# Battle of the Bulge

## Evaluation & Management of Abdominal Wall Hernias in Children


**Sherif Emil, MD,CM, FRCSC,FACS,FAAP**

**Mirella & Lino Saputo Chair in Pediatric Surgical Education &**
**Patient and Family-Centered Care**
**Associate Chair for Education & Departmental Citizenship**
**Department of Pediatric Surgery**
**McGill University Faculty of Medicine**
**Director; Harvey E. Beardmore Division of Pediatric Surgery**
**The Montreal Children's Hospital; McGill University Health Centre**


McGill

Hôpital de Montréal pour enfants
Centre universitaire de santé McGill

Montreal Children's Hospital
McGill University Health Centre

# Disclosure

- No conflicts to disclose

# Objectives

As a result of attending this session, participants will be able to:

- Diagnose common abdominal wall hernias in children.
- Differentiate inguinal hernias from hydroceles.
- Appropriately refer patients who require surgical management.

# Abdominal Wall Hernias

## Classification

**Common**

- Epigastric
- Umbilical
- Inguinal
  - **Indirect**
  - Direct
  - Femoral

**Rare**

- Spigelian
- Lumbar
- Incisional
- Abdominal Wall Defects
  - Omphalocele
  - Gastroschisis

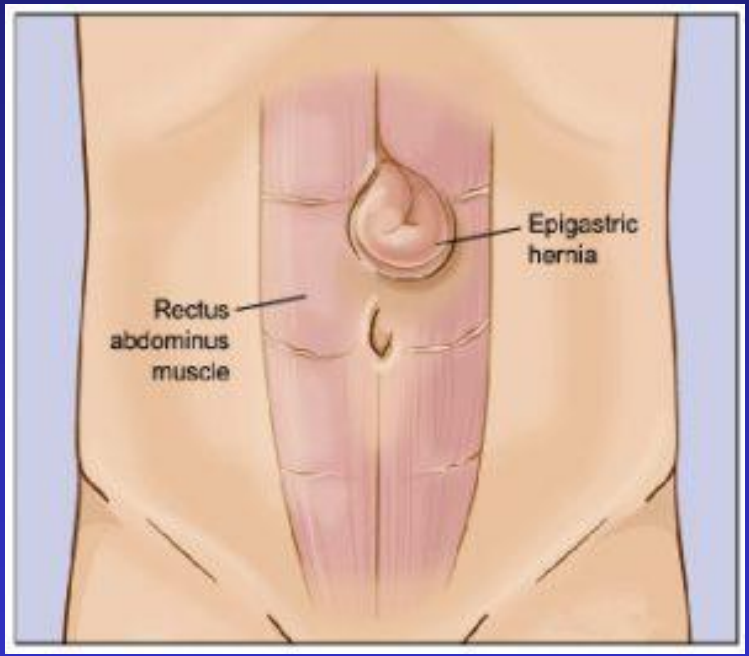
# Evaluation

- Clinical Diagnoses.

- Ultrasound is ***not*** required.

# Epigastric Hernia

- Small linea alba defects.
- Anywhere between xiphoid and umbilicus.
- Herniated pre-peritoneal fat.
- No sac.
- Often confused with soft tissue mass.



# Epigastric Hernia

## Presentation & Diagnosis

- Non-tender soft mass in young children.
- Larger slightly tender mass in older children.
- Positioning
  - Supine — Invisible & Non-palpable
  - Upright — Visible & Palpable
- Non-reducible

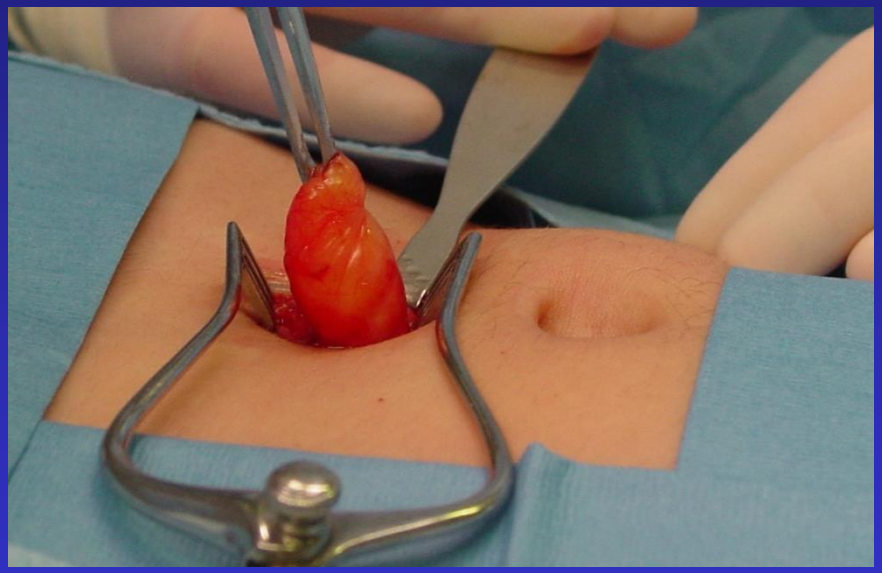
# Epigastric Hernia
## Management

- Small hernias can be observed.
- Enlarging or symptomatic hernias should be repaired.
- The larger the easier!

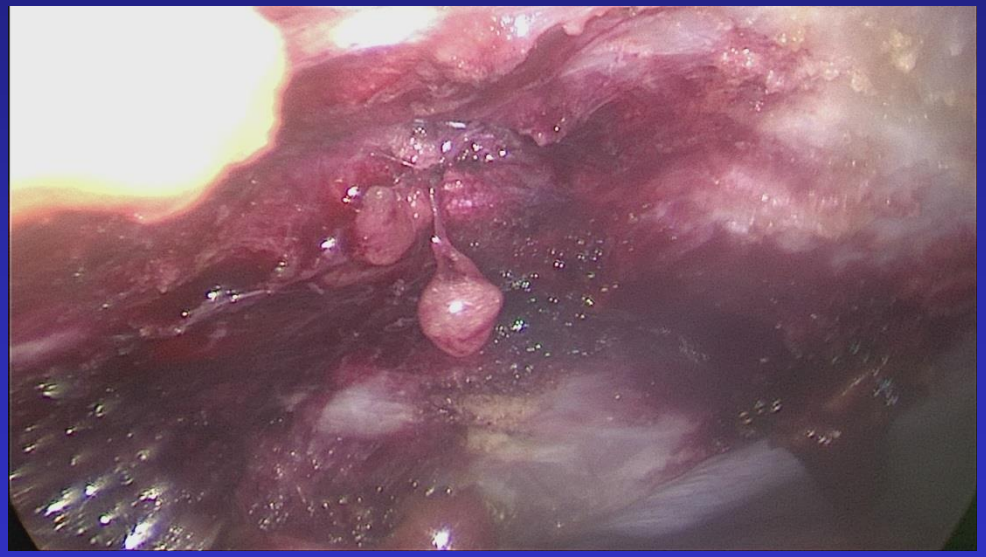
# Epigastric Hernia

## Repair

**Open**

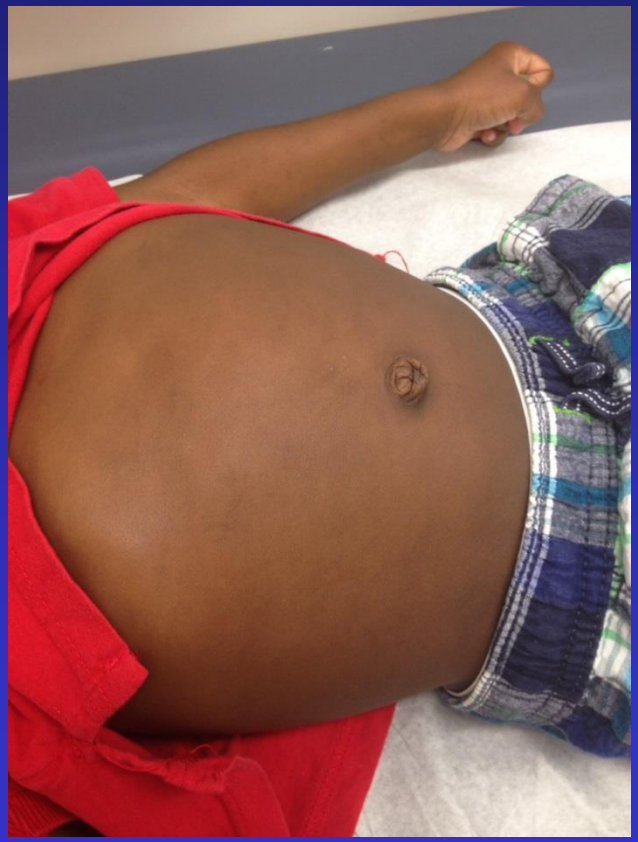


**Laparoscopic**



# Diastasis Recti

**Relaxed**



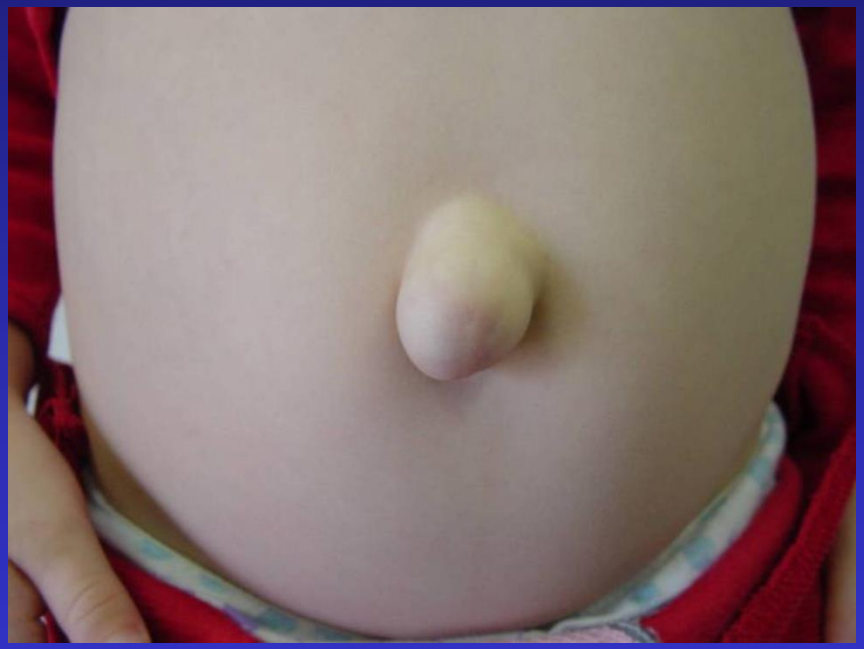
**Straining**

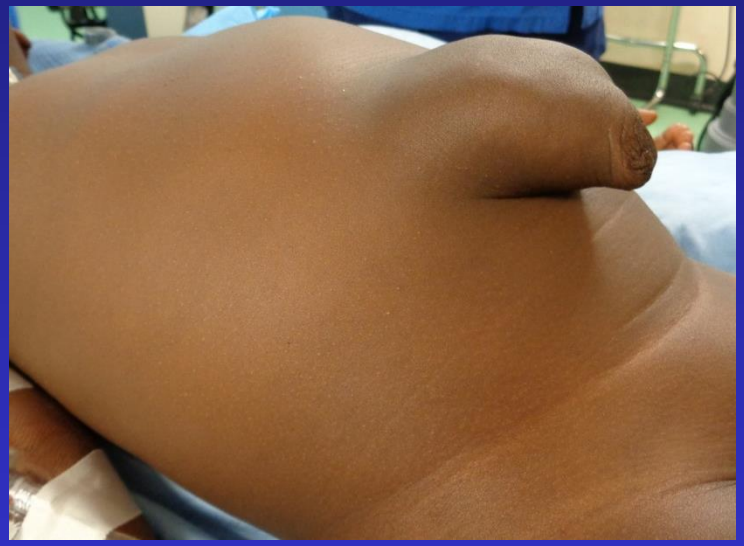
# Umbilicus

## Embryology

- Transmits umbilical vessels, vitelline duct and allantois.
- Transmission zone (umbilical plaque) may be weak or enlarged forming the basis for a hernia.

