

Cardio-Thoracic

SURGERY

A 20 year old male got stab wound injury to left side of chest in a fight. O/E External wound is 2cm from left sternal border in 4th intercostal space. He has BP 80/60 & engorged jugular vein His pulse is paradoxical.

Raised JVP

Pulses paradoxus

Heart sound quieter (reduced)

Diagnosis: Cardiac Tamponade

investigations:

X-ray chest

ECG

Echocardiography (definitive)

Emergency Treatment:

- ① Pericardiocentesis
- ② emergency surgery → when due to cardiac rupture
- ③ Pericardial window
↳ b/w pericardial space & Pleura

- O₂
- Antibiotic
- IV fluids
- inotropic agents

Q:- Describe the Triangle of Safety

It is an anatomical position / region in the Axilla that form a safe Guide For insertion of intercostal catheter

Boundries :

- Posterior** Anterior to the mid-axillary line
- Base** Above the level of nipple
- Anterior** Below & Lateral to the pectoralis major muscle

CHEST Tube

STEPS

- △ of safety
- ↓
- skin paint & Drapes
- ↓
- local Anesthesia
- ↓
- 3cm incision deep to sub. Fat
- ↓
- split Intercostal muscle
- ↓
- parietal pleura breeched
- ↓
- chest Tube insertion
- ↓
- Drain also attach
- ↓
- secure by suture & skin stitch

complications

- Hemorrhage
- infection
- Bleeding
- organ penetration
- Tube dislodgement
- Retained pneumothorax

indications

- Pneumothorax
- Hemopneumothorax Trauma
- Malignant pleural effusion
- Postoperative
 - ↓
 - esophagectomy
 - cardiac surgery

Q:- CAUSES OF malignant pleural Effusion

① Primary

Mesothelioma

② Secondary

Adenocarcinoma

Squamous cell carcinoma

Breast lesion

Lymphoma

TB

Recurrent pleural Effusion

Role of Surgeon in malignant Pleural Effusion

Thoracentesis

Chest Tube intubation

Thoracoscopy

VATS drainage

Pleural Biopsy

Pleurodesis

Decortication

A young man of 30 is brought to A & E Department after fall from one story over a brick. O/E breathlessness and abrasions on the side of chest with area of chest wall showing paradoxical movement.

Breathlessness

Abrasions on the side of chest with

Paradoxical movement

Diagnosis : Flail chest

→ It is a Fracture of Rib of 3 or more > 3 adjacent Ribs in two places / Either from one side / other

→ Segment have no Attachment to Rib

→ move Paradoxically (chest wall)



Causing → Compression in Lung Exchange mechanism

(247
K-UHS)

management

IF the segment is small & not interfere with respiration

observe

Analgesics

ABGs Analysis until segment stabilize

In severe case

Endotracheal Tube with tve pressure ventilation

Q:- A 30 year motor cyclist sustained injury to Right Chest After RTA brought in A&E with severe dyspnea o/E Diminished breath sound on R side & Dull Percussion note.

A 55 year male brought He is Breathlessness Trachea Deviated to left Hyper-resonant Percussion note on R side of chest.

Breathlessness / Absent Breath sound

Dull percussion

Hyperresonant percussion note

Trachea Deviated

Diagnosis: Tension pneumothorax

TYPES OF pneumothorax

① Tension pneumothorax

② Spontaneous pneumothorax

③ open / Traumatic

Positive Findings on X-RAY: ① X-Ray

② CT-scan

Linear shadow of visceral pleura

Absent lung marking

management:

Follow the ATLS Guidelines

maintain ABC

secondary survey

immediate → needle insertion

delayed → chest Tube intubation

vitals monitoring

oxygen

chest x-ray

management of Spontaneous Pneumothorax

309
08/02/20

Observation

Aspiration > 30%

Chest intubation

Pleurodesis

SURGERY

A young motor cyclist is brought to A/E AFTER RTA. He is complaining of severe pain at his right side ribs. Breath sound Diminished and percussion note is Dull. CXR shows obliteration of Angles & a horizontal level.

