



# Surgically correctable hernias in children

## by Chip Uffman, M.D., MPH

Hernias represent one of the most frequent surgically correctable problems in children and one of the most common procedures performed by a pediatric surgeon. Inguinal and umbilical hernias together combine to account for more than 90 percent of all hernias seen in our practice. Pediatric surgeons are specially trained in the evaluation and management of childhood hernias.

Being able to recognize and differentiate the types of hernias is critical to timely repair. The pediatric surgeon will determine when an operation is needed based on the location of the hernia, the age of the patient and other characteristics as outlined below.

## Hernia presentation

Most hernias present as an asymptomatic bulge in the groin or abdomen that is noticed by parents or the pediatrician on examination. The bulge is frequently worse with episodes of increased abdominal pressure such as crying or straining with a bowel movement. Older children may present with an asymptomatic bulge or with one that gives some discomfort during periods of exercise. Incarcerated hernias may present with entrapment of the bowel and significant pain in the groin or abdomen. They also occasionally present with signs of obstruction.

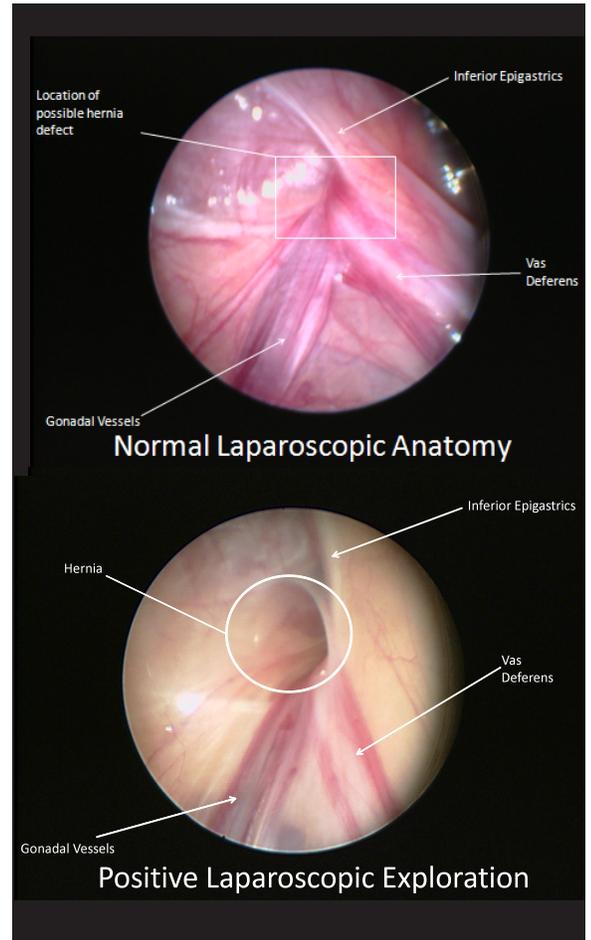
## Characteristics of hernias

- **Reducible** – A hernia whose contents are able to be returned to their normal anatomic site. Reducible hernias are not an emergency, but may require an expeditious operation.
- **Incarcerated** – A hernia whose contents are swollen or fixed within the hernia sac. Contents are unable to be returned to the normal location. These warrant urgent referral to a pediatric surgeon for evaluation. Pediatric surgeons are specially trained in reduction and repair of pediatric incarcerated hernias.
- **Strangulated** – An incarcerated hernia with resulting ischemia can present with signs of obstruction or intestinal necrosis. These require emergent repair and possible bowel resection. Timely intervention of a strangulated hernia may prevent the significant loss of the intestine, ovaries or testes.

## Inguinal hernias/hydrocele

### Pathophysiology

Some studies suggest that between 80 and 100 percent of infants are born with a patent processus vaginalis; however, the majority of these close within the first six months of life. Inguinal hernias result from the failure of the processus vaginalis to close. The defect allows for the passage of intra-abdominal contents through the defect. Hydroceles will present as a swelling in the scrotum that may fluctuate in size or remain constant. A communicating hydrocele is essentially a small hernia. Obtaining an accurate history from the parents will help to distinguish a communicating hydrocele from a non-communicating hydrocele.



