

4th
Edition



Long Cases in

GENERAL SURGERY

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Foreword
P Venkatesvaran



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Inguinal Hernia

Overview

- ◆ History Taking
- ◆ Examination
- ◆ Diagnosis
- ◆ Investigations
- ◆ Treatment
- ◆ Anatomy
- ◆ Surgeries
- ◆ Strangulated Hernia
- ◆ Sliding Hernia
- ◆ Miscellaneous

DEFINITION

- ❖ Hernia is an abnormal protrusion of an organ or tissue through an opening in the layer that normally confines them.
- ❖ Herniation of contents via the inguinal canal is known as inguinal hernia.

HISTORY TAKING

Name:

Age:

Sex:

Occupation:

Viva Stops

- ❖ Most common hernia in females: Indirect inguinal hernia
- ❖ Most common hernia in males: Indirect
- ❖ Femoral hernia most common among: Females
- ❖ Young age: Indirect
- ❖ Old age: Direct
- ❖ Direct hernia never occurs in females and children

Presenting Complaints

- I. About the Hernia
- II. Due to Hernia (Complications)
- III. Precipitating Factors

About the Hernia

- ❖ Duration
- ❖ **Onset:** Suddenly/gradually
- ❖ **Site of start:**
 - From groin to scrotum (hernia)
 - From scrotum to groin (hydrocele and varicocele)
- ❖ Aggravating factors:
 - On straining
 - On standing
 - On coughing
- ❖ Relieving factors:
 - By lying down
 - Manually by himself
- ❖ Associated with pain: Usually painless

Complications

- ❖ **Irreducibility: Reasons for becoming irreducible:**
 - Crowding of the contents
 - Adhesion between sac and contents
 - Adhesion between contents
 - Adhesion between sac.
- ❖ **Obstruction: Four cardinal features:**
 1. Colicky abdominal pain
 2. Vomiting
 3. Abdominal distension
 4. Obstipation (absolute constipation)—not passing flatus and feces**.
- ❖ **Strangulation: (Obstruction + irreducibility + arrest of blood supply)**
 - Colicky abdominal pain becomes dull aching continuous pain if bowel goes for gangrene**
 - Sudden increase in size of hernia; becomes tense and tender.

History of Precipitating Factors

- ❖ Chronic bronchitis/asthma/tuberculosis (TB)
- ❖ Difficulty in micturition
- ❖ Difficulty in defecation.

Viva Stops

- ❖ **Why are you asking about history of open appendicectomy?**
 - Ilioinguinal or iliohypogastric nerve if damaged by grid iron incision or during keeping the drain; direct hernia occur**.
- ❖ **What will happen if you cut ilioinguinal or iliohypogastric nerve in inguinal canal?**
 - If ilioinguinal nerve is cut in the inguinal canal direct hernia never occurs. Because the nerve supplies the abdominal muscles before entering the canal. Only sensory supply is lost in root of penis and anterior third scrotum in males, labia majora and clitoris area in females.

- ❖ **Where is the pain in inguinal hernia usually?**
 - Pain in inguinal hernia is usually in the region of the umbilicus due to drag in the root of mesentery as bowel enters the sac.
- ❖ **Weightlifting is not a risk factor** for inguinal hernia from recent studies**
 - A recent Swedish study showed an interesting finding “obesity has less incidence of hernia”—Hernia is inversely related to BMI**
 - 10% cases will present with bilateral hernia
 - 20% will have contralateral hernia on laparoscopic examination
 - A patient with unilateral hernia has risk of 33% to develop contralateral hernia.

Past History

- ❖ History of diabetes mellitus/hypertension/ischemic heart disease/bronchial asthma/tuberculosis
- ❖ History of previous surgery (appendicectomy and hernia surgery in same side or opposite side).

Family History

History of connective tissue disorders in family.

Personal History

- ❖ History of smoking: Smoking leads to chronic bronchitis
- ❖ Collagen deficiency occurs in smokers.

General Examination

- ❖ General condition
- ❖ Anemia
- ❖ Lymph adenopathy
- ❖ Blood pressure
- ❖ Pulse rate.

LOCAL EXAMINATION OF INGUINAL REGION

Inspection

Patient in standing position:

- ❖ Site
- ❖ Size
- ❖ Shape
- ❖ Extent
- ❖ Surface
- ❖ Skin over the swelling
- ❖ Visible peristalsis

- ❖ Cough impulse
- ❖ Draining lymph nodes
- ❖ Penis
- ❖ Urethral meatus
- ❖ Opposite scrotum

Viva Stops

Shape:

- ❖ **Hemispherical:** Direct (**Figure 1.1**)
- ❖ **Pyriform:** Indirect (**Figure 1.2**)
- ❖ **Retort:** Femoral

Position:

- ❖ **Femoral:** Below and lateral to pubic tubercle (**Figure 1.3**)
- ❖ **Inguinal:** Above and medial to pubic tubercle



Figure 1.1: Direct hernia (hemispherical shape).