Diagnosis

Hemothorax

A 55 year old patient presented in OPD with epigastric mass for 6 months. O/E **non-reducible mass with no cough impulse but pulsatile.**

Diagnosis: Abdominal Aortic Aneurysm

Investigations

- Echocardiography — [Transesophageal, Transthoracic]
- CT-scan
- MRI

Treatment:

Indications for Rx:

Treatment Options

In Ascending Aortic Aneurysm

- Diameter 5-6 cm
- Aortic valve insufficiency
- Marfan Related Aneurysm

⇒ Depend upon part of Aorta involved

- ① If Aortic Root involve
↓
valve Resected
Composite Graft suture

In Descending Aortic Aneurysms

- Diameter > 6 cm
- Acute enlargement

- ② Aortic Arch involve
Dacron Graft
- ③ Descending Aorta
Endovascular stent

AORTIC DISSECTION: 2017 Annual

Aortic dissection occur when there is defect in the intima of the aorta resulting in blood tracking into the aortic tissue splitting the media from intima and creating a false lumen. It most commonly occurs in the ascending aorta. Male are affected more than female.

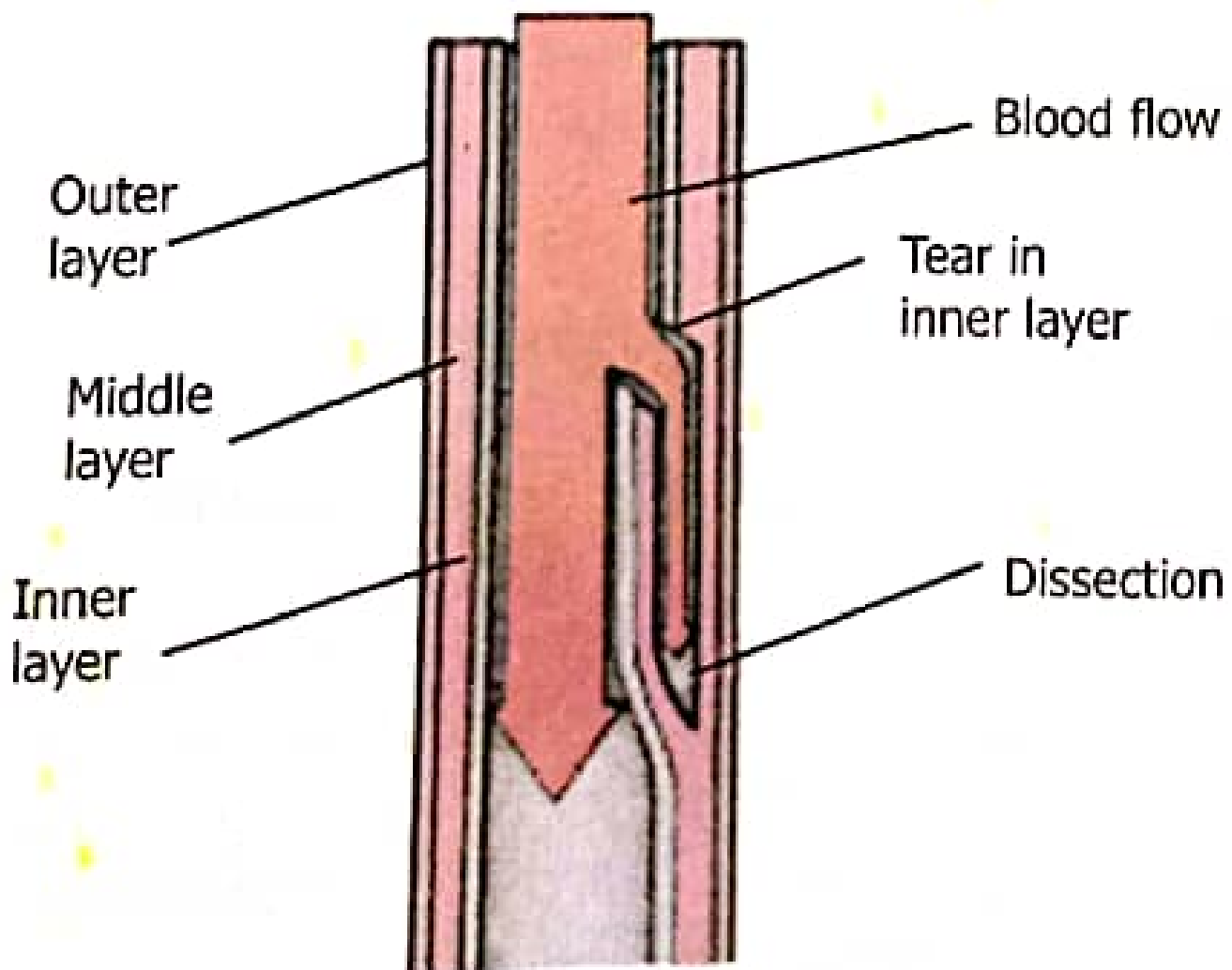


Fig: showing the Aortic dissection

Risk factors:

- ✓ Long standing hypertension.
- ✓ Marfan syndrome.
- ✓ Atherosclerosis.
- Pregnancy.
- ✓ Trauma.
- Coarctation of aorta.