# Umbilical Hernia Spectrum





# Umbilical Hernia

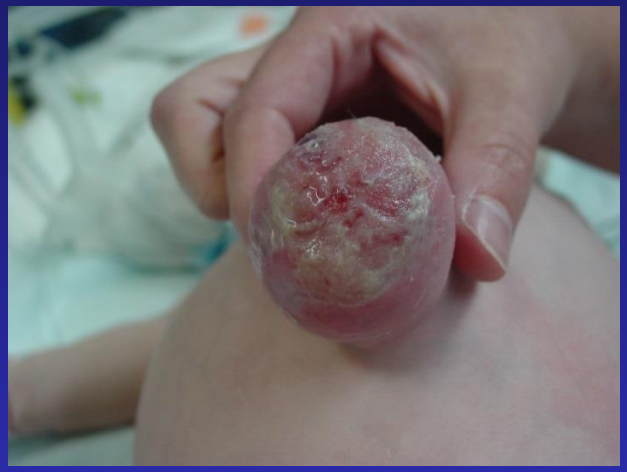
## Treatment

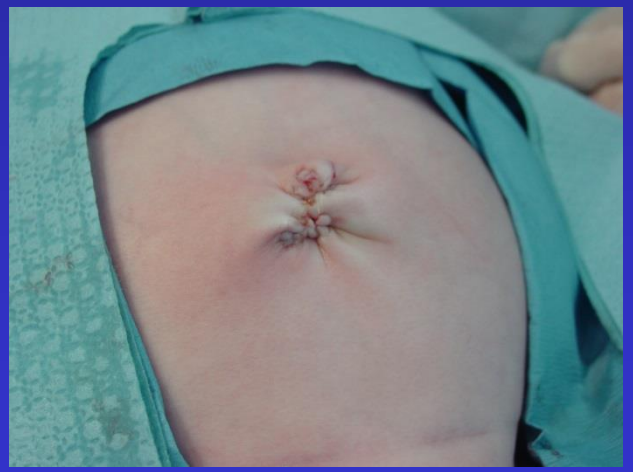
- Repair rarely indicated before age 4 years.
  - Observation is safe.
  - Incarceration rare event.
  - Optimizes spontaneous closure.
  - Allows child to start school with normal umbilicus.

# Umbilical Hernia

## Indications For Early Repair

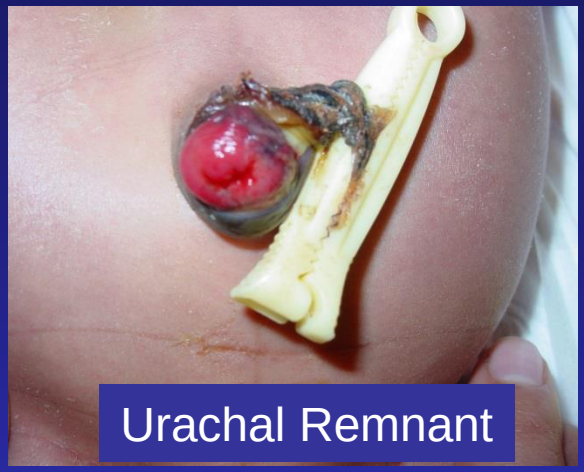
- Concomitant surgery under GA.
- Episodes of incarceration.
- Skin erosion.
- Massive defects.





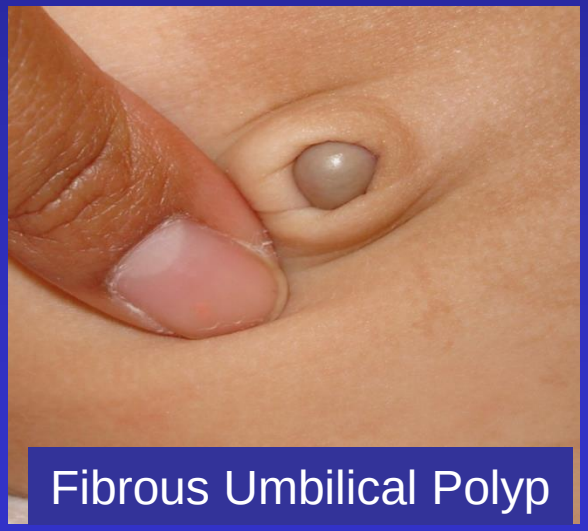
# When is it not an umbilical hernia?

