

# American Pediatric Surgical Association

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## Standardized Toolbox of Education for Pediatric Surgery

### Childhood Hernias

APSA Committee of Education

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# CHILDHOOD HERNIAS

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# OBJECTIVES

- **Describe the pathophysiology of inguinal hernias and umbilical hernias**
- **Use history and physical examination to distinguish between inguinal hernias, communicating hydroceles, and noncommunicating hydroceles**
- **List the basic steps of the operation, including common risks of the procedure**



# INGUINAL HERNIAS

- Almost all pediatric hernias are indirect
- Occurs 1-5% of children, 16-25% of premature babies
- More common in boys
- 60%-R; 30%-L; 10% bilateral
- “Incarcerated” aka “irreducible” -- viscera cannot be reduced
- “Strangulated” -- visceral blood flow is compromised



# PATHOPHYSIOLOGY

- **“Processus vaginalis” --peritoneal diverticulum extending through the internal ring at 3 months gestation**
- **As testis descends at 7-9 months, the processus elongates into the scrotum**
- **The processus vaginalis normally spontaneously obliterates, closing the internal ring**
- **If the processus does not obliterate along its entire length, a hernia or hydrocele occurs**
  - **The hydrocele can be communicating, noncommunicating, or of the cord/canal of Nuck**



# CASE STUDY

**3 month old boy referred for a “groin bulge” found during his well-baby check**

**Active baby**

**VS: 36.8°C, HR 120, RR 25, BP 70/50**

**GU: bilateral descended testes, soft fullness in the right groin extending to scrotum**



# HISTORY

- **Think incarceration/strangulation if there are symptoms of**
  - **irritability**
  - **groin pain**
  - **abdominal distention/pain**
  - **vomiting**



# HISTORY

- If the patient presents only with *scrotal* swelling, differentiate between a *communicating* or a *non-communicating* hydrocele
  - Ask the caregiver whether the scrotal size fluctuates
  - If scrotal size fluctuates, there is a “communication” to the abdominal cavity” → this should be considered a hernia and should be repaired
  - If scrotal volume is stable, it is likely a non communicating hydrocele → in this case, the hydrocele can be cautiously observed for one year for spontaneous resolution



# HISTORY

- **Conditions with increased intraabdominal pressure increase the risk of hernia**
  - **prolonged ventilation as a newborn**
  - **chronic respiratory disease, cystic fibrosis**
  - **peritoneal dialysis**
  - **VP shunt**



# PHYSICAL EXAM

- **If the bulge is not readily apparent, try maneuvers to increase abdominal pressure**
  - **In a baby, gently straightening arms above the head and keeping the knees straight may make them cry**
  - **Ask a cooperative toddler or child to jump several times**
- **Reduce the bulge if it does not spontaneously reduce**
- **Palpate for a thickened spermatic cord**



# STUDIES

- **Typically, no labs or imaging are necessary because the diagnosis is made on a clinical basis**

