INTERCOSTAL DRAINAGE

AND

ITS MANAGEMENT

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ICD – INTERCOSTAL DRAINAGE

- DEFINITION: THORACOSTOMY

- Drainage of fluid / air / blood / chyle from the pleural space through intercostal space
Chest tube drains blood from the lungs
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DIAGNOSTIC AIDS

- X-RAY CHEST
- CT SCAN CHEST
- FAST ULTRASOUND
- CLINICAL SUSPICION IN CRITICAL CASES
PURPOSE

- Diagnostic
- Therapeutic
TECHNIQUE OF INSERTION

Mostly EMERGENT - Placement of tube is vital to avoid complications
TECHNIQUE

- PAINFUL PROCEDURE
- Usually done under local anesthesia
- May need additional painkillers
PREPROCEDURE PLAN

- OBTAIN INFORMED CONSENT
- INFORM THE PATIENT THE POSSIBILITY OF MAJOR COMPLICATIONS
- EXPLAIN THE MAJOR STEPS OF PROCEDURE AND NEED FOR REPEATED XRAYS
MATERIALS NEEDED

- Chest tube with / without trocar
- ICD TRAY – No 11 / 23 Blade with handle, Large Kellys clamps, needle driver, Scissors
- 2-0 Ethilon / mersilk
- Mask, gloves & gown
SITE OF INSERTION

- SAFE ZONE
  - Lateral border of Pectoralis major
  - Horizontal line inferior to Axilla
  - Anterior border of Lattisimus Dorsi
  - Horizontal line superior to nipple
  - 5TH INTERCOSTAL SPACE
POSITION
INCISION
PROCEDURE - Contd

- Local area preparation
- Sterile drapings
- Incision along the upper border of the rib
- Curved Clamp is used to develop the tract & then with the finger
- Finger inserted into the pleural space for exploration
- Large bore chest tube (32-36 F) is passed along the tract into the pleural cavity
- Tube is connected to underwater seal & secured with sutures
- Check xray to be taken
INCISION - CONTD
INCISION - CONTDB
INSERTING A CLOSED INTERCOSTAL DRAIN

A
infiltrate down to the pleura

B
2 cm
one chest wall thickness

4 cm space
first forceps
second forceps anywhere

C
make a nick with a scalpel

D
put in the trocar and cannula

E
pull out the trocar and put in the rubber tube

F
push the tube in as far as the first forceps

G
apply the second forceps close to the chest wall

H
alternative method if you don’t have a trocar and cannula
CHEST TUBE DRAINS

- Available from size 12 F – 36 F
- Large size tube are preferred in case of effusions
- Can be placed with / without trocar
CHEST DRAIN
UNDERWATER SEAL DRAIN

- To Allow air to escape through drain
  BUT NOT TO REENTER

- Always be kept below the level of the patient

- NEVER CLAMP – avoid TENSION PNEUMOTHORAX

- Moderate suction – (- 20 cm) especially in air leak
UNDERWATER SEAL DRAIN

Diagram:

- To patient
- To air or suction
UNDERWATER SEAL DRAIN
Care of Intercostal tubes

- DRESSINGS:
- CHEST XRAY
- OBSERVATIONS:
  - Report immediately chest drainage of >200mls of blood in a 1 to 2 hour time frame.
  - *Continuous SaO2 monitoring. Keep O2 Sa > 96%.
  - *Observe the swings of fluid in the chest tube bottle.
ICD CARE

- NEVER CLAMP AN INTERCOSTAL TUBE: WHY??

- BECAUSE TENSION PNEUMOTHORAX IF FORGET TO REMOVE CLAMP
ASSESS AND REPORT ANY OF THE FOLLOWING

- Sudden drop of Sa 02 < 90%

- *increased restlessness and anxiety of the patient.

- *cessation of swing, or swing < 2cm.

- *absent or decreased breath sounds on the side of the pneumothorax.

- *tympany or hollow sound on chest percussion.
Contents of the chest bottle

- sterile solution that is not toxic to the lungs
- Water / saline / dextrose
INDICATION FOR REMOVAL

- No Drain
- No Air leak
REMOVAL OF ICD

- Explain procedure to patient and place in a position of comfort
- Remove sterile dressing. Cut suture
- Ask patient to take a deep breath and hold
- then remove the tube and place a sterile piece of gauze and airtight over the site.
ACUTE COMPLICATIONS

- Hemothorax
- Lung laceration
- Injury to Diaphragm
- Stomach / Colon injury in unrecognised Diaphragmatic Hernia
- Tube placed subcutaneously
- Tube placed too far
- Tube falls out
- Reexpansion pulmonary edema
LATE COMPLICATIONS

- Blockage of tube (clot / lung)
- Retained hemothorax
- Empyema
- Pneumo thorax after tube removal
- Infection
CONCLUSION

- Emergency life saving procedure
- Maintaining the patency is critical to avoid complications
- Subcutaneous emphysema clog / insufficient negative pressure
Thank you