Omphalomesenteric Duct Remnant



Urachal Remnant

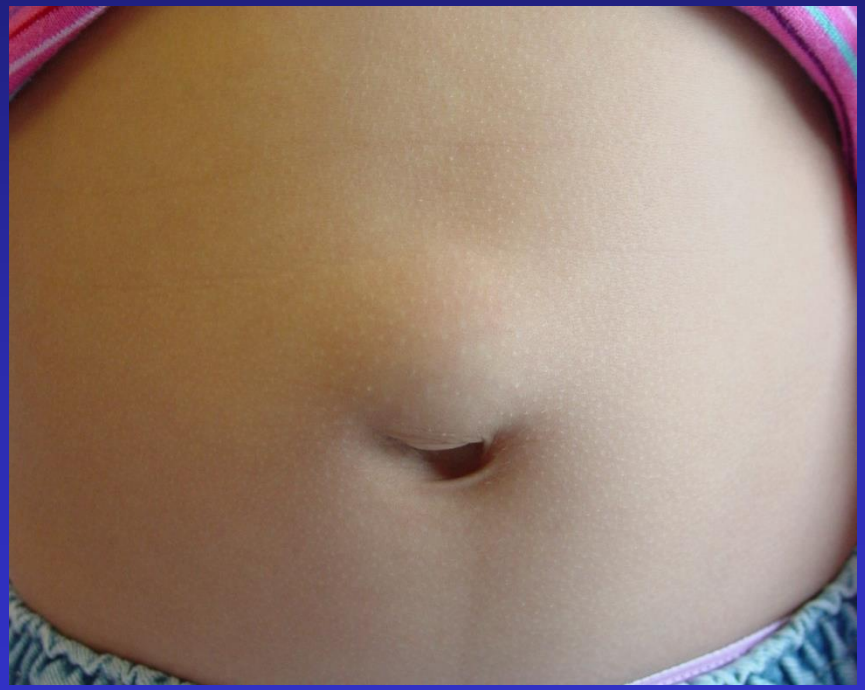
Umbilical Granuloma



Fibrous Umbilical Polyp

# Supra-Umbilical Hernia

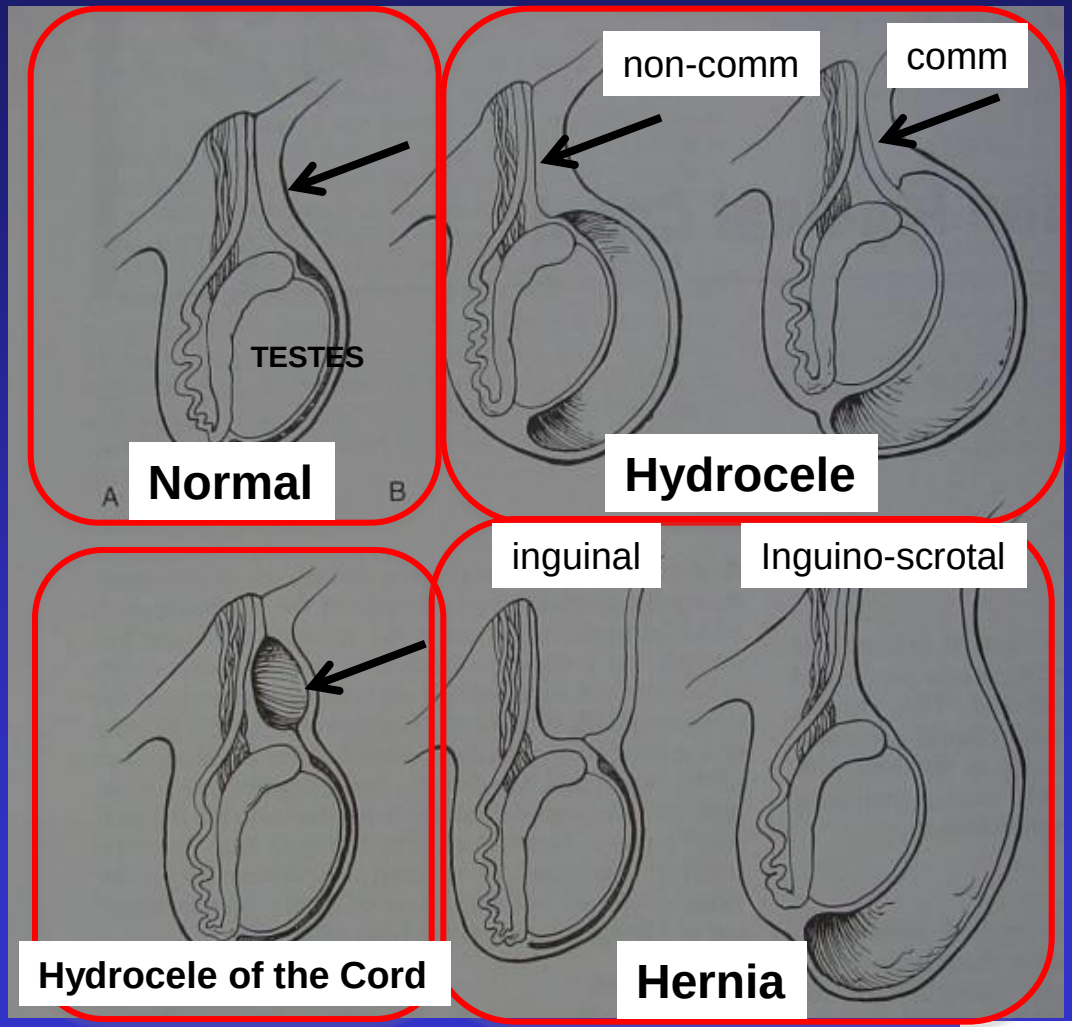
- Outside the umbilical ring.
- Within 2 cm of the umbilicus.
- Full thickness defect with a sac.
- Does not close spontaneously.



# Inguinal Hernia & Hydrocele

- About 4% of boys and 0.5% of girls
- ⑩↑ with prematurity
- Failure of involution of processus vaginalis.
- Most common presentation is a painless groin or scrotal mass.
- Intermittent presence and/or size change common.
- Can present at any age.

# Patent Processus Vaginalis



# Evaluation of Inguinal Hernia

## History

- Intermittent groin or scrotal mass.
- More common after crying, bowel movements, physical activities.
- Absent in the morning. Obvious in the evening.
- Child or parent can push it in.

