

PediatricsⁱⁿReview[®]

Inguinal Hernia

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Pediatrics in Review 2003;24;34

DOI: 10.1542/pir.24-1-34

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detector, nasal air flow meter, heart rate monitor, and a pulse oximeter. More complex instruments may have a pH probe and provide electroencephalographic monitoring. In 1996, criteria were set to standardize PSG interpretation in children. An abnormal study is defined by an apnea index (AI) greater than 1, an apnea/hypopnea index (AHI) greater than 5, blood carbon dioxide levels of 45 mEq/L (45 mmol/L) for more than 60% of sleep time or 50 mEq/L (50 mmol/L) for more than 10% of sleep time, and a minimum oxygen saturation lower than 92%.

Not all children suspected of having OSA require PSG, particularly when the indication for a tonsillectomy and adenoidectomy is already clear. PSG can provide critical information when there

is uncertainty about the severity of OSA, in the presence of severe neurologic disease, with a very young child, and with a medical condition that might complicate surgical intervention. The major disadvantages of PSG are its expense and the time required for the study.

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Comment: As Drs. Matiz and Roman point out, the association between OSA and obesity is not as strong in children as it is in adults. About one third of children who have OSA actually are underweight, which makes sense, con-

sidering how failure to thrive might well be the consequence of poor sleep and chronic hypoxemia in a growing organism. The association of massive obesity with hypoventilation, daytime somnolence, and OSA has been called the Pickwickian syndrome. In fact, the syndrome is misnamed. In Dickens' *Pickwick Papers*, the hero, although portly, is neither obese nor somnolent, and he is not remarkable for his snoring. Mr. Wardle's young servant, known as "the fat boy, Joe," has all the appropriate characteristics, but "Joe's syndrome" doesn't have much of a ring.

*Henry M. Adam, MD
Editor, In Brief*

In Brief

Inguinal Hernia

The Acute Groin in Pediatrics. Gilchrist BF, Lobe TE. *Clin Pediatr.* 1992;31:488–496

Pediatric Hernias and Hydrocoeles. Kapur P, Caty MG, Glick PL. *Pediatr Clin North Am.* 1998;45:773–789

Evaluation and Management of Inguinal and Umbilical Hernias. Katz DA. *Pediatr Ann.* 2001;30:729–789

Hernia Survey of the Section on Surgery of the American Academy of Pediatrics. Weiner ES, Touloukian RJ, Rodgers BM, et al. *J Pediatr Surg.* 1996;31:1166–1169

An inguinal hernia is a protrusion into the groin of a portion of an abdominal organ or tissue (most commonly small bowel) through a persistently patent processus vaginalis. In the pediatric population, the incidence ranges from 1% to 4%. Children present most frequently with inguinal hernia during infancy, and preterm infants in particular

have an increased occurrence. Affected boys greatly outnumber girls, and often there is a positive family history. Patients who have abdominal wall defects (exstrophy of the bladder, prune belly syndrome), connective tissue disorders (Ehlers-Danlos syndrome), chronic respiratory disease (cystic fibrosis), or undescended testes are at especially high risk for inguinal hernias. Any process that causes an increase in intra-abdominal pressure, such as ascites, peritoneal dialysis, or ventriculoperitoneal shunting, may make apparent a previously unrecognized inguinal hernia.

There are three types of inguinal hernia: indirect, direct, and femoral. Indirect hernias, which enter the inguinal canal through the abdominal (internal) inguinal ring, are most common in children, accounting for more than 95% of cases, and most frequently are located on the right side. In about 10%

of cases, there are bilateral hernias. Usually the content of the hernia is bowel, but in females an ovary or fallopian tube may be found.

Often the suspicion of a hernia arises when parents give a history of an intermittent bulge in the groin. Although inguinal hernias do not cause discomfort unless they become incarcerated, some parents report that their child seems fussier when the bulge protrudes.

When examining a patient who may have a hernia, the pediatrician should have the child lie supine. If no inguinal mass or asymmetry is observed, several simple maneuvers can help make the hernia protrude: having the child stand and perform a Valsalva maneuver or stimulating an infant to cry. A spermatic cord that feels thicker on one side than the other when gently palpated near the pubic tubercle (silk glove sign) is evidence of a reduced hernia.

Even in the absence of any physical findings indicative of an inguinal hernia, a suggestive history given by the parent is sufficient reason to consult a surgeon.

Besides a hernia, the differential diagnosis of an inguinal mass includes a hydrocele, testicular torsion, lymphadenopathy, and tumor. Patient evaluation is guided initially by the history, including whether the mass is acute or chronic, its location, and whether it is accompanied by pain.

Reducible inguinal hernias generally do not cause discomfort, and the intermittent inguinal or scrotal swelling reported by parents usually has persisted for some time. Similar to hernias, hydroceles are scrotal in location and do not cause discomfort. Although they may enlarge through the course of the day, hydroceles most commonly do not reduce fully. Transillumination is not reliable in distinguishing between a hydrocele and a hernia; especially in infants, hernias can be translucent. A boy who has testicular torsion presents with sudden, severe pain and acute swelling of the scrotum. If a hernia incarcerates, the clinical picture

can be similar, including acute onset of pain, often with vomiting, and an irreducible mass. An enlarged lymph node may appear suddenly as a mass in the inguinal area, usually associated with a local infection. Lymphoma also may present in the inguinal area as an enlarging, nonresolving lymph node that is firm and rubbery.

In most cases, findings from the history and physical examination are sufficient to establish the presence of an inguinal hernia. Radiographic studies are not usually helpful. Once the diagnosis is confirmed by a surgeon, an elective operative repair should be scheduled. If the hernia is incarcerated, it must be reduced immediately to avoid strangulation, necrosis, and perforation. Manual reduction of an incarcerated hernia involves keeping the child as calm and comfortable as possible, using sedation and analgesia as needed. The patient should be placed in a Trendelenburg position, and if gentle manipulation with upward pressure does not reduce the mass, immediate surgery is indicated. Even with manual reduction, the risk for reincarceration is

sufficiently high to warrant urgent, if not immediate, repair.

The surgical procedure performed to repair an inguinal hernia is a high ligation of the hernial sac. Investigation of the contralateral side for possible hernia is still debated because the incidence of bilateral involvement is only about 10%. Preterm infants and those who have a positive family history or left-sided hernias are at increased risk for bilateral involvement. A survey of the Section on Surgery of the American Academy of Pediatrics found that 65% of surgeons routinely explore the contralateral inguinal area in boys younger than 2 years of age and 84% do so in girls younger than 4 years old.

In general, the operative outcome of an inguinal hernia repair is good. Postoperative complications occur most frequently after repair of an incarcerated hernia. Early diagnosis and treatment of inguinal hernia is the key to avoiding complications.

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