Case Based Urology Learning Program

Resident's Corner: *UROLOGY*

Case Number 5

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A 6 month old boy is referred to you for undescended testicles (UDTs). On exam he has a normal circumcised penis and bilateral impalpable testicles. Your first thought is to wonder whether he even has testicles.

How would you determine that?

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Obviously he had testicles early in gestation since he is normally virilized. However it is possible that he has bilateral vanishing testes which infarcted late in gestation after genital development was complete. To test for viable testicles an HCG stimulation test should be performed. Serum FSH, LH, and testosterone levels are drawn. Then HCG is administered and the testosterone is repeated. If the testosterone level rises in response to HCG, then at least one testicle must be present. If the testosterone fails to rise AND the baseline gonadatropins are elevated, then anorchia is confirmed and the patient should be referred to an endocrinologist for management of anorchia. If the testosterone level fails to respond, but the FSH and LH levels are normal, then the test is equivocal and testicles may still be present. If the patient is seen as a newborn, then a simple testosterone level at 1-3 months of age may resolve the issue since there is normally a testosterone surge at that time. Recently serum Mullerian inhibiting substance (MIS) has also been used as a marker of viable testicular tissue.

This patient’s HCG stimulation test is normal and his exam is unchanged.

What additional tests would you consider?

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None. While radiographic studies such as ultrasound, CT and MRI can locate some impalpable testicles, they may fail to identify an intraabdominal testis. Therefore, the patient will require an operation of some sort regardless of the test result. Ultrasound is particularly unhelpful, being less accurate than a good exam by an experienced urologist. However, ultrasound is occasionally employed in obese boys in whom an inguinal testis might be difficult to identify – while the child will still require an operation, laparoscopy can be avoided if an inguinal testis is confirmed.

What intervention would you recommend for your patient?

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Hormonal therapy with HCG has been used for UDTs, but has a success rate of less than 20% so most authors recommend a surgical approach. This patient requires an exploration to identify the location of the testicle(s) and, if possible, an operation to bring them down to the scrotum. While this can be done with an open approach, most cases are managed with laparoscopy. One potential finding on laparoscopy is vessels and vas ending blindly below the internal inguinal ring with a closed ring.

What does this signify?

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This confirms a vanishing testis and nothing further need be done.

What if a blind-ending vas with no spermatic vessels is identified? What does this signify?

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A higher abdominal exploration should be undertaken (either open or laparoscopically) until a testis is identified, blind-ending vessels are identified, or the absence of spermatic vessels arising at the renal level is confirmed. A basic principle is that blind ending vessels is the main finding that confirms absence of the testis, not a blind ending vas.

Each of the following pages has an image or description of other possible laparoscopic findings.

For each one, what is the significance of the finding and what would your next step be?