# Evaluation of Hydrocele

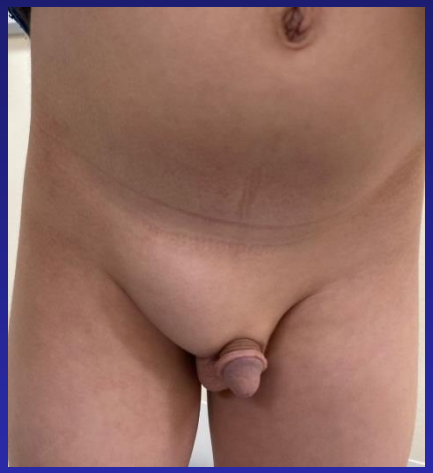
## History

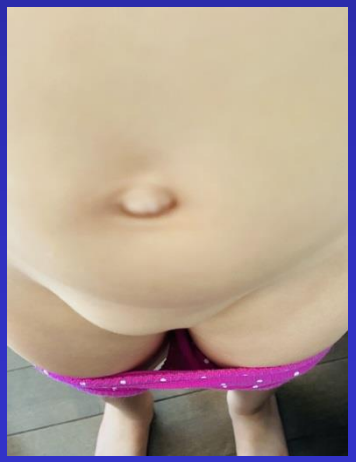
- Often present since birth.
- Non-communicating hydrocele does not change in size.
- Communicating hydrocele small in morning and enlarges during the day
- May first manifest during a viral infection.

# Physical Examination

## Eliciting an Inguinal Hernia

- Examine first supine.
- Testicular exam first.
- “Push your tummy!”
- “Blow a balloon!”
- If not seen, repeat in standing position.
- Reduce once elicited.

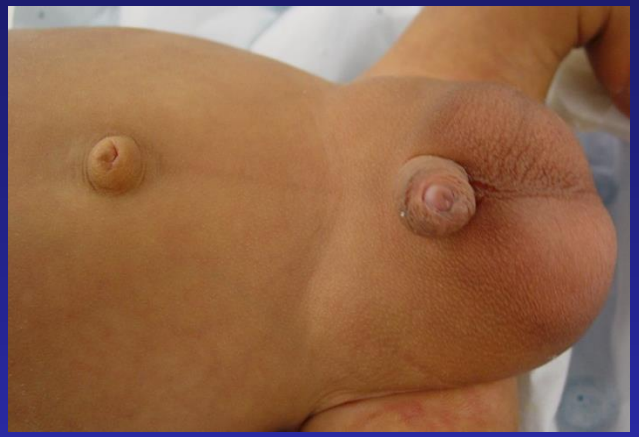


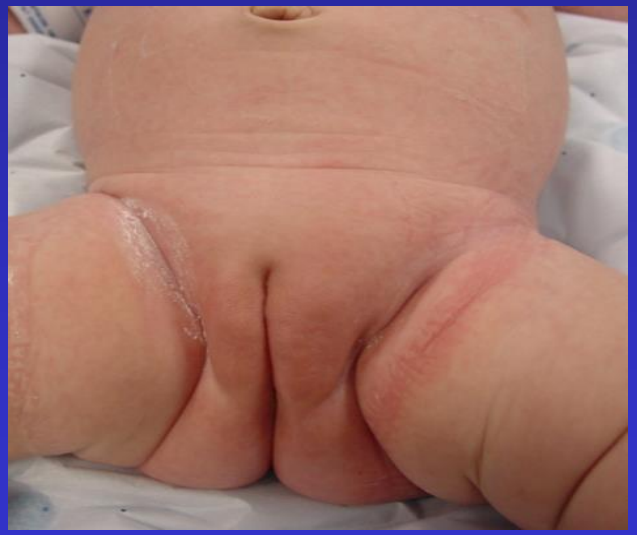


# Physical Examination

## Infants

- Supine exam.
- Examine scrotum/labia.
- Restrain legs.
- Pressure on the abdomen
- In girls, palpate for an ovoid mass.

