American Pediatric Surgical Association

Standardized Toolbox of Education for Pediatric Surgery

Hernias

APSA Committee of Education 2012-13

STEPS
STANDARDIZED TOOLBOX OF EDUCATION FOR PEDIATRIC SURGERY

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CHILDHOOD HERNIAS

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OBJECTIVES

- Understand the pathophysiology of inguinal hernias
- Learn elements in the history and physical examination pertinent to the diagnosis of inguinal hernias
- Understand the basic steps of the operation, including common risks of the procedure.

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INGUINAL HERNIAS

- Almost all pediatric hernias are <u>indirect</u>
- Occurs 1-5% of children
- More common in boys
- 60%-R; 30%-L; 10% bilateral
- "Incarcerated"--viscera is stuck in sac
- "Strangulated"--visceral blood flow is compromised

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INGUINAL HERNIAS: PATHOPHYSIOLOGY

- "Processus vaginalis"--peritoneal diverticulum extending through the internal ring at 3 months gestation
- As testis descends at 7-9 months, a portion of the processus is dragged into the scrotum
- The processus vaginalis normally obliterates
- If the processus does not obliterate, a hernia or hydrocele occurs

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Case Study

- **3 month old boy referred for a "groin bulge" during his well-baby check**
  - **Active baby**
  - **VS: 36.8°C 120 25 70/50**
  - **Small umbilical hernia**
  - **Full right hemiscrotum with bilateral descended testes, fullness in the right groin**

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History Discussion

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

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History Discussion

- **If the patient presents only with scrotal swelling, the provider should differentiate whether the patient has a communicating or a non-communicating hydrocele.**
  - **Ask the caregiver whether there are changes in the volume of the scrotum**
  - **If change is seen, there is a "communication" to the abdominal cavity"—this should be considered a hernia and should be repaired.**
  - **If scrotal volume is stable, it should be considered a "non communicating hydrocele". In this case, a hydrocele can be cautiously observed for one year. If the swelling is still present at that time, then a hernia repair should be undertaken**

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History Discussion

- **Premature infants and twins have a higher likelihood of having an inguinal hernia.**

- **Other risk factors of having a hernia include those that increase intraabdominal pressure (e.g., prolonged ventilation as a newborn, need for peritoneal dialysis or ventriculoperitoneal shunt**

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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 the cry.**
  - **Ask a cooperative toddler or child to jump several times in place.**

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Studies

- **Typically, no labs or imaging are necessary**

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Case Discussion

- **Differential diagnosis**
  - **Incarcerated hernia**
  - **Strangulated hernia**
  - **Acute hydrocele**

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INGUINAL HERNIAS: PLANS/MANAGEMENT

- Asymptomatic, easily reducible hernia: elective repair within one month
- Incarcerated hernia: IV hydration, sedation, attempted reduction, and repair within 24 hrs
- Strangulated hernia: IV hydration, antibiotics, urgent operation
- Easily reducible hernias should be repaired within one month of diagnosis
- In boys < 2 years old and girls < 5 years old, surgeon should rule out a contralateral hernia if only one side is clinically apparent
  - Diagnostic laparoscopy (through hernia sac or umbilicus)
  - Groin exploration

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CONSENT

- **Risks to discuss: bleeding (<1%), infection (<1%), damage to the vas deferens and spermatic cord (rare).**
- **Antibiotics not necessary, unless bowel strangulated at the time of operation.**

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OPERATIVE REPAIR

- Incision in lower abdomen (lowest abdominal crease)
- Open Scarpa's fascia and external oblique aponeurosis at external ring
- Separate cremasteric fibers from the sac.
  - Sac is anterior. In boys, sac is medial to the cord
- Sac is suture ligated at the level of the internal ring.

