

Orchidopexy for Undescended Testis

Jason Axt, Muse Frenah, Leahcaren Oundoh

Introduction:

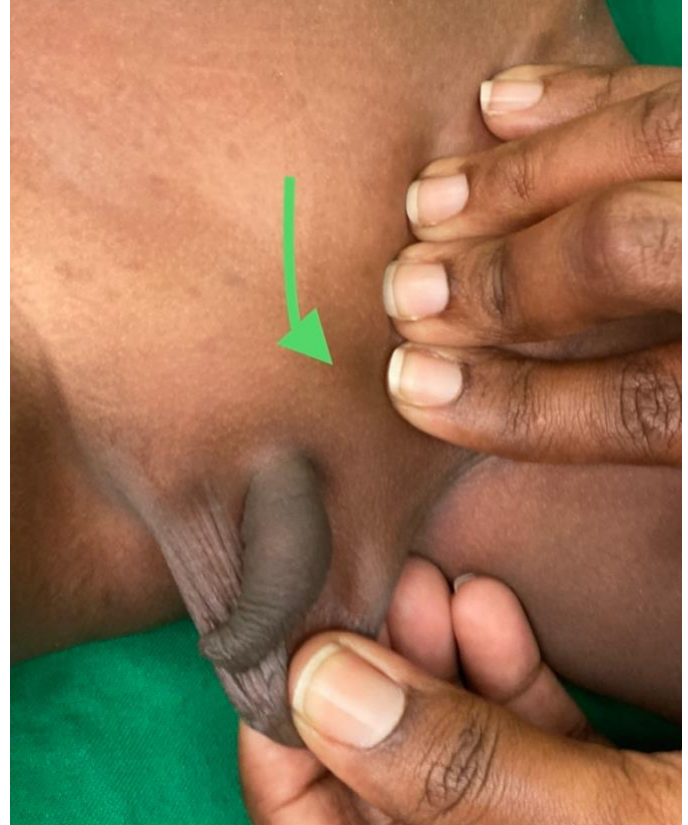
Undescended testis is one of the most frequent surgical conditions encountered in children. Decline in fertility increases the longer the testis remains out of the scrotum > 8 months' time. Therefore, we recommend orchidopexy for all truly undescended testis at 8 months to one year of age depending on the comfort and skill of your anesthetist. There is a slight increase in cancer potential in undescended testis, but this risk does not decrease after orchidopexy. However, testicular cancer is easier to detect, by palpation, in testes located within the scrotum. Orchidopexy at 8 months to one year of time is recommended for fertility preservation, potential cancer detection, and to avoid traumatic injury to a testis located over bony structures.

In the instance of bilateral undescended testis, care must be taken to always preserve at least one functioning gonad. If the first side of a bilateral orchidopexy goes well, we may perform bilateral orchidopexy in the same setting. If there is any concern about blood supply or testicle viability, we defer the contralateral side temporarily to assure one side's survival before placing the other side at risk. If there is hypospadias or any other indication of ambiguous genitalia along with bilateral undescended testis, orchidopexy should be only undertaken after chromosomal analysis and multidisciplinary discussion of gender assignment.

Orchidopexy is increasingly difficult as age increases, particularly after puberty. We will offer an attempt at orchidopexy for post pubertal children primarily for social and aesthetic purposes if it can be easily done. If extensive dissection is necessary however, we will perform orchiectomy if there is a normal contralateral testis. Therefore, every post-pubertal child, and his parents, undergoing orchidopexy are explained the possibility of ipsilateral orchiectomy and consent is obtained.

Testicular examination is an acquired skill and requires a relaxed child. One should stand to the side of the child, with the child's legs gently bent, and knees spread. The parent should be at the head reassuring them. The examining hand should sweep downward from the abdomen following the inguinal

canal, gently compressing tissue onto the superior pubic ramus and then laterally.



Examine for testicle with a gentle inferior then lateral sweeping motion, in the direction shown by the green arrow. Traction on the scrotum may bring a "peeping" intrabdominal testis into a palpable position.