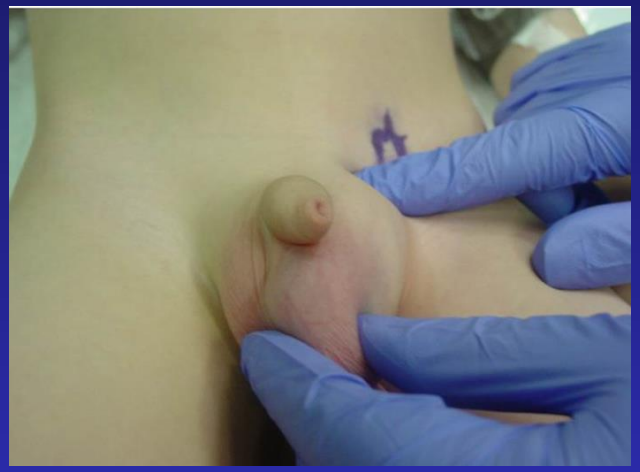


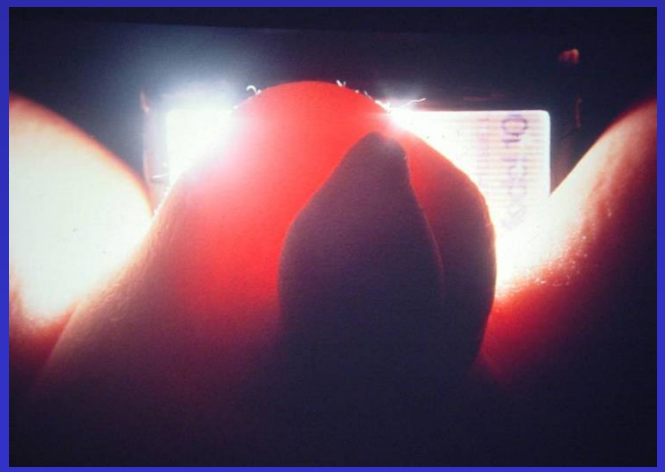


# Physical Examination

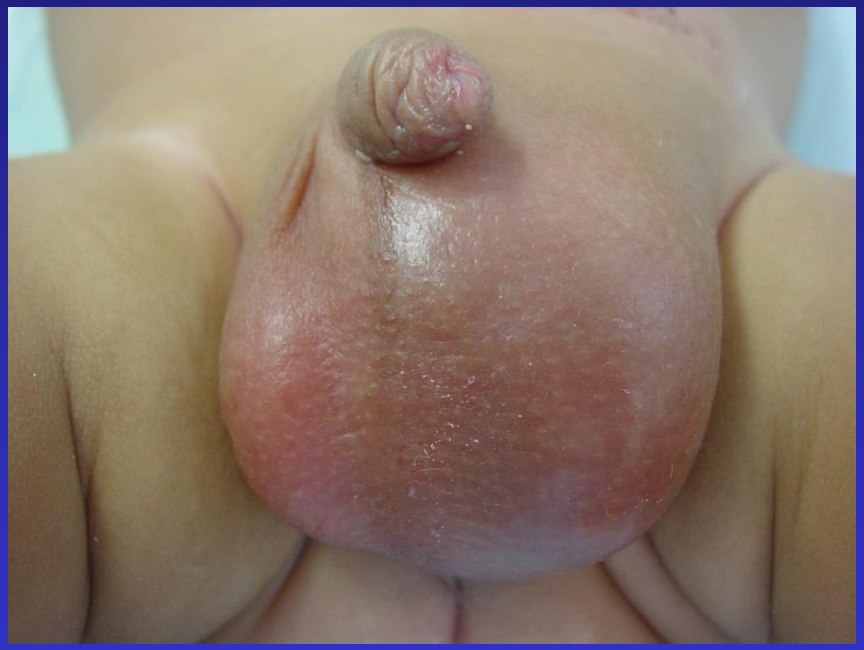
## Differentiating Hernia from Hydrocele

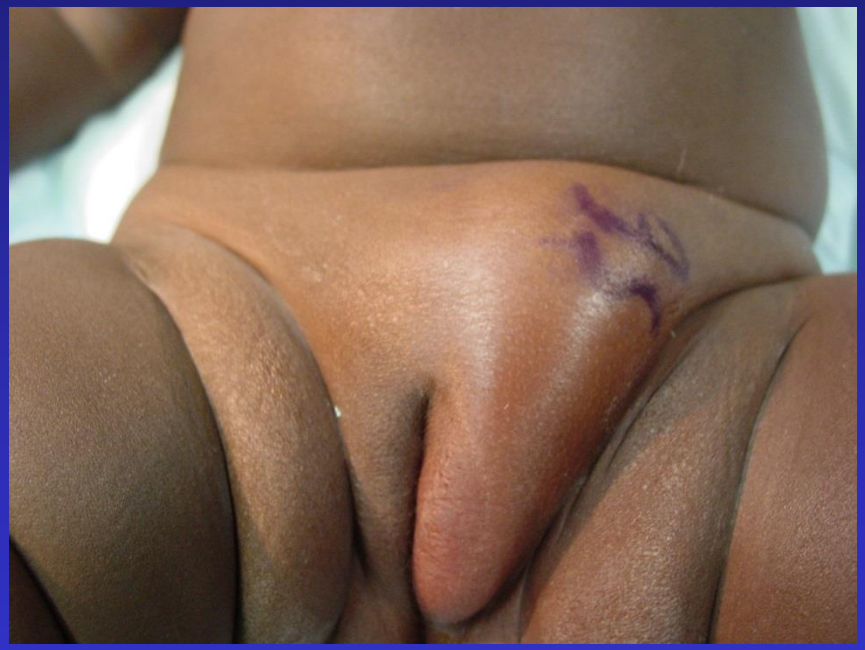
- Scrotal hydrocele
  - Palpation “above the swelling”
- Hydrocele of the cord
  - Discrete mobile inguinal or scrotal mass separate from the testicle.
- Trans-illumination
  - Be careful!





