The case of the missing gonad: Using laparoscopy to diagnose and treat undescended testis.

By Kristen Lake Finn

English is basic to academic advance

Hello! Lovely readers

Here we are! Time and again we keep pushing the index of "English is basic to academic advance." Please put up with us as we all are responsible for "the making of a Medical World."

In this issue we like you to read this article which links anatomy (embryology) to surgery rather nicely and you will also learn the arts of surgical treatment as well. So go ahead and swallow it now!

Nestled within the scrotum like a pair of hard-boiled eggs, the testicles are crucial to a man's fertility and virility. In addition to producing sperm and the male sex hormone testosterone, the testes also are among the most outwardly visible signs of manhood.

Ironically, during fetal development the testes start out deep inside the abdomen near the kidneys. Not until around the seventh month of gestation do the gonads begin their southward migration through the inguinal canal and into the potbelly scrotum.

However, among 3.5 percent of full-term and up to one-third of premature male babies, one or both testicles fail to complete their journey by birth. Some testes may remain suspended within the abdomen, while others may take a wrong turn as they tunnel through the groin.

The condition, called cryptorchidism, or undescended testes (UDT), is among the most common abnormalities in males that brings them into the hospital before the age of 3. UDT typically involves only one testicle and often corrects itself within several months. However, if the problem doesn't resolve naturally by the baby's first birthday, an operation usually is recommended to bring the testis down into the scrotum.

The call for prompt surgical intervention goes beyond physical appearance; if left untreated for more than five years, and undescended testes will not develop normally and will be incapable of adequate sperm production. Furthermore, the risk of developing cancer in this testis is 30 times greater than normal.

Due to the high malignancy risk, the physician's first order of business is to verify the presence of the missing gonad and to determine its exact location. In most cases, the testis can be detected simply by
The first step of the repositioning process involves getting the testis prepared for relocation by shifting its source of blood to the vas deferens artery alone. This is done by laparoscopically tying off, or blocking, the spermatic blood vessels that also feed the gonad. By shutting off the spermatic vessels, the testis is forced to live solely on the blood from the vas deferens artery. During the next few months, the vas artery carries enough of the increased demand while it keeps the testis healthy and nourished with oxygen-rich blood. This effect is especially helpful among patients born with a short vas deferens.

The second step is a two-hour operation called orchiopexy that’s scheduled about six months after the laparoscopic vessel-blocking procedure. It involves severing the spermatic vessels, which tether the testis to the abdomen, and lowering the gonad and its newly expanded blood vessel leash into the scrotum.

In contrast, traