Pediatric Inguinal Hernia Repair

Jason Fader, Jason Axt

Introduction:

Pediatric inguinal hernia repairs are among the most common pediatric surgical procedures performed. In a resource-limited setting, the timing of repair is limited by safety of anesthesia. We usually defer large and easily reducible hernias until one year of age. If the child presents earlier than this with a reducible hernia, the family needs to be taught how to recognize and reduce it. If the hernia cannot be reduced the patient needs immediate medical evaluation for possible strangulation. When a hernia is difficult but ultimately reducible, I generally operate as soon as a rested team and competent anesthetist are available. The tissues may be inflamed and more delicate immediately post reduction. If the hernia is non-reducible, it needs to be operated on immediately.

Diagnosis is made by a history of an intermittent swelling of the inguinal canal and/or scrotum. This may or may not be evident in clinic. The parents can be asked to take a photo of the bulge. On physical exam, the surgeon's index finger or thumb rolls over the cord to determine its size and to feel the presence of a sac. If the cord is larger than normal, this means there is likely a hernia sac as part of the inguinal cord. A typical cord in an infant is about 2 or 3 mm and an enlarged one is 5+ mm, so the difference is not always easy to distinguish. Note that this is different than the method of diagnosing a hernia in an adult.

Infantile hydroceles may spontaneously resolve up to one year of age. Any new hydrocele in a child merits and abdominal ultrasound to evaluate for a neoplasm causing the hydrocele. If the child is above one year of age and has been evaluated for tumor, they can be addressed in the same way as inguinal hernias. Most hydroceles have a persistent processus vaginalis that can be ligated, just like an indirect hernia.

The operation consists of:

- 1.5cm incision
- Identify and isolate the sac from the other cord structures
- High ligation of the sac
- Subcutaneous and skin closure

Steps:

1. General or spinal anesthesia may be used, Ketamine is often utilized.
2. Prepare and drape the inguinal area, including the scrotum.
3. Palpate the cord and make a 1.5 cm incision in an inguinal crease superficial to the cord and lateral to the pubic symphysis, going through the dermis. Note: a scalpel makes a much nicer closure than a diathermy. A diathermy is not necessary for this case.

Palpate the cord to locate the area you will make an incision.

Measure to approximately 1.5cm in a skin crease using an open hemostat.

4. Identify and generously cut Scarpa's fascia

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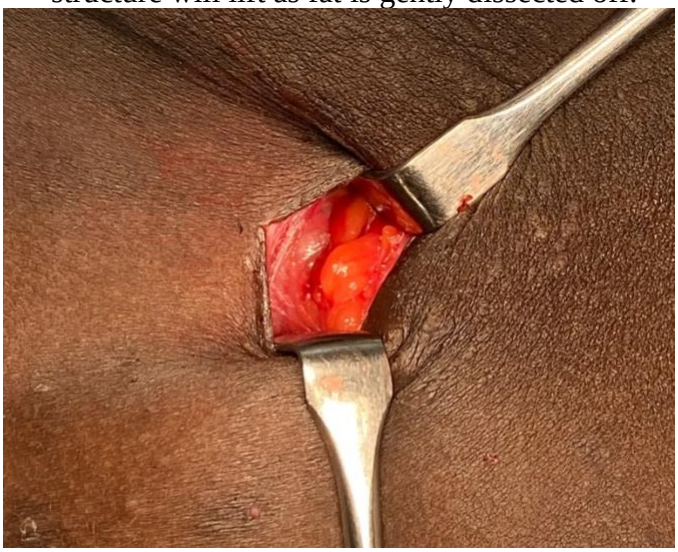
Opening Scarpa's fascia allows access to the plane containing the external inguinal canal and the spermatic cord.

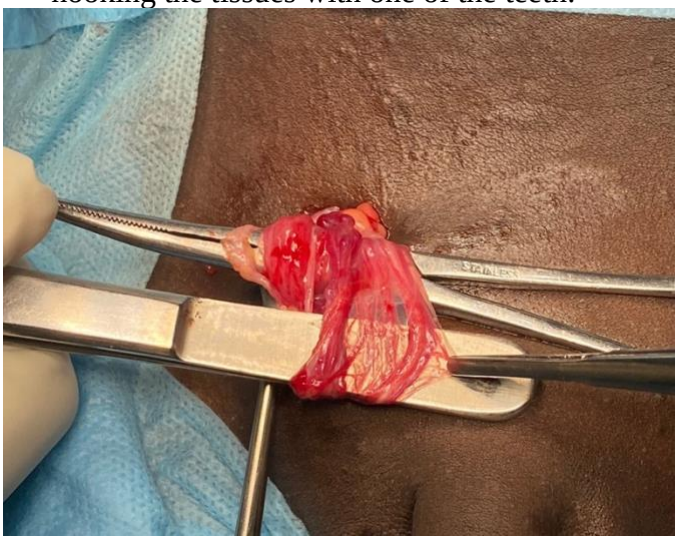
5. Use two small retractors (Ragnell or Senn) to separate the subcutaneous tissue and then use a fine hemostat find the cord as it exits the external inguinal ring. The cord and sac usually bulge up into the field and should be lightly grasped and "wiggled" up out of the incision. The correct structure will lift as fat is gently dissected off.