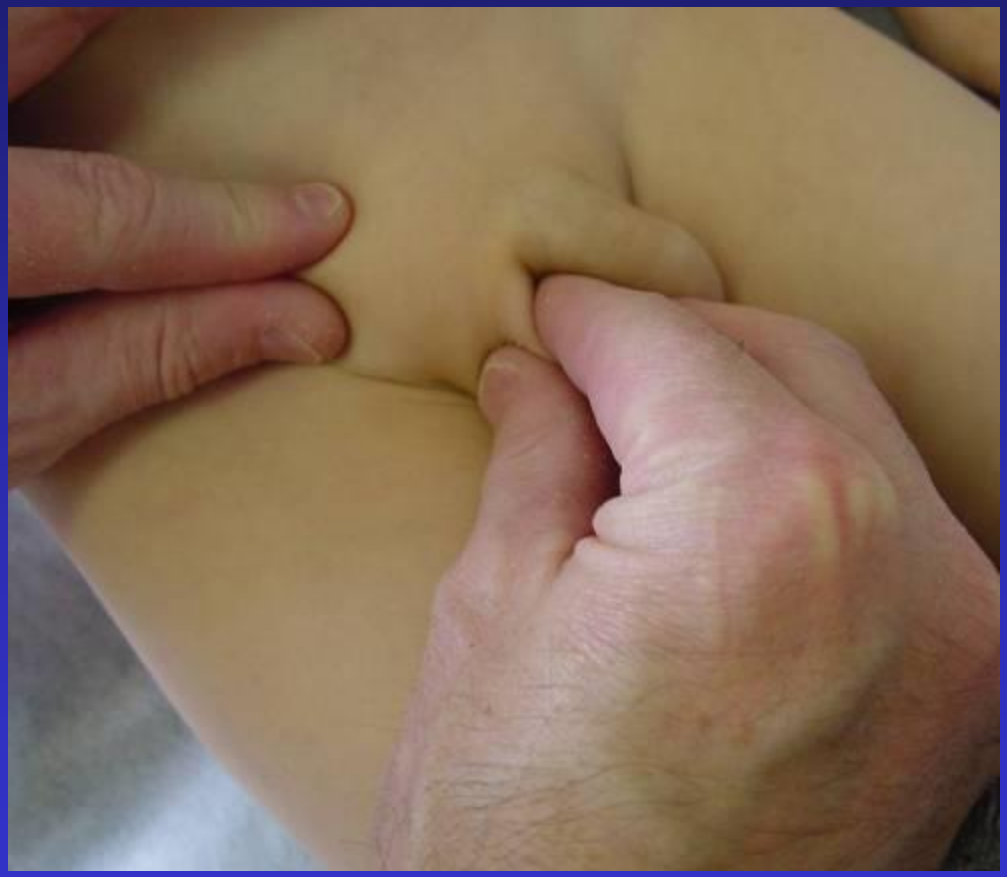
# Incarcerated/Strangulated Hernias





# Hernia Reduction

## Do not fight with the hernia!



# Specific Scenario

## Cannot identify hernia on exam

- History atypical
  - Repeat exam in 3-4 months.
  - Ask patient/parent to document any bulge with picture.
- History typical
  - Refer to a pediatric surgeon.
  - Surgery may be scheduled pending confirmation by photos.

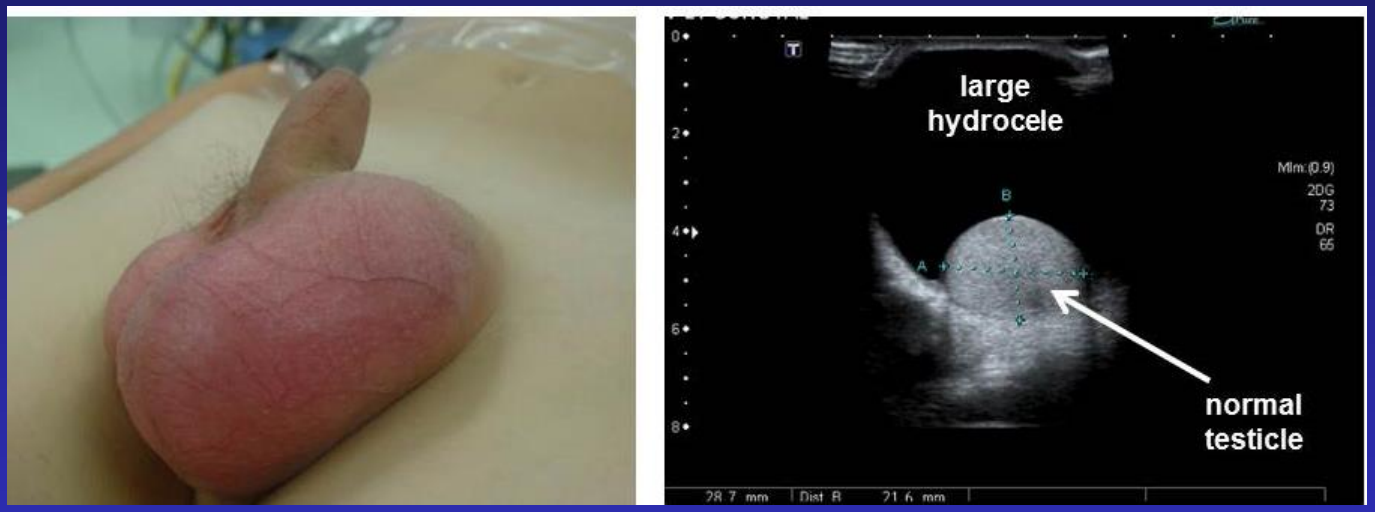
# Specific Scenario

## Hernia in a baby < 6 months old.

- Urgent referral to a pediatric surgeon.
- Rates of incarceration much higher, especially with prematurity.

# Specific Scenario

## New hydrocele in a child > 5 years old

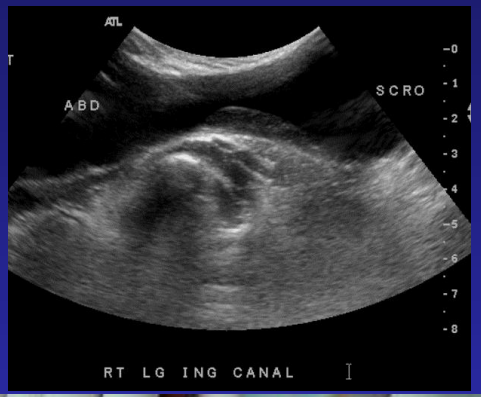



- Ultrasound indicated.
- Possible secondary hydrocele.
- Possible testicular mass.

# Specific Scenario

## Enlarging Hydrocele in Infancy

- Suspect abdomino-scrotal hydrocele.