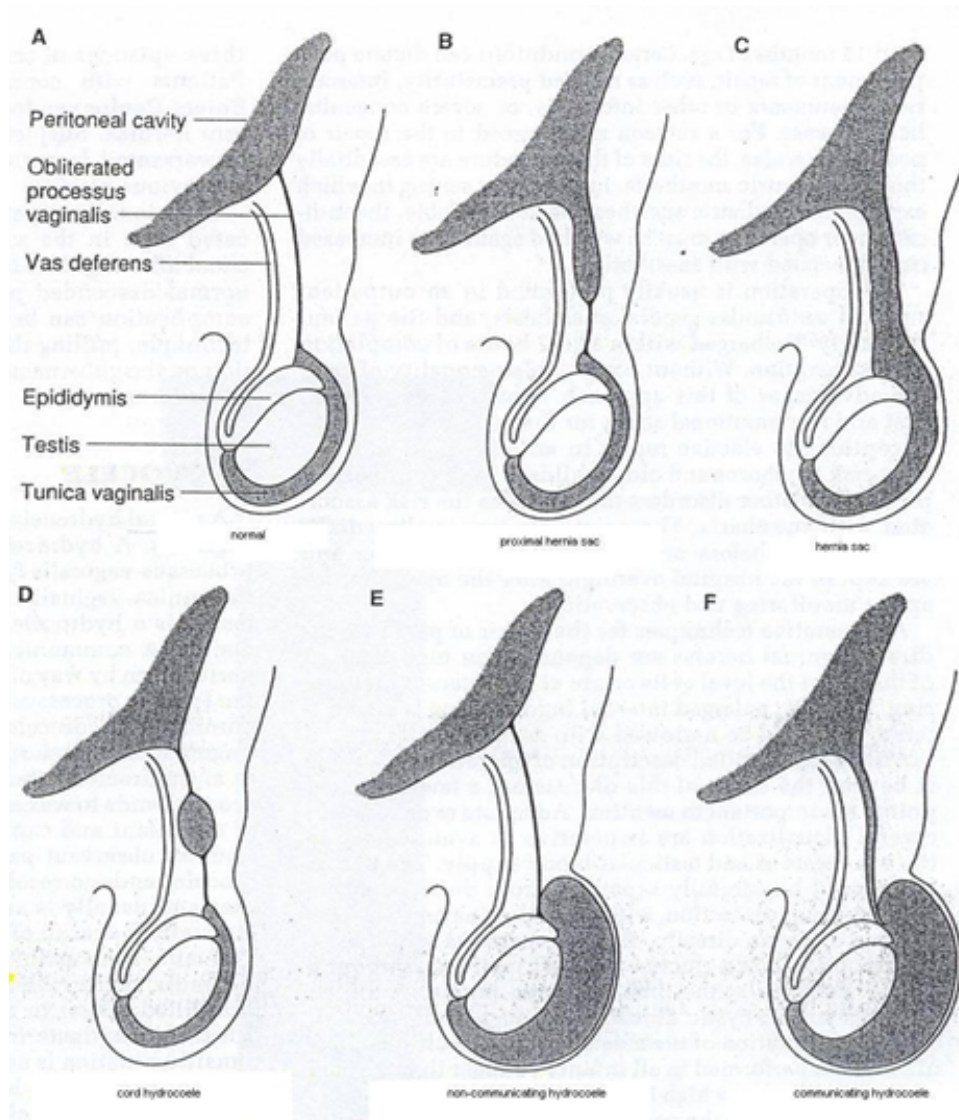


# DIFFERENTIAL DIAGNOSIS

- **Inguinal hernia**
  - reducible
  - incarcerated +/- strangulated
- **Hydrocele**
  - communicating
  - noncommunicating
    - of cord, scrotal



# DIFFERENTIAL DIAGNOSIS



# MANAGEMENT

- **Reducible IH: urgent elective repair 2-4wks**
- **Incarcerated IH: hydrate, sedate, reduce → urgent repair 24h-1wk**
  - **If unable to reduce: emergent exploration/repair**
- **Contralateral exploration controversial**