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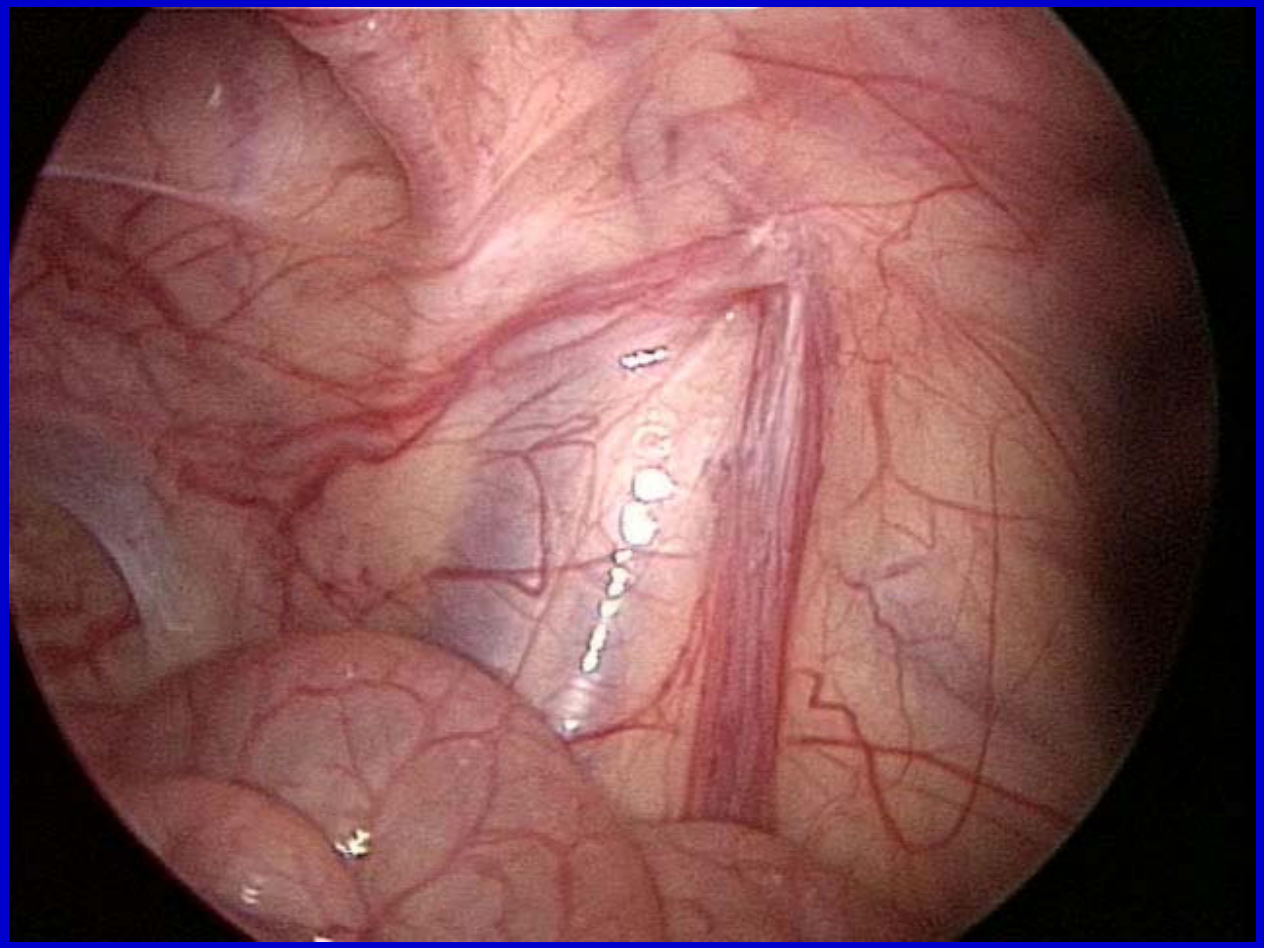
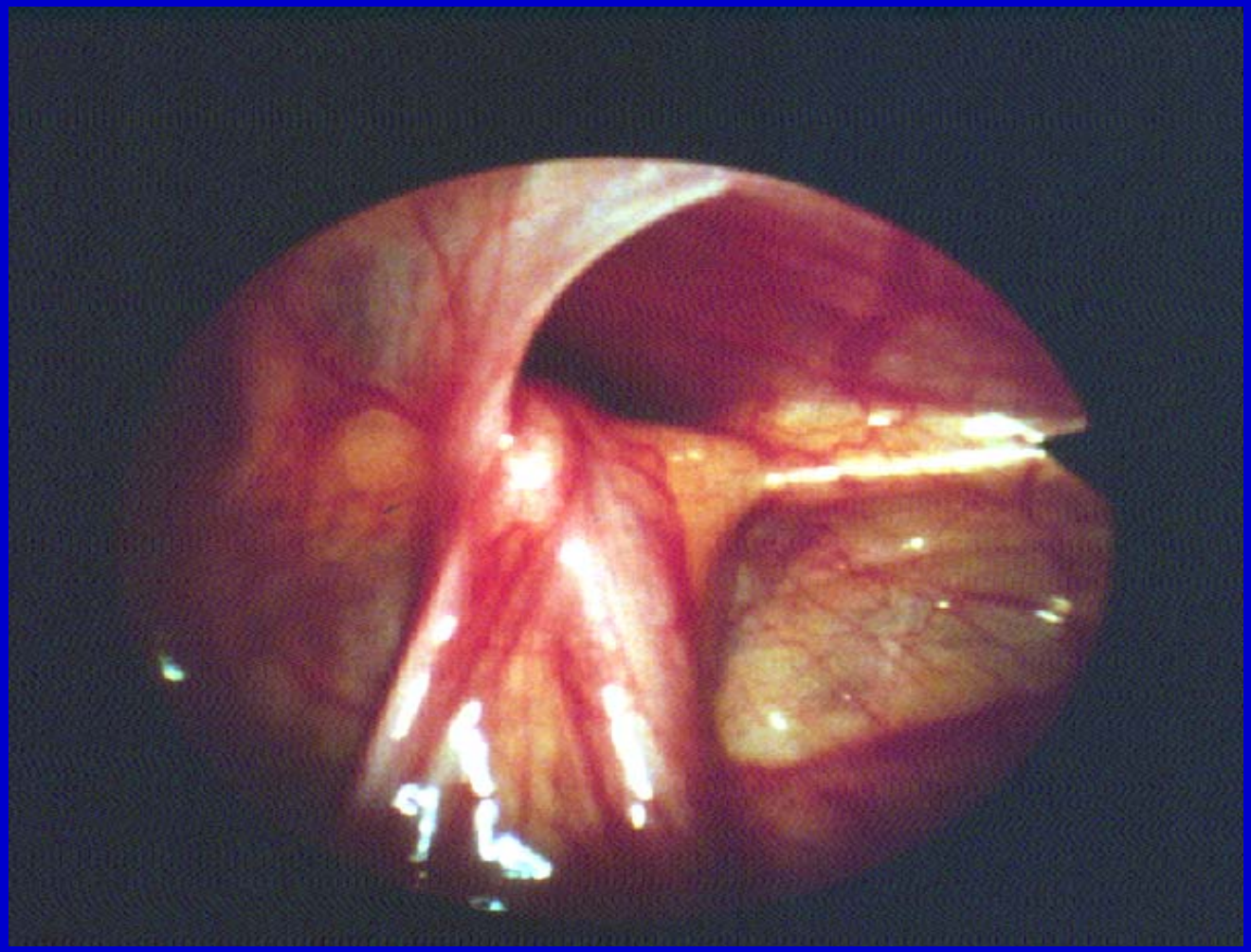