Pathogenesis:

Tear in the intima leads to redistribution of blood into media, creating false lumen. The tear usually occurs in ascending aorta about 2 - 3cm distal to aortic valve. The dissection extends distally or it may propagate proximally.

Classification:

Two classification systems are in common use.

The DeBakey system involves three types.

- ✓ **Type I:** A tear in the ascending aorta with the dissection extending distal to the arch is type I.
- ✓ **Type II:** Dissection restricted to the ascending aorta is type II.
- ✓ **Type III:** A tear originating in the descending aorta and the dissection extending distally is type III.

The Stanford system of classification is simpler and more widely used.

- Type A:** Dissections involving the ascending aorta.
- Type B:** if the ascending aorta is spared (irrespective of the site of tear).

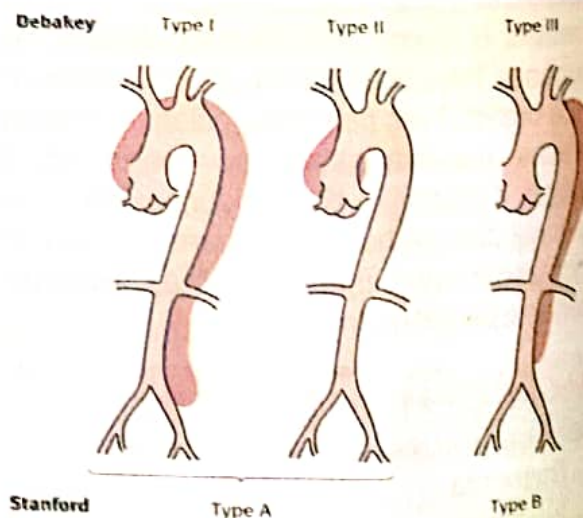


Figure demonstrating Stanford and DeBakey classification system of aortic dissection.

Clinical features:

- Tearing Intra-scapular pain which is difficult to distinguish from myocardial infarction.
- The dissection can extend distally to involve.
 - Renal artery (renal pain and renal failure).
 - Mesenteric artery (abdominal pain and bowel ischemia).
 - Spinal arteries (paraplegia).
- The dissection may extend proximally to involve.
 - Head and neck (stroke).
 - Coronary vessels (myocardial infarction).
 - Aortic root (aortic regurgitation).

Investigation:

- X-Ray chest show widening of mediastinum.
- Echocardiography.
- CT angiography is investigation of choice now a day.

Treatment:

Type A (or Type I and Type II) dissections, these involve ascending aorta and require surgery. Chest is opened via median sternotomy, cardiopulmonary bypass (CPB) is started, and aorta is cross clamped. The affected position of aorta is replaced with a graft. Mortality of untreated cases is very high (75%).

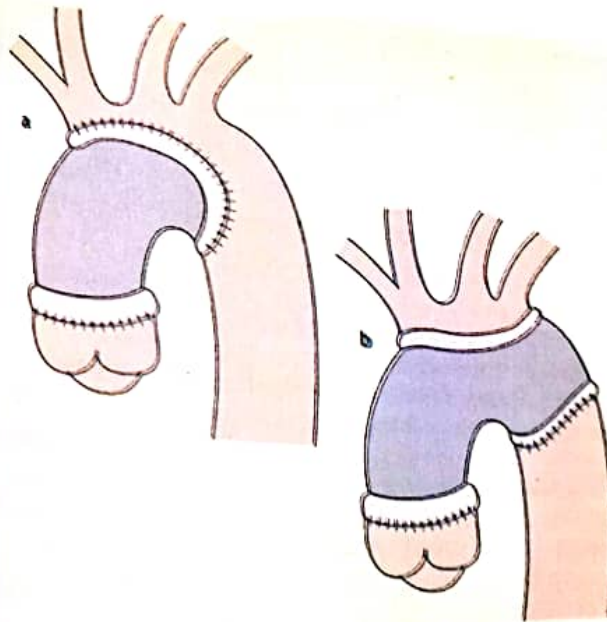


Figure demonstrating replacement of ascending aorta (a) and aortic arch (b) using a Dacron graft.

Type B (or Type III) dissections, It is best managed with antihypertensive drugs. Surgery is indicated if pain increases, and size is increasing on serial X Rays.