Figure 1.2: Indirect hernia (pyriform shaped).



Figure 1.3: Femoral hernia (obstructed).

Palpation

In standing and lying position:

- ❖ Temperature
- ❖ Tenderness
- ❖ Site
- ❖ Size
- ❖ Shape
- ❖ Extent
- ❖ Surface
- ❖ Skin over
- ❖ Consistency
- ❖ Reducibility
- ❖ Get above the swelling
- ❖ Cough impulse
- ❖ Invagination test
- ❖ Deep ring occlusion test
- ❖ Ziemann's three finger technique

Viva Stops

What is cough impulse?

- ❖ Propulsive and expansile impulse on coughing.

Can be performed by:

- ❖ Making the child cry
- ❖ Valsalva maneuver
- ❖ Head raising and abdomen contraction

To demonstrate by inspection:

- ❖ No need to reduce the content
- ❖ Just ask the patient to stand and cough

Inference:

- ❖ Swelling increases in size or
- ❖ Impulse seen and swelling reappears

To demonstrate by palpation:

- ❖ Hold the right side of the root of scrotum with your left thumb and index finger without reducing the content and ask to cough
- ❖ You will get expansile and propulsive impulse
- ❖ In bubonocele—keep your thumb at deep ring

Absent cough impulse:

- ❖ Strangulated hernia
- ❖ Incarcerated hernia
- ❖ Neck of sac becomes blocked by adhesions

Where else you see cough impulse?

- ❖ **Varicocele:** Expansile and thrill like not propulsive
- ❖ **Morrisey's cough impulse:** In case of varicose veins, expansile impulse at sapheno-femoral junction
- ❖ **Laryngocele**

Viva Stops**How will you say the content of hernia?***On testing the reducibility:*

- ❖ **Intestine:** Last part is easy to reduce; initial part is difficult to reduce; gets reduced with gurgling sound
- ❖ **Omentum:** First part easy to reduce, last part is difficult because omentum adheres to fundus of sac

On testing for consistency:

- ❖ **Soft elastic:** Intestine
- ❖ **Doughy granular:** Omentum

Note: *Get above the swelling at root of scrotum is a classical feature of hydrocele. This is absent in hernia.*

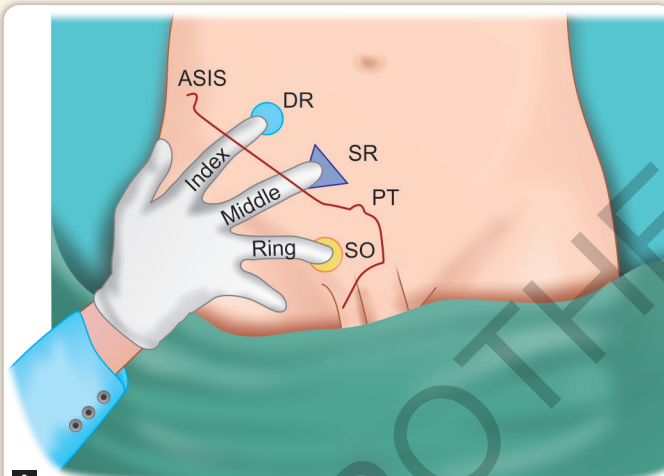
Viva Stops**How will you do the following tests?****Test 1: Ziemann's technique (Figures 1.4A to C):**

For right side inguinal hernia:

- ❖ **Place the right hand (no hard and fast rules to keep fingers—whichever is comfortable you keep in such a way and write the impulse felt at which opening)**
 - Index finger over deep ring
 - Middle finger over superficial ring
 - Ring finger over saphenous opening

See where the impulse is felt:

- Direct hernia: Superficial ring
- Indirect hernia: Deep ring
- Femoral hernia: Saphenous opening



A

ASIS: anterior superior iliac spine; PT: pubic tubercle; DR: deep ring; SR: superficial ring; SO: saphenous opening



B

Figures 1.4A and B



Figures 1.4A to C: Ziemann's technique.

Test 2: Deep ring occlusion test: (Figure 1.5)

After reducing the contents, patient in standing position, occlude the deep ring with thumb.

Ask the patient to cough.

