutaneous flap

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Unilateral L.N. metastasis	Complete neck dissection		
Bilateral L.N. metastasis	<ul style="list-style-type: none"> <li>Complete neck dissection.</li> <li>Selective neck dissection on the less affected site preserving the IJV</li> </ul>		
Mandible	<ul style="list-style-type: none"> <li>Commando operation (combined mandibulectomy &amp; neck dissection operation)</li> </ul>		Osteomyocutaneous flap

### Radiotherapy

- ▶ **Indications**
  - T1 and T2 (less than 4cm) may equally benefit from surgery or radiotherapy.
- ▶ **Advantages**
  - Avoiding the disfiguring side effects of surgery.
- ▶ **Disadvantages**
  - Mucositis, dysphagia and osteoradionecrosis.
- ▶ **Methods**
  - Brachytherapy → cesium or iridium needles.
  - Teletherapy → external beam irradiation.
- B. Palliation for advanced cases**
  - ▶ **Indications**
    - 1- Unresectable primary growth.
    - 2- Fixed lymph nodes in the neck.
    - 3- Distant metastases.
  - ▶ **Methods**
    - 1- Radiotherapy.
    - 2- Palliative resection.
    - 3- Analgesics, nasogastric feeding or tracheostomy may be required.
    - 4- Chemotherapy.

### Prognosis

- 1- TNM staging [Lymph node involvement is the most important prognostic index].
- 2- The degree of tumor differentiation. Poorly differentiated tumors develop local recurrence even if surgery and radiotherapy are combined.
- 3- Extension of the tumor posteriorly to the oropharynx carries bad prognosis.
- 4- Combined surgery and radiotherapy improve prognosis.
- 5- Prognosis is better in females than males.



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7- a mother came to your outpatient clinic carrying her newborn complaining that she can't breast feed her baby as the baby can't suck, also she noticed that the baby cries with a strange tone, she showed you a defect in the upper lip of the baby reaching his nostril.

- a- What is your diagnosis ?
- b- Mention the development of lips and palate ?
- c- How could you diagnose this case ?
- b- What is the treatment in such a condition ?

### **Answers:**

a- the diagnosis is unilateral lateral cleft lip of the upper lip associated with cleft palate.

#### **b- Development of lips & palate**

1. Upper lip → by fusion of Fronto-nasal + Maxillary
2. Lower lip → fusion of 2 Mandibular process.
3. Ant part of (alveolar margin + palate) → Fronto-nasal process.
4. Post part of (alveolar margin + palate) → Maxillary process.

#### **c- diagnosis of cleft lip:**

##### **■ Antenatal diagnosis:**

1. By U/S scan after 18 weeks of gestation (if antenatal diagnosis is confirmed, referral to a cleft surgeon for counseling to allay fears) (reassure the patient)

##### **■ Clinical picture & Complication:**

1. Flaring & flatness of nares on the affected side if complete.
2. Disfigurement.
3. Abnormal teeth growth
4. Nasal tone.
5. Short lip-nose distance.
6. In 35% of cases → Associated congenital anomalies e.g. cleft palate, coloboma, encephalocele etc.

#### **- diagnosis of cleft palate :**

##### **■ Antenatal diagnosis:**

- All types (except isolated cleft palate) can be diagnosed by U/S scan after 18 weeks of gestation (then referral to a cleft surgeon)

##### **■ Clinical picture & Complication:** (Due to communication between the oral & nasal cavities):

- Impairment of suckling: due to inability to create -ve intra-oral pressure.
- Impaired speech: due to
  - 1- Inadequate velopharyngeal mechanism: Opposition of velum (the muscles of the soft palate) against the pharyngeal wall to separate the oral from the nasal cavity is impaired. Nasal tone is due to naso-oral communication.
  - 2- Hearing loss.
- Impairment of dentation if the alveolar margin is reached.

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- Impaired sinus, otitis media due to nasal regurgitation due to impaired aeration of Eustachian tube.
- Distortion of facial growth.
- Recurrent chest infection (due to reflux into nose).
- Usually associated with other congenital anomalies.

d- treatment :

- treatment of cleft lip :

Surgery is the only treatment (Millard's operation)

- **Timing:** 3-6 months
- **Pre-requisites:** The infant should be at least 10 pounds in weight and Hb level at least 10 mg%
- **Goals of lip repair:**
  1. Cosmetic lip repair where all anatomical defects are corrected.
  2. Functional repair of orbicularis oris to preserve function of facial expressions.
  3. Repair of alveolus (anterior palate) in the same setting by:
    - a- Primary gingivo-periosteoplasty.
    - ± b- Primary alveolar bone grafting.
  - It is called primary when it's done before 2 years of age.
  - **Aim:** it is needed to help the teeth to erupt.

► **Secondary alveolar grafting is done after 2 years of age (Most successful):**

- Early → 8 – 12 years (transitional dentition).
- Late → after 16 years.
- **Advantages:** don't impair the growth of the upper jaw.

- **Principle:** 1- Paring of edges.  
2- Repairing the defect with suturing the three layers of lip (Skin, muscle and mucous membrane).

- Sutures are made in zigzag way not in a straight line (Why?)

To avoid notching of the lip margin as the scar contract.

- 1- Attention to feeding. As there is inefficient breast feeding, a bottle with a large hole is used or spoon feeding in an upright position.
- 2- Prevention and treatment of chest infection.

▪ **Objectives of surgery:**

1. Closure of oro-nasal communication.
2. Achieving a competent velopharyngeal sphincter.

▪ **Principles of surgery:**

1. Paring of edges.
2. Suturing is done in three layers in the middle line (nasal mucosa, muscle layer, then oral mucosa).
3. Lateral relaxation incisions are needed.
4. fracture of the pterygoid hamulus to relax tensor palate.

▪ **Post-operative treatment:**

1. Speech therapy.
2. Orthodontic treatment.