2016 (A)

BRONCHOGENIC CARCINOMA

Carcinoma of lung is leading cause of cancer related death in developed countries. It is most common malignancy in men and second only to breast cancer in female. (95%) of patients are more than 40 years of age.

ETIOLOGY:

85% of all lung carcinomas are related to smoking. ✓ patients who stop smoking reduces their risk of developing lung cancer. Other risk factors include exposure of asbestos and passive smoking. ✓ uranium Radon.

Classification

Carcinoma of lung is broadly divided into two patterns.

1. Small cell carcinoma.
2. Non small cell carcinoma.

SS
↓
Central located.

Small cell carcinoma:

It makes 20% all lung cancer. They tend to occur centrally, are aggressive and metastasize early both by lymphatic and hematogenous pathway. It is also called as **oat cell carcinoma** because of packed nature of small dense cells. They are neuro-endocrine tumors and may cause paraneoplastic syndrome.

Non small cell lung carcinoma:

NSCLC is further divided four subgroups.

1. Adenocarcinoma:

They are most common lung tumor (40% of all). They are periphery located tumors and have weakest association with smoking.

2. Squamous cell carcinoma:

Strongly associated with smoking, centrally located and appear as cavitating tumor, prognosis is relatively good.

3. Undifferentiated large cell carcinoma:

These are rare tumor and has very poor prognosis and it includes a group of large cells neuroendocrine tumor.

4. Mixed Tumors:

They are comprised of combination of tissue types.

Hypercalcaemia

Clinical Presentations: + Digital Clubbing

- i. Hemoptysis, atelectasis, pneumonia, pain, weight loss, cough, Dyspnea
- ii. Tumor of apex of lung may compress brachial plexus.
- iii. Sympathetic ganglion may be compressed causing ptosis, miosis, enophthalmos and decreased facial sweats ipsilaterally (**Pan Coast Tumor**)
- iv. **Paraneoplastic syndrome** (Hypocalcaemia, Cushing syndrome etc)

Diagnosis:

- ① Radiograph of chest. → opaque shadow.
2. CT scan chest.
3. Endoscopic ultrasonography.
4. Bronchoscope. It allows direct vision of the tumor to obtain tissue, cells and bronchial brushing.
5. CT-guided percutaneous needle biopsy.
6. **MEDIASTINOSCOPY**: It is surgical procedure and is gold standard for staging purpose. A small incision is given over supra sternal notch, mediastinoscope is inserted and mediastinal lymph nodes are visualized directly and biopsy may be obtained.
7. Thoracoscopy can also be helpful for staging of disease

TNM Classification:

TIS: Carcinoma in situ.

- T₁: Tumor < 3 cm
- T₂: Tumor > 3cm that invades visceral pleura.
- T₃: Any size within 2cm of carina, extension into chest wall, diaphragm, pericardium.
- T₄: Any size with invasion of heart, great vessels, trachea, esophagus, vertebra or malignant pleural effusion.
- N₀: No nodal involvement.
- N₁: Peribronchial and ipsilateral hilar node.
- N₂: Mediastinal or subcarinal nodes.
- N₃: Supra clavicular or contralateral node.
- M₀: No, distant metastasis.
- M₁: Distant metastasis.

Staging:

- Stage I:** T₁ N₀ M₀
T₂ N₀ M₀.
- Stage II:** T₁ N₁ M₀
T₂ N₁ M₀.
- Stage IIIA:** T₂ N₂ M₀
T₃ N₂ M₀.

Stage IIIB: $T_4 N_2 M_0$
Any $T N_3 M_0$

Stage IV: M_1 Disease.

Treatment:

Stage I & II: Surgery is mainstay of treatment for stage I and stage II.

Preoperative assessment should include.

- i. For lobectomy FEV_1 should be > 1.5 liters.
- ii. For pneumonectomy FEV_1 should be > 2 Liters.

1. Surgical options for stage I & II include:

- i. Lobectomy is used for a disease localized to one lobe.
- ii. Extended resection (pneumonectomy) is used when tumor involves a fissure or is closed to pulmonary hilus.
- iii. Wedge resection may be used for periphery located tumors.

1. STAGE IIIA:

Stage IIIA disease is treated by combination of surgery, chemotherapy and radiotherapy.

2. STAGE IIIB AND STAGE IV:

Treatment is palliative only.

Complications of lung resection:

- bleeding
- respiratory infection
- persistent air leak
- bronchopleural fistula