If swelling appears - Direct
Does not appear - Indirect

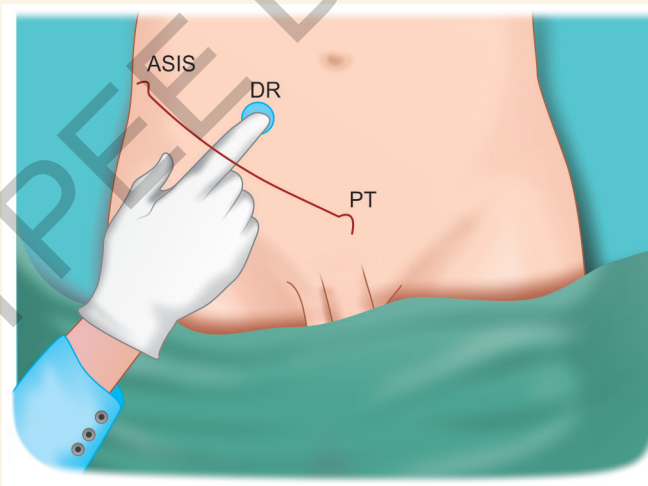


Figure 1.5: Deep ring occlusion test.

(ASIS: anterior superior iliac spine; DR: deep ring; PT: pubic tubercle)

Fallacy of deep ring occlusion test

When will you get the swelling even though it is an indirect hernia by deep ring occlusion test?

- ❖ Pantaloon hernia
- ❖ Wide deep ring (occlude in such cases with index and middle finger together)

Test 3: Ring invagination test (Figures 1.6A and B)

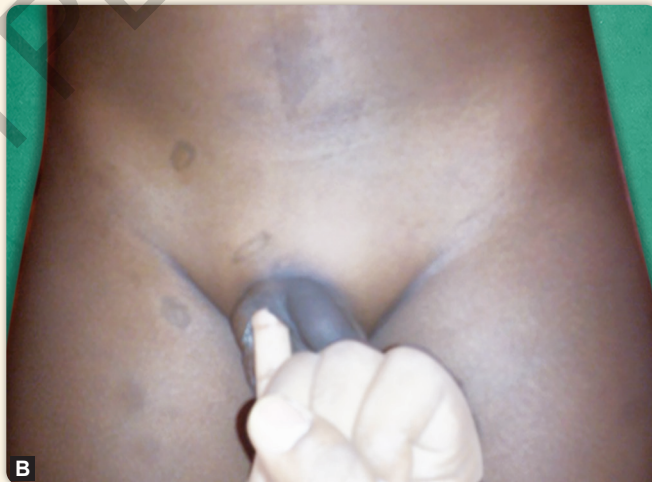
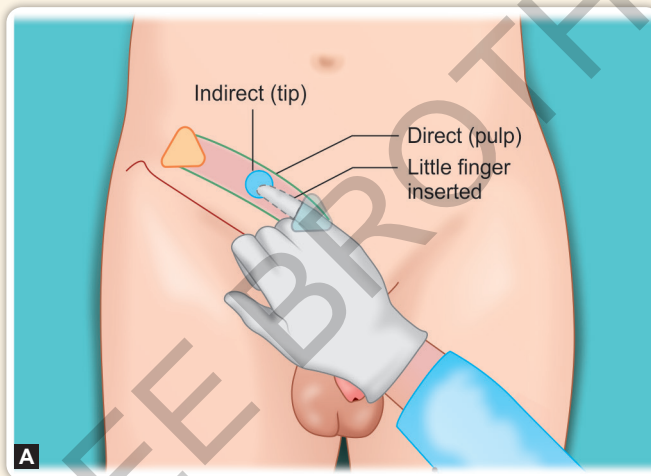
- ❖ Only test in hernia; done in lying position always, and only test never done in females:

Prerequisite:

- ❖ Swelling should be reducible
- ❖ Lax of skin should be there for invaginating (so this test could not be done in females)

Procedure:

- ❖ Reduce the swelling
- ❖ For right side, invaginate with right little finger into the superficial ring
- ❖ Rotate the little finger medially so that the pulp faces medially
- ❖ Note the direction of entry and site of impulse



Figures 1.6A and B: Finger Invagination test.

What are the things you will look for in finger invagination test:

- ❖ Strength of superficial ring: Normal ring admits only the tip
- ❖ Direction of canal:
 - Direct hernia: Directly backwards
 - Indirect: Goes upwards, backwards and laterally
- ❖ Site of impulse:
 - Pulp: Direct
 - Tip: Indirect
- ❖ Strength of posterior wall
- ❖ To find early cases of hernia, impulse felt at tip.

Percussion

- ❖ **Enterocoele:** Resonant
- ❖ **Omentum:** Dull

Auscultation

Peristaltic sounds occasionally heard.

Others

- ❖ **Testis:** ‘Traction test’ to find whether the inguinal swelling is an encysted hydrocele of cord, also look for normal or atrophied testis.
- ❖ Epididymis:
- ❖ **Penis:** Look for 3p’s in penis
 - Phimosis
 - Penile strictures
 - Pinhole meatus
- ❖ Regional nodes
- ❖ Opposite groin

Per-rectal Examination

(Not needed to do for final year students—but you must say you will do PR to look for following):

- ❖ **Benign prostate hypertrophy:** Micturition difficulty
- ❖ Malignant anal or rectal obstruction
- ❖ **Chronic fissure:** Constipation

Cardiovascular system (S1/S2): Murmurs must be examined

Respiratory system: Respiratory infections.