The examiner's hands should be warmed, and oil or soap can be used to reduce friction. One should feel and see a small pop as the examining hand slides over the inguinal testis. Alternately, gentle traction can be placed on the scrotum (gently pinching the gubernaculum) as the same motion is used with the examining hand. This will sometimes bring a "peeping testis" from an intrabdominal position below the pelvic brim rendering it palpable. Testis can also be ectopic, outside of the normal pathway of descent, or intrabdominal. An ectopic testis can be surgically addressed in the manner described here if it is near the canal. If a testis cannot be palpated, one should examine the patient under anesthesia. If the testis cannot be palpated in an anesthetized child, diagnostic laparoscopy should be performed to identify an intrabdominal testis vs. a vanishing testis that has atrophied due to intrauterine torsion. This procedure is described elsewhere in this Manual.

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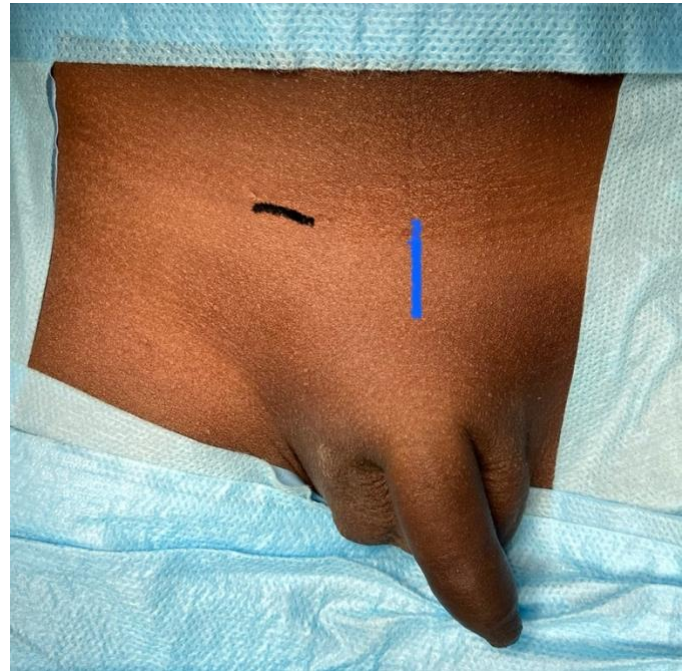
Undescended testis must also be differentiated from retractile testis due to a strong cremasteric reflex. In retractile testis there is usually a well-formed scrotum. If the testis can be reduced into the scrotum in a relaxed and warm child and remains there for 5-10 seconds, no orchidopexy is needed. The testicle likely resides in the scrotum during sleep and times of rest. The testis should be examined for ascent in one year.

Orchidopexy proceeds in the following steps:

- Skin and Scarpa's fascia incision
- Incision of the external oblique aponeurosis, if necessary, and locating the testis
- Dissection of the testis and spermatic cord away from adherent peritoneum, and ligation of the peritoneum
- Creation of a Dartos pouch
- Passage of the testis to the Dartos pouch
- Skin closure, including securing the testis within the pouch if necessary.

Steps:

1. No ultrasound or other workup is required. In a healthy child one can proceed electively to operative repair.
2. Orchidopexy can be performed under general or spinal anesthesia with sedation. Often a caudal or ilioinguinal block is utilized for post operative pain control.
3. The patient is placed supine with the knees slightly flexed and the hips externally rotated. The umbilicus and scrotum are prepared and draped into the operative field.
4. Make a 1.5 cm incision through skin in an inguinal crease overlying the palpated cord (no diathermy is needed). Usually, the incision is about 1.5 cm lateral to the midline.



A horizontal incision (Black line) is made 1.5cm from the midline (Blue line), through a skin crease, over the palpable cord.

5. Scarpa's fascia is identified and generously cut with scissors allowing access to plane above the external oblique.

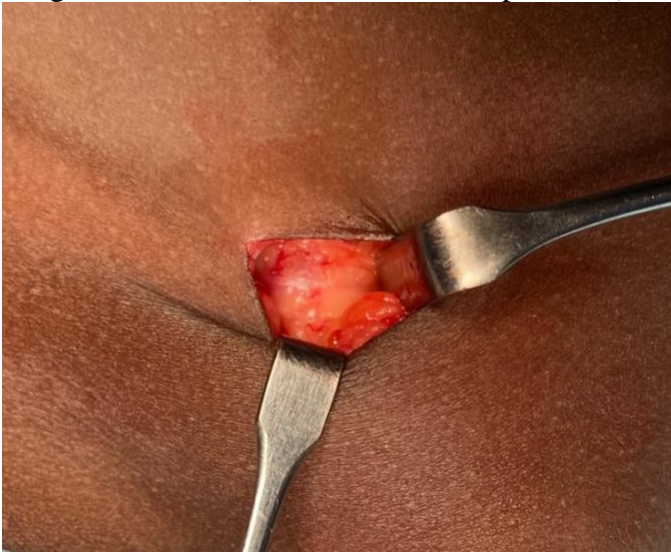


After skin incision, a fascial layer within the subcutaneous fat is found: Scarpa's fascia. Once this is incised, the external oblique aponeurosis is revealed.