What is the significance of the finding? What would your next step be?

With vessels and vas entering a closed internal inguinal ring there is likely a vanishing testis in the inguinoscrotal region. Because rarely a viable testis may be present, an inguinoscrotal exploration is recommended.

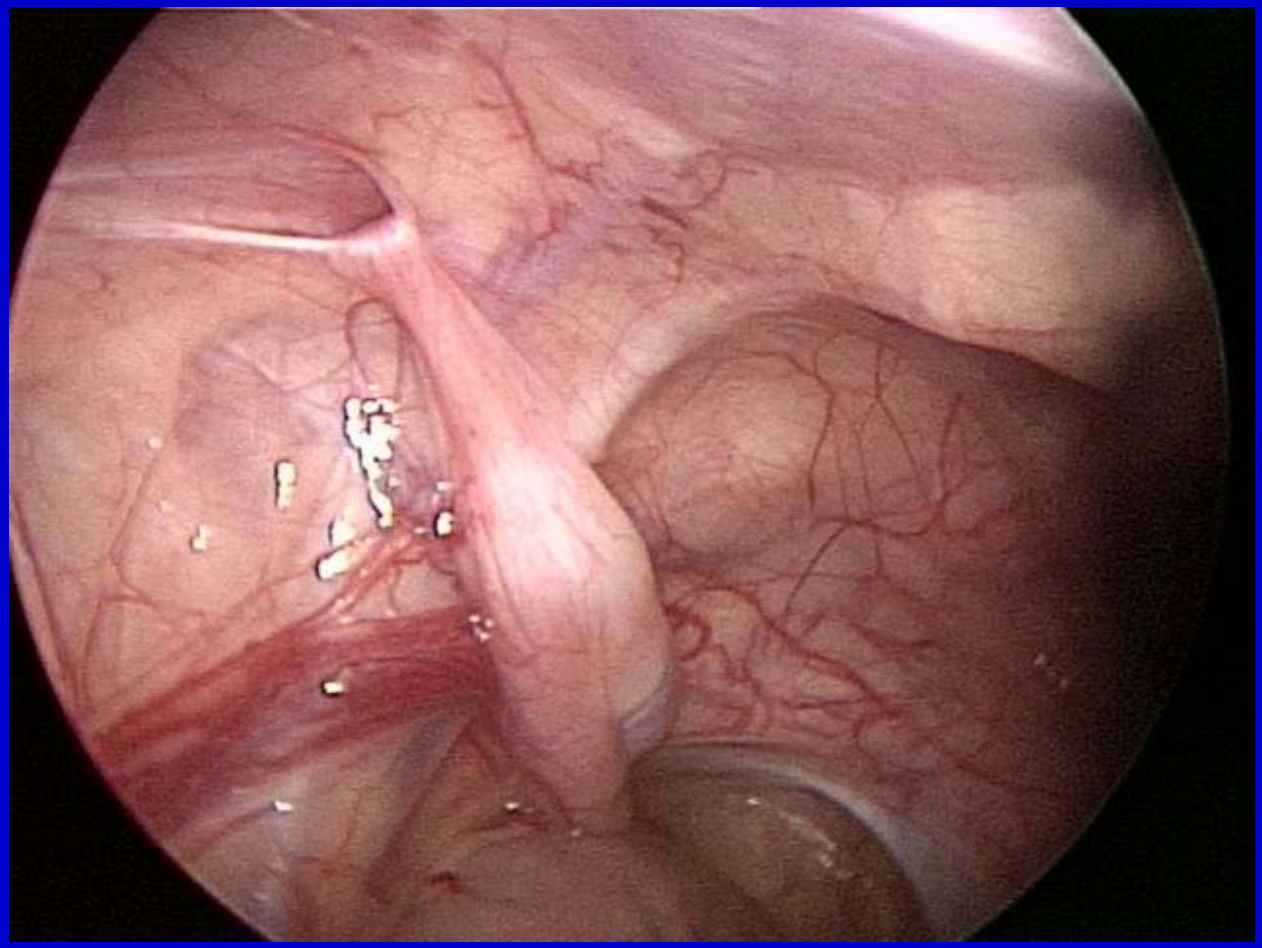
What is the significance of the finding? What would your next step be?