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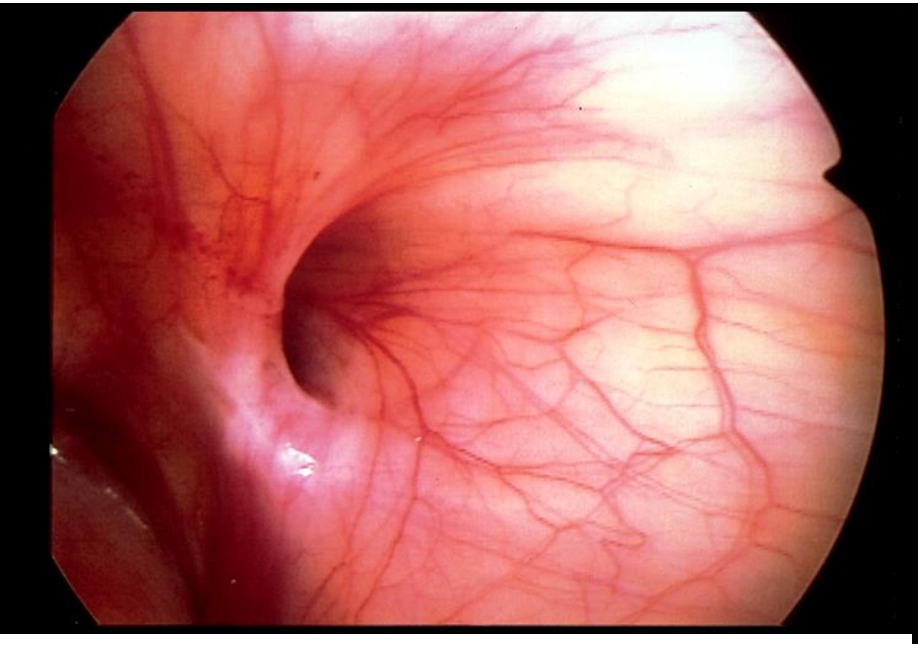
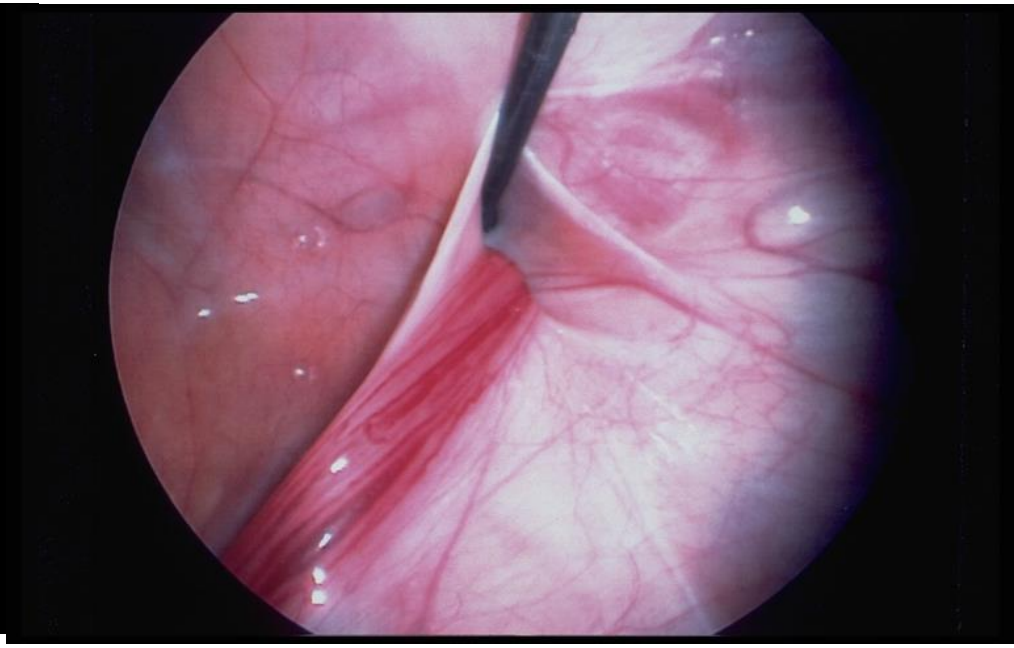
Diagnostic Laparoscopy





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Outcomes

- Outpatient surgery with return to normal activities within 1 week
- Operative complications
  - bleeding
  - infection (<1%)
  - injury to cord structures (<2%)
- Recurrence 0.5-1%
- Infertility

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Post-operative Management

- **Babies <52 weeks Post Menstrual Age (PMA) are routinely admitted after general anesthesia to monitor apnea and bradycardia**
  - **Young infants are sensitive to GA and narcotics**
  - **Propensity for A & B most pronounced in former premies**
- **Some infants can be done under spinal anesthesia.**
- **Often a single shot caudal block is administered by anesthesia which gives 4-6 hrs of pain control**

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UMBILICAL HERNIAS

- Spontaneous closure is rule rather than exception
- Majority close by age 3 years
- Two factors: age > 4 years; diameter > 2 cm
- Timing of operation
  - symptomatic for incarceration or pain--immediate
  - asymptomatic --at school age
  - large, proboscis like--1-2 years

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Umbilical Hernias

- **Use if needed for rare or classic board questions**

- **Eg. Umbilical hernia**
  - **Could contain urachus, or omphalomesenteric duct**

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Epigastric Hernias

- Epigastric hernias present as bumps in the supraumbilical midline.
- Palpable mass is preperitoneal fat
- On the day of surgery, remember to mark the hernia with a surgical marker prior to the operation.
  - The mass may be difficult to locate once the child is asleep

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Questions

- **You reduce an inguinal hernia in 2-week old boy in the ER. He required IV sedation. The reduction was moderately difficult. The most appropriate plan for operative intervention is:**
  a. **Admit and plan repair during this admission**
  b. **Wait until he is 52 weeks PMA and repair hernia**
  c. **Discharge and elective repair at any time**

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Questions

- **A two-month old baby has a large umbilical hernia (2 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. **Planning an elective operation within the next 6 weeks since the hernia will likely enlarge with time.**
  c. **Scheduling a repair in the next 2 weeks since the hernia will likely incarcerate**

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Questions

- **A diagnostic laparoscopy performed at the time of surgery is most applicable to which patient?**
  a. **An 8 year old girl with a right inguinal hernia.**
  b. **A 12 year old boy who was found to have a right inguinal hernia after he was "straining" while weight lifting.**
  c. **A 6 month old otherwise healthy boy with a left inguinal hernia found on a well baby check.**

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Final Discussion/Review

- **Top 5 take home points for disease**

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