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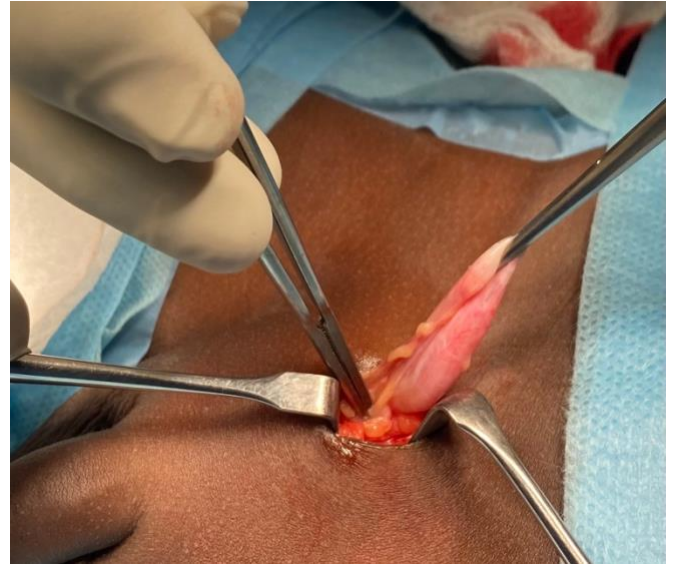
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- Small retractors are used to clear overlying tissue from the external oblique fascia and the external opening of the inguinal canal. After sweeping away this tissue, the examining retractors are pushed downward to reveal the bulge of the cord structures or the fibrous tissue of the gubernaculum (if the testis is more proximal).



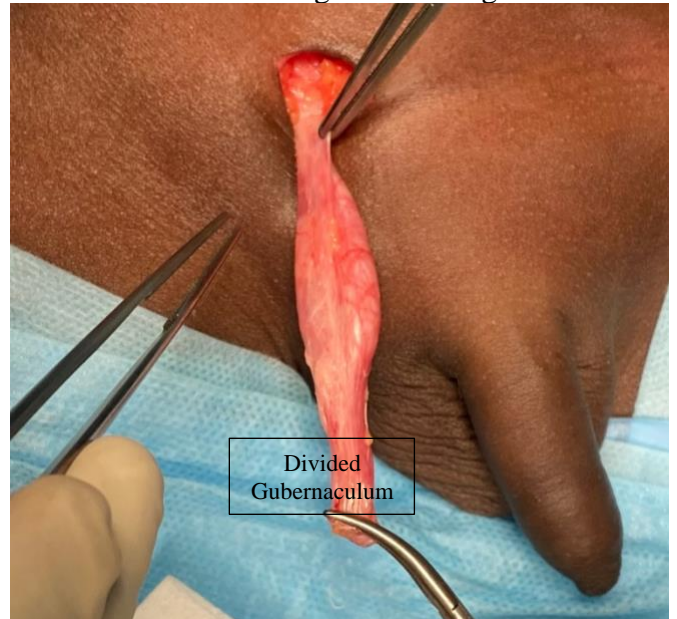
Once the external oblique fascia is cleared, downward pressure with two retractors reveals a bulge representing the cord transiting the external opening of the inguinal canal.

- The cord structures or gubernaculum are grasped using a non-toothed grasper or hemostat and pulled through the incision. It should come up easily as fat is stripped. If the structure does not come up easily, it is not likely the cord / gubernaculum / testis. If it cannot be easily found, identify the external oblique as it creates the external inguinal ring and divide with scissors to open and fully examine the inguinal canal.



The cord should come easily into the surgical wound once it is located and pulled gently.

- The cord and testis are now externalized. The gubernaculum if robust can be divided distal to the testis taking care not to injure a long looping vas deferens that might be in the gubernaculum.



The gubernaculum testis will be a thickened structure on the opposite side of the testis from the spermatic cord. It is divided. Watch for the vas deferens, which may loop near to this structure.