## Examination

- Visually inspect the bilateral groin.
- Palpate both testicles while examining for hernias to help differentiate a true hernia from a retractile testicle.
- Feel for enlargement or thickening of the spermatic cord (silk-glove sign).
- Older children may be examined in a standing position and asked to Valsalva.
- In infants, crying may help to elicit a hernia.
- Demonstrating reduction in the size of paratesticular fluid will delineate a communicating hydrocele.

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## Timing and indications for surgical referral

- Asymptomatic reducible hernias may be repaired electively.
- Symptomatic hernias or those with history of incarceration need to be repaired in an urgent fashion. Strangulated hernias are a true surgical emergency and need evaluation immediately to prevent bowel loss.
- In most premature infants, repair prior to discharge from the hospital is recommended due to the high rate of incarceration in this population.
- Hydroceles may be observed until six months to a year. A history in change in size of the fluid denotes a communicating hydrocele which may need to be repaired sooner.

## Techniques

Repair of hernias in children differs from adult hernia repair. Handling of the delicate tissue in a pediatric hernia requires special expertise for which pediatric surgeons are specifically trained. Childhood hernias are congenital whereas adult hernias may be acquired. The fundamental technique in repair of indirect inguinal hernias in children is high ligation of the hernia sac. Usually this is accomplished via an open groin incision. Depending on the age of the child at presentation, exploration of the contralateral groin is recommended. This is routinely performed by pediatric surgeons, but not typically done in adult patients.

Several methods of exploration exist. Traditionally, a contralateral groin incision was made and the opposite inguinal canal was explored. Modern techniques now allow for laparoscopic evaluation of the contralateral groin. This provides excellent visualization of the anatomy and saves an unnecessary incision and dissection in a patient with a negative exploration. In some selected patients, completely laparoscopic repairs are available.

## Umbilical hernia

### Pathophysiology

The umbilical ring begins to close as gestation progresses. Umbilical hernias are frequently present for several weeks after umbilical separation and most of these are noticed by 6 months of age. Many of these defects will spontaneously close by 3 years of age; especially those with umbilical rings less than 1 cm. Defects greater than 1.5 cm are less likely to close. The degree or amount of protrusion of an umbilical hernia does not impact umbilical ring closure. Incarceration and strangulation are rare events in children. Most umbilical hernias are asymptomatic in children; however, a few present with vague abdominal pain.

## Examination

- Visually inspect for bulge at umbilicus.
- Palpate for umbilical ring noting diameter of the defect.
- Observe for any drainage or granulation tissue. This may represent other unique pathology found in children such as persistent urachus or omphalomesenteric duct.

## Timing and indication for surgical referral

- With the exception of a proboscoid variant, umbilical hernias should be observed until age 2.
- Small hernias (<1.5 cm) should be observed until age 4-5 years as many of these will spontaneously close.
- Children that have persistent defects after 5 years of age usually require operative closure.

## Techniques

The fundamentals in repair of umbilical hernias include reduction of the contents and fascial repair.

This can usually be performed as an outpatient with minimal post-operative discomfort.

## Similar problems that may require evaluation by a pediatric surgeon

### Epigastric hernia

Epigastric hernias are small facial defects in the linea alba that can occur anywhere from the xiphoid to the pubis. These frequently present with a small noticeable bulge with crying or straining. These congenital defects are uncommon, but require repair when found (regardless of age) due to a relatively high rate of incarceration. Repair is straightforward and comprises of closing the fascial defect. These may be repaired on an outpatient basis.

### Diastasis recti

Diastasis recti is often present in young children due to lack of strength of the linea alba. It presents as a ridge running down the midline from the xiphoid to the umbilicus. It is usually prominent with straining and may disappear with relaxing the abdominal muscles. Underlying epigastric hernias should be ruled out. These would appear as small bulges within the prominent ridge. Ultrasound may be helpful if an epigastric hernia is suspected. In the absence of an epigastric hernia, no surgical repair is required. The diastasis will resolve as abdominal musculature develops further.

For consultations or referrals please contact:

Cook Children's Pediatric Surgery

1433 W. Humbolt  
Fort Worth, TX 76104  
682-885-7080 phone

[www.cookchildrens.org/pediatricsurgery](http://www.cookchildrens.org/pediatricsurgery)

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