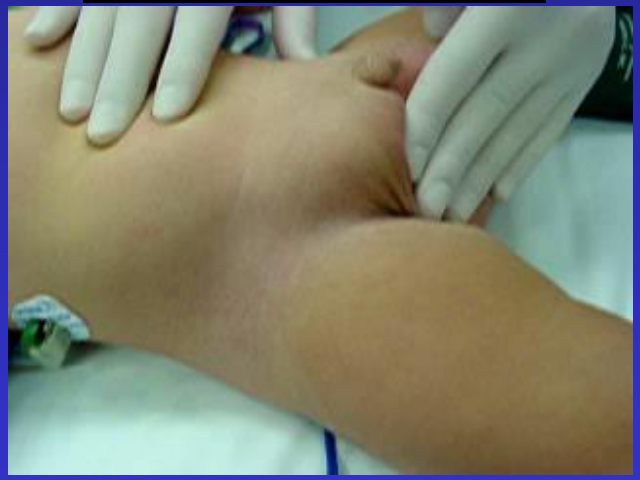



JOURNAL OF LAPAROENDOSCOPIC & ADVANCED SURGICAL TECHNIQUES
Volume 22, Number 4, 2012

DOI: 10.1089/lap.2011.0242

The Value of Laparoscopy in the Management of Abdominoscrotal Hydroceles

Kathryn Martin, MD, Sherif Emil, MD, CM, and Jean-Martin Laberge, MD



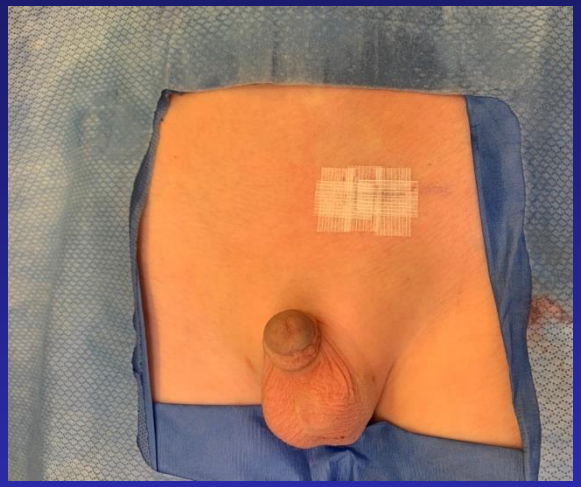
Spring-back Ball Sign

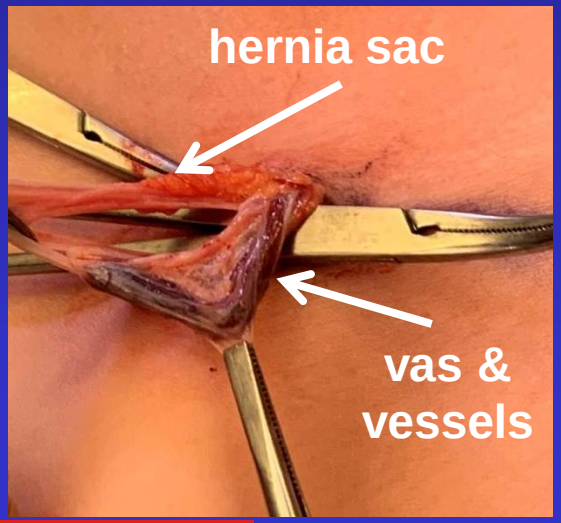
# Management of Hydroceles

- High rate of spontaneous resolution when present at birth.
- Observation through age 2 years.
- Repair through an inguinal hernia approach in children.
- Scrotal repair in adolescents.

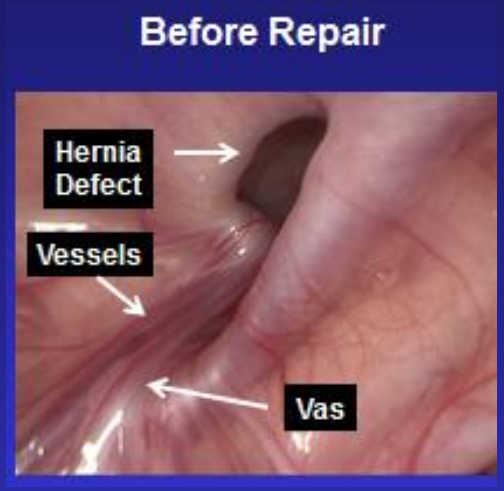
# Management of Inguinal Hernias

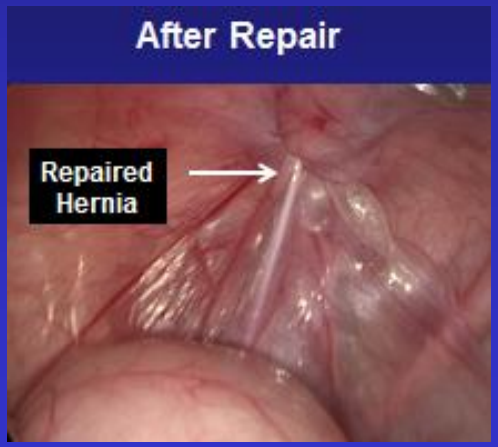
## Open






## Laparoscopic



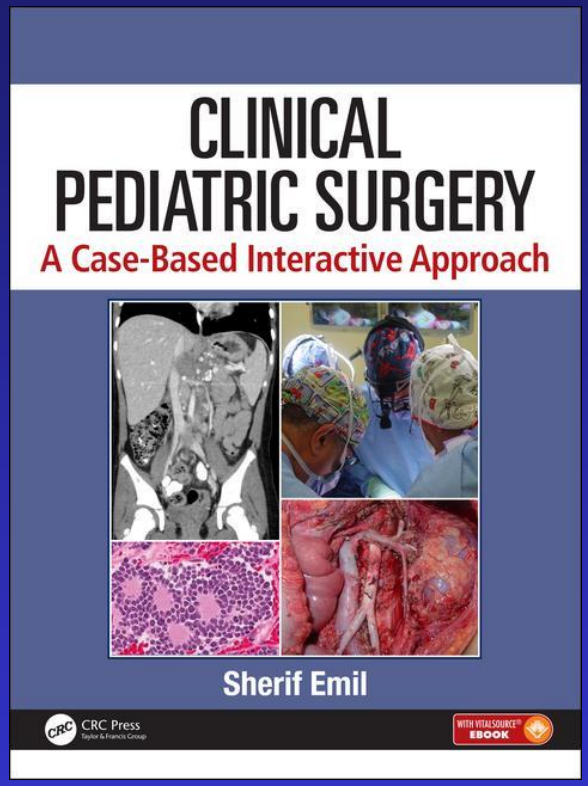
# Thank You!

# Merci!


**TEL:** 514 412 4497

**Fax:** 514 412 4289

**EMAIL:** Sherif.Emil@McGill.ca


**@DrSherifEmil**

**Sherif Emil**

**Sherif Emil**

McGill

Hôpital de Montréal pour enfants
Centre universitaire de santé McGill

Montreal Children's Hospital
McGill University Health Centre