- The hernia sac / investing peritoneum is carefully dissected from the cord. A small fraction of undescended testes will have a persistent

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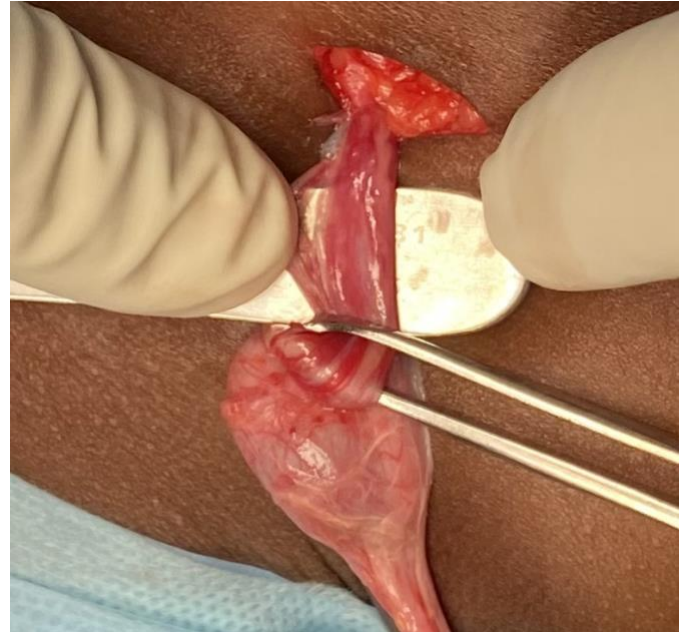
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processus vaginalis that could develop into a symptomatic hernia.



Undescended testes will have attached peritoneum, similar to a hernia sac. Dissecting this peritoneum off the testicle and spermatic cord, all the way down to the internal ring, is the key to allowing the testicle to reach the scrotum without tension. In this photo, the spermatic cord is held within an Allis clamp on the right side of the photo and the forceps holds the thin peritoneum. It is quite clear in this photo that fully dissecting the peritoneum off the spermatic cord will give considerable length to the testis and cord.

10. When the sac / investing tissue is dissected off the cord, the cord structures are verified by palpation. The vas deferens feels like a hard piece of spaghetti, the testicular artery and veins can be seen. An Allis clamp can be used to control the cord.



As seen here, an Allis clamp surrounds the spermatic cord and its individual structures, including the vas deferens and blood vessels, all of which can be seen.

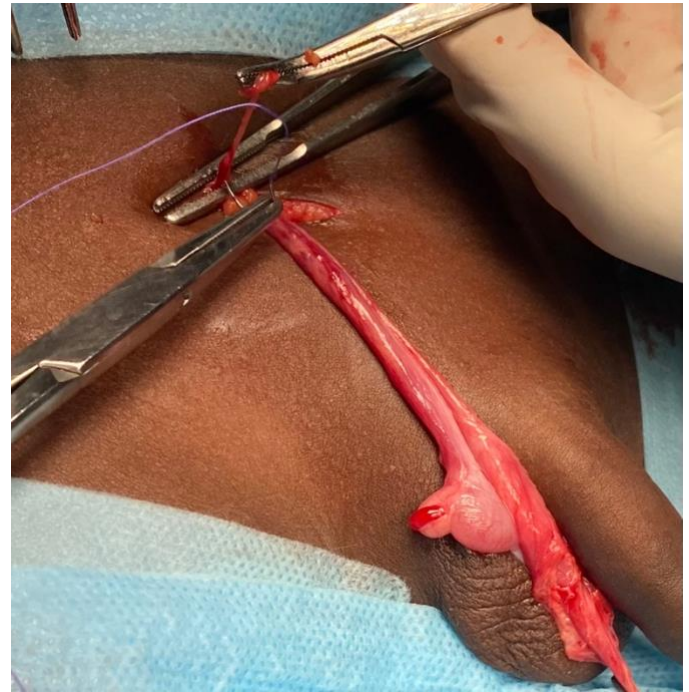
11. The sac structures are now divided and dissected from the cord toward the abdominal wall. If necessary to create adequate length, the external oblique aponeurosis can be sharply opened into the inguinal canal (if not already done). If there is still inadequate cord length to reach the upper scrotum, the epigastric vessels can be divided, and the cord further medialized.

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Mobilized testis and spermatic cord. The peritoneum, dissected off the cord, is held by a fine hemostat in the top of the picture.