Opening of the external ring with fat protruding. The cord structures and hernia sac will be found under this bulge.

As the cord comes into the field a forceps or hemostat can be passed under it.

6. The sac is then bluntly dissected from the other cord structures (vas deferens, testicular artery, pampiniform venous plexus, and cremaster muscles.) We use a fine toothed (Adson) forceps for this, keeping the forceps open and just hooking the tissues with one of the teeth.



The cord is separated from the sac. A flat instrument is placed under the vas, testicular artery, and venous plexus, and the vas is confirmed by palpation. It is firm like a hard spaghetti noodle.

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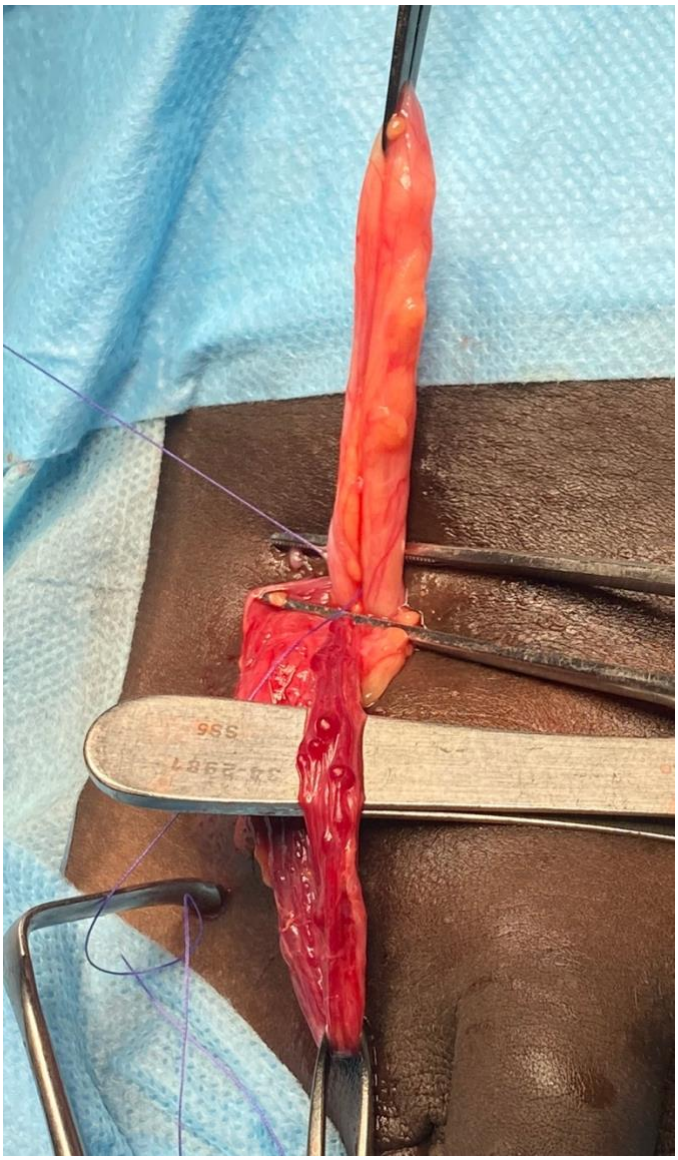
With the cord under gentle tension, the sac is dissected toward the external opening until preperitoneal fat comes into view.

7. The sac is separated from the other structures until preperitoneal fat is seen. After confirming that all the vital structures are isolated from the sac, it is doubly ligated 3-0 or 2-0 braided absorbable suture (Vicryl) and divided.



The sac is doubly ligated with absorbable suture while protecting the vas. This suture is preserved for later use with skin closure.

8. The distal sac does not need to be dissected and removed. It should be emptied of fluid if there is a hydrocele. Dissecting the residual sac increases the risk of hematoma without any other benefit.
9. Pull testicle to the bottom of the scrotum to guide the cord into place.
10. Place one suture in Scarpa's fascia and then two or three inverted intra-dermal stitches in the skin using the same suture– only 1 suture is needed for the entire case.

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Pitfalls

- Take your time to dissect out the sac from the other structures. It is friable and easily damaged.
- Dissect the sac off the cord near the external inguinal ring, otherwise you will find yourself in the scrotum at a point where the sac balloons out and is more difficult to isolate.
- Clearly identify the vas deferens and protect it.

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