Abdomen

- ❖ Mass abdomen
- ❖ Malgaigne’s bulgings
- ❖ Ascites

Viva Stops

What are these Malgaigne's bulgings?

- ❖ Oval, longitudinal, bilateral bulging produced on straining, in inguinal region or above it; and are parallel to medial half of inguinal ligament.
- ❖ Present in direct hernia
- ❖ Indicates poor muscle tone
- ❖ Signifies hernioplasty is the treatment.

Final Diagnosis: 6 Points

1. **Side:** Right/left
2. **Type:** Indirect/direct
3. **Inguinal:** Femoral
4. **Complete/incomplete**
5. **Complicated/uncomplicated**
6. **Content:** Enterocele/omentalocele

Classification of Hernia

European Hernia Society Classification

- ❖ Primary or recurrent (P or R)
 - ❖ Lateral, medial or femoral (L, M or F)
 - ❖ Defect size in finger breadths assumed by be 1.5 cm
- So PL2 means: Primary, lateral and defect size 3 cm**

Nyhus classification of hernia

- Type I: Indirect hernia with normal deep ring
 Type II: Indirect hernia with dilated deep ring
 Type III: Posterior wall defect
- a. Direct
 - b. Pantaloon
 - c. Femoral
- Type IV: Recurrent

Gilbert classification

- Type 1: Small, indirect
 Type 2: Medium, indirect
 Type 3: Large, indirect
 Type 4: Entire floor, direct
 Type 5: Diverticular, direct
 Type 6: Combined, pantaloon
 Type 7: Femoral

POSTPRESENTATION EXAMINER'S RAPID SHOTS

1. **Tell the difference between reducibility and compressibility:**

Reducibility	Compressibility
After reducing the swelling opposite force is required to make the swelling reappear	Opposite force is not required for reappearing. It appears slowly to its original size
Swelling can be completely reduced	Swelling cannot be completely reduced
Example: Hernia	Example: Hemangioma

2. How will you demonstrate hernia in very small children?

Gornall's test

- Child held from back by both hands of clinician on its abdomen
- Abdomen is pressed and child is lifted up
- Hernia appears due to increase in the abdominal pressure exerted.

3. What is taxis? (do not mention unless asked by the examiner)

Method of reducing the inguinal hernia

Procedure: Flex the knee, adduct and internally rotate the hip



Relaxes the abdominal muscles

With the thumb and fingers hold the sac; guide with other hand at superficial ring

Complications of taxis

- ❖ Bowel injury
- ❖ **Reduction en masse:** Reducing the sac with the constriction being present at the neck; thereby making the hernia with obstruction to go into the abdomen.
- ❖ Sac may rupture at its neck and the contents may be reduced extra peritoneally.

4. Name the differential diagnosis of the swelling in inguinal region:

Inguinal swelling	Inguinoscrotal swelling	Femoral hernia
<ul style="list-style-type: none"> ◆ Enlarged lymph nodes ◆ Undescended testis ◆ Lipoma ◆ Femoral hernia ◆ Saphena varix ◆ Psoas abscess ◆ Femoral aneurysm 	<ul style="list-style-type: none"> ◆ Encysted hydrocele of cord ◆ Varicocele ◆ Lymph varix ◆ Diffuse lipoma of cord ◆ Inflammatory thickening of cord 	<ul style="list-style-type: none"> ◆ Inguinal hernia ◆ Saphena varix ◆ Cloquet's node ◆ Lipoma ◆ Femoral aneurysm ◆ Psoas abscess

5. List out the investigations done for hernia:

Routine

- ❖ Hemoglobin
- ❖ Bleeding time/clotting time
- ❖ Total count, differential count, ESR
- ❖ Urine—albumin, sugar, deposits
- ❖ Blood—urea, sugar
- ❖ Blood grouping/typing—for irreducible hernia/huge hernia

Anesthetic purpose

- ❖ X-ray chest (chronic tuberculosis, asthma—precipitate hernia)
- ❖ ECG all leads

USG abdomen and pelvis

- ❖ In old age group—to find benign prostate hyperplasia, calculate postvoidal residual urine. If >100 mL postvoidal residual urine is present—it is significant
- ❖ To find any mass.

Long Cases in GENERAL SURGERY

Salient Features

- The only clinical case book for *Long Cases of Clinical Examination* covering A to Z about each topic right from history taking to management.
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- The book contains more than 100 colored photos and illustrations.
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- All the oncosurgery topics are updated as per latest NCCN guidelines.
- Viva session topics are updated and highlighted.
- Easy flow of reading and recalling is the unique feature of the book.

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