What is the significance of the finding? What would your next step be?

With vessels and vas entering an open internal inguinal ring, a viable inguinoscrotal testis is likely and an inguinal exploration should be undertaken.

What is the significance of the finding? What would your next step be?



What is the significance of the finding? What would your next step be?

This is an intraabdominal testis and an orchidopexy should be performed to bring the testis to the scrotum. If the testis is abnormal or very high in the abdomen and the other testis is normal, then an orchiectomy may be appropriate. Either procedure may be accomplished through an open incision or laparoscopically.

The findings in your patient are a left intraabdominal testis 2 cm from the internal inguinal ring and vas and vessels entering an open internal inguinal ring on the right side. You decide to start with a right inguinal exploration. You mobilize the testis within the tunica vaginalis along with the cord structures up to the internal ring. You open the tunica vaginalis toward the internal ring, dissect the back wall of the hernia sac off the cord structures, dissect the hernia to the internal ring, and ligate it. With these maneuvers the testis is still unable to be brought to the scrotum.

What additional measures can be undertaken at this point to bring the testis down?

What additional measures can be undertaken at this point to bring the testis down?

Additional attachments between the peritoneum, the retroperitoneum, and the cord should be divided above the internal ring. If additional exposure is required, the internal oblique muscle can be divided craniolaterally from the internal ring. If there is still inadequate length, a Prentiss maneuver can be employed. The tranversalis fascia is opened and the cord is transferred medial to the epigastric vessels giving it a straighter course to the scrotum.

If the testis will still not reach the scrotum, can the vessels be ligated leaving the testis to survive on the vasal vessels (a Fowler-Stephens orchidopexy)?

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No. Once the cord has been extensively dissected, collateral vessels will be inadequate to sustain the testis. A decision to proceed with a Fowler-Stephens orchidopexy must be made early in the dissection, ideally before the peritoneum between the vas and vessels has been dissected.

The right testis is successfully brought to the scrotum. You elect to manage the left testis with a laparoscopic orchidopexy. You are considering a Fowler-Stephens orchidopexy.

What factors will influence this decision?

What factors will influence this decision?

While no hard and fast rules exist for making this decision, several factors have been shown to be important. These include the distance of the testis from the internal ring, the age of the patient, and the subjective mobility of the spermatic vessels. A testis more than 1.5 cm from the ring and patient age greater than 18 months have been suggested as factors which make a standard one stage orchidopexy less feasible.

In this case, you decide to perform a Fowler-Stephens orchidopexy.

How is this done?

How is this done?

Most authors believe a Fowler-Stephens orchidopexy is more successful if performed in 2 stages. At the first stage, the peritoneum on either side of the spermatic vessels is opened as high in the abdomen as easily accomplished without any dissection. The cord is then clipped. Six months later a standard orchidopexy is performed (open or laparoscopically), but the peritoneum between the vessels and the vas is preserved and the spermatic vessels are divided where they were previously clipped. The 6 month interval between stages allows for proliferation of collateral vessels. An alternative is a one-stage Fowler-Stephens orchidopexy with or without autotransplantation of the testis by microvascular anastamosis of the spermatic vessels to the epigastric vessels.

A 2 stage Fowler-Stephens orchidopexy is performed and, at 1 year following his operations, the patient is doing well with both testicles well-positioned in the scrotum.

What long-term follow-up would you recommend?

What long-term follow-up would you recommend?

Since both testicles were involved, the patient should be followed at puberty to be sure there is normal pubertal development. Even in unilateral cases, patients should be instructed to perform testicular self-examination on a regular basis starting at puberty because of the increased risk of testicular cancer in men with a history of UDT.

Selected Readings

Ashley RA, Barthold JS, Kolon TF: Cryptorchidism: Pathogenesis, Diagnosis, Treatment, and Prognosis, *Urol Clin North Amer* 2010;37:183-93.

Topic:

Pediatric Urology/Neoplasms/Embryology

Subtopics:

Bilateral Undescended Testis