Once the peritoneum is completely dissected off of the cord structures all the way up to the internal ring, it is suture ligated.



A hemostat may be placed under the external oblique fascia which can be sharply divided using a pushed scissors to open the inguinal canal if more length is needed

12. The dissected sac structures (peritoneum) are ligated and divided at the abdominal wall, taking care to preserve the cord structures.

13. A 1 cm incision is made on the scrotum in a skin crease.



An incision the size of the testis is made in the scrotal skin, but not through the Dartos fascia underneath.

14. An inferior pouch is created in the space between the scrotal skin and the fascia just underneath it,

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Dartos' fascia. Open up much more space than you think the testis will occupy.

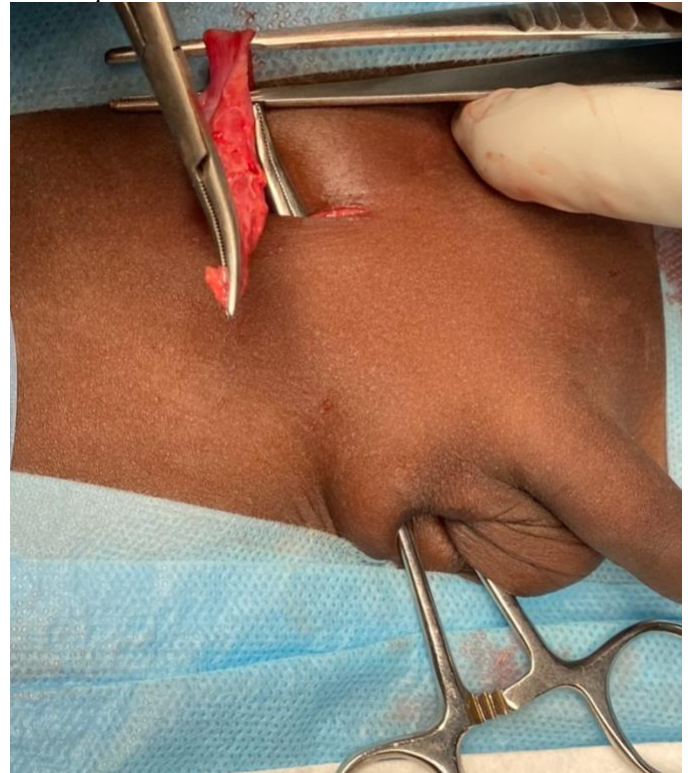


Using a hemostat, bluntly create a space between the skin and the Dartos fascia underneath.

15. A hemostat is passed from the inguinal incision under Scarpa's fascia to the scrotal incision pushing it in deeply to make a wide path for the testicle. This is exchanged for a hemostat from the scrotal incision to the inguinal incision following the same path. Grasp the testis, make sure there are no twists to the cord, and draw it into the scrotum.



The first hemostat is passed from the groin incision to the created pouch in the scrotal skin.



The first hemostat then guides a second one in the opposite direction, that will be used to pull the testicle down into the newly created pouch.

16. Absorbable suture is used to close the canal around the cord.

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17. The testis is placed in the Dartos pouch. If the testis is under tension, additional sutures can be used to affix the testis to the inferior scrotal wall. (We only place these when testis is under tension, as there is concern that inflammation caused by suture material to the testis can affect fertility.)



Make sure the Dartos pouch is large enough to accommodate the testicle, enlarging it if necessary. An absorbable suture is placed to close the canal around the cord. The testicle, having been passed to the scrotum, can be seen outside the scrotal incision in the lower part of the picture.



The testicle is placed within the subcutaneous pouch in the scrotum. If there is no tension, no sutures are required to fix it in place.

The scrotal skin is closed with running absorbable monofilament suture.



Close the scrotal skin with the testicle now in its proper location.

18. Scarpa's fascia is closed with a single absorbable suture. The skin is closed with two interrupted absorbable sutures. The whole operation can be performed with a single 2-0 or 3-0 polyglactin suture.

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The completed operation.

Note

The photos are of a right transinguinal orchidopexy on a 2-year-old child.

Pitfalls

- If the testis cannot be palpated prior to operating, the child should have diagnostic laparoscopy.
- Carefully preserve the vas deferens and testicular vessels.
- Divide external oblique and then epigastric vessels if there is inadequate length.
- In the case of hypospadias and bilateral undescended testis or ambiguous genitalia, perform chromosomal analysis and involve patient, family, and other medical providers in surgical decisions.

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