Undescended Testicle

What is the normal descending testis?
The testicle begins to form just before the second fetal month and starts to look like a testicle around the fourth fetal month. By then it has migrated down from the kidney and lies next to the internal inguinal ring, where it remains until around the seventh fetal month. At this point the testicle, accompanied by a small peritoneal pouch (the so-called hernia sac), passes through internal ring, inguinal canal, and external ring to take its normal position in the scrotum.

What are the advantages of the scrotal location?
Not all mammals have testicles that lie outside the main abdominal cavity. In humans, however, this location seems necessary for future fertility in that the scrotum keeps the testicles 2 to 3 degrees C. cooler than the core body temperature. This temperature difference seems important for the development of normal postpubertal testicular structure as well as for production of fertile sperm.

There are other advantages to a location within the scrotum. There is a cosmetic advantage. The scrotal testis may be less amenable to injury than a testis outside the scrotum in that the latter may be anchored in position directly over bone. Finally, and perhaps as important as any other reason, a testis that has not made it into the scrotum is not accessible to physical examination. This is a serious handicap because the most common solid tumor in males after puberty and up to age 40 years is testicular cancer. Testicular carcinoma is highly curable, when detected early, and the best way to do this is
monthly self-examination -- which is only feasible in testes that lie within the scrotum.

What is an undescended testicle?
The term "undescended testicle" is loosely applied to several different conditions. When a testicle is not in the normal scrotal location several possibilities exist:

1. There may never have been a testicle (congenital absence=agenesis).
   This is the least likely possibility and is only occasionally associated with an absent kidney on that same side.
2. The testis may have been lost before or just after birth due to torsion or vascular accident involving the testicular vessels.
3. The testis may have not descended properly, but remains within the abdominal cavity. In older children, such abdominal testicles are abnormal in appearance, are not likely to be fertile, and have an increased chance of becoming malignant after puberty.
4. The testis may have descended incompletely and may lie within the inguinal canal, at the external ring, or just outside of the scrotum.
5. The testis may have come through the inguinal canal, but instead of then traveling down into scrotum, the testis passes into an ectopic location (usually a space under the skin in the groin, called the superficial pouch) where it is firmly anchored to the adjacent tissues. Unusual ectopic sites include the femoral region or the perineum.
6. Retractile testes that temporarily get pulled up into the groin by hyperactive muscles may be confused with situations #4 or #5. However, retractile testes rarely are a clinical problem and generally require no treatment.

How is an undescended testicle managed?
A testicle that is not in the normal scrotal location should be located and if fairly normal, should be placed in a normal position.

When a testis is felt in the superficial pouch or inguinal canal we usually explore the area with a small hernia-type incision. Usually the testis will look suitable for salvage and can be delivered into the scrotum and anchored in a subcutaneous scrotal pouch (orchidopexy). Most undescended or ectopic testes are accompanied by a hernia sac that must be separated from the spermatic cord, divided, and closed. Sometimes this is the most difficult part of the operation.

When a testis cannot be felt by physical exam, we look for it with a laparoscope at the time of surgery. Depending upon what is found by the laparoscope we will usually bring down a salvageable testis (orchidopexy) or remove a very abnormal gonad (orchiectomy). When a boy is left with a single functioning testis we recommend anchoring it to minimize chances of losing it to torsion later in life. (The primary causes of testicular loss during childhood are trauma and torsion. Anchoring the testis, we believe, lessens the chance of late torsion. We furthermore advise use of a protective cup should the child become active in contact sports.) Occasionally a child will be found not to have any testicles. In this situation, the child will need to have hormones given later in life to go through puberty and then receive regular hormones as an adult. In this rare event, he will be infertile.

**What are the possible complications of testicular surgery?**

The usual complications of testicular surgery are bleeding and infection. Transfusion is very unlikely in these patients and infections are uncommon and usually involve only the sutures at skin level. One cannot promise fertility for any male child, and the undescended testis -- no matter how it is managed surgically -- is less likely to be fertile than a normal testis. Still, early
orchidopexy should optimize the chances. Occasional boys will have unusual postoperative pain or prolonged ileus (intestinal shutdown) with inability to eat. The overwhelming majority are eating and comfortable the day after operation. Suggest putting away bicycles and similar toys for 4 weeks after orchidopexy because we have seen a few boys with dislocated testes after orchidopexy or similar operations. We have speculated that a vigorous straddle injury might pop a testis back into the external ring area where it is entrapped by the healing tissues. In spite of the most careful anchoring procedures, late torsion has been reported in some boys after orchidopexy.

**What are testis tumors?**

Any male can develop a testicular tumor, and boys with undescended testes (even after orchidopexy) have a higher than average risk. The chance of cancer (carcinoma in situ and overt carcinoma) in men who have had orchidopexy may be 8% or more according to recent data. **Monthly self-examination of the testes should be taught and encouraged after puberty for all males.** With routine self-exam the normal anatomy will become appreciated and subsequent development of a nodule or hardening will ideally be detected very early. With early treatment testicular cancer is usually curable.

**What is the follow-up procedure after treatment of undescended testis?**

We generally see orchidopexy patients first a few weeks and then a few months after their operations. If anything unusual is observed at any other times we ask the families to contact us or bring the child right in to Pediatric Walk-In at the University of Michigan Emergency Room and we will see you there.

In addition, we have asked the families to let us see the patient around the time of puberty so we can assess growth of the testis and be certain that it is not in jeopardy from, say, a varicocele or some other problem. **Most importantly,** we
would use this occasion to discuss self-exam with the patient to try to initiate this in each youngster's personal routine.