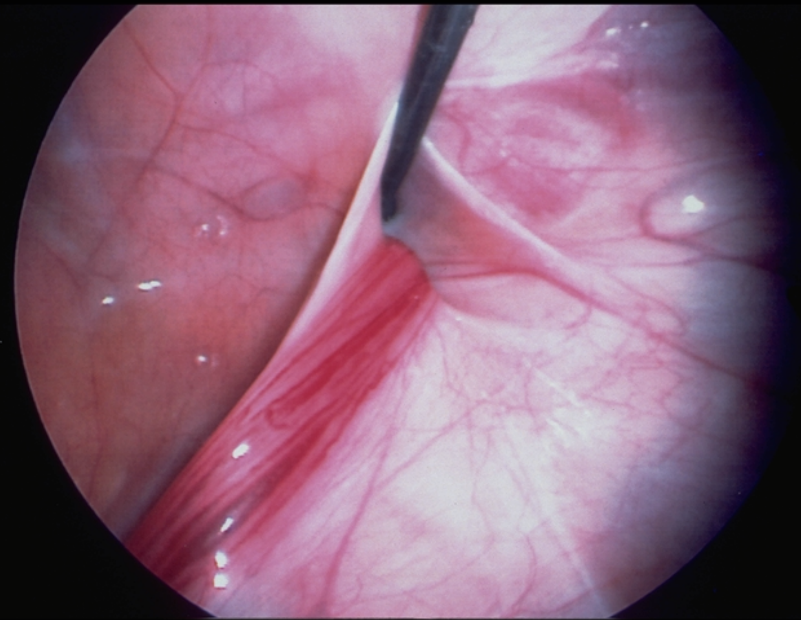
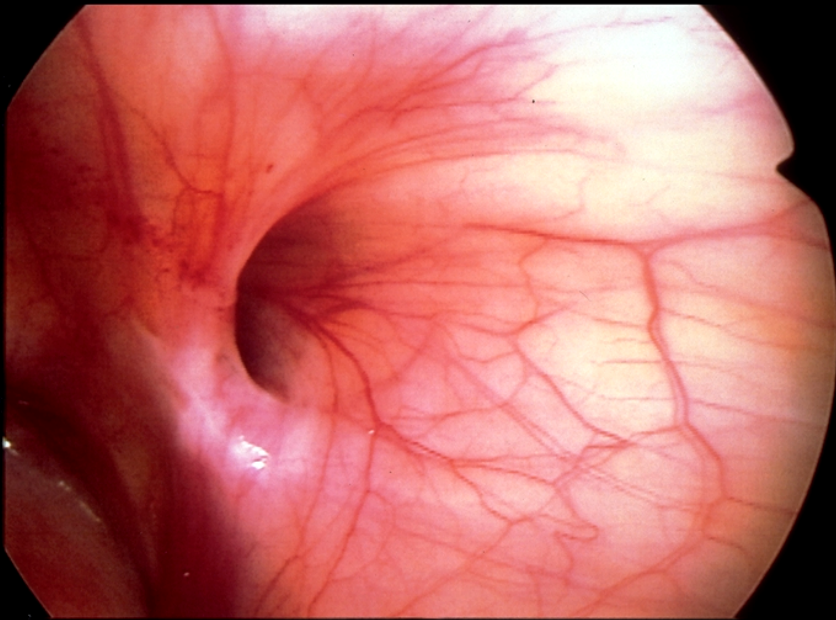


# OPERATIVE REPAIR

- **Open**
  - Lower skin crease incision
  - Open external oblique fascia vs repair via external ring
  - Separate cremasteric fibers
  - Separate sac from cord structures, divide sac
  - Ligation of sac at internal ring
- **Laparoscopic**
  - Ligation of sac at internal ring



# OPERATIVE REPAIR - Laparoscopy



# COMPLICATIONS

- **bleeding (<1%)**
- **infection (<1%)**
- **damage to the vas deferens (fertility rate preserved)**
- **damage to spermatic cord vessels → testicular atrophy (1%, up to 5% for incarcerated)**
- **ascending testis (0.2%)**
- **recurrence (<1% for uncomplicated, 15% prems, up to 20% for incarcerated)**



# UMBILICAL HERNIAS

- **Spontaneous closure is rule rather than exception**
- **Majority close by age 3 years**
- **Indications for repair**
  - **symptomatic/incarcerated**
  - **no progress to spontaneous closure > 3 years**



# EPIGASTRIC HERNIAS

- Present as supraumbilical midline mass(es)
- Herniation of preperitoneal fat
- Mark the hernia site preop, as the location is not obvious once supine



# QUESTIONS

**A 2 year old boy presents to ER with an incarcerated hernia. IV sedation is required, but you are able to reduce the hernia. The most appropriate plan for operative intervention is:**

- a. Admit and repair during this admission**
- b. Wait until he is 50 weeks CGA then repair hernia**
- c. Discharge and schedule elective repair at any time**



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# QUESTIONS

**A 2 month old girl has an umbilical hernia (1.5 cm fascial defect), which appears to get larger when she cries. Appropriate management would include:**

- a. Reassuring her parents that the umbilical hernia needs no surgical intervention at this time.**
- b. Scheduling repair since the hernia will continue to enlarge with time.**
- c. Scheduling repair in the next 2 weeks since the hernia will likely incarcerate**



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# FINAL REVIEW

1. Pediatric inguinal hernias are **INDIRECT**
2. Inguinal hernias are more common in boys, on the R, and in preemies
3. Intermittent presence of the finding indicates communication i.e. hernia or communicating hydrocele
4. Hernia/hydrocele is a clinical diagnosis
5. Inguinal hernias do not close spontaneously whereas umbilical hernias often do



# ACKNOWLEDGEMENT SLIDE

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**The preceding educational materials  
were made available through the  
American Pediatric Surgical  
Association**

**In order to improve our educational  
materials we welcome your  
comments/ suggestions:**

[www.eapsa.org](http://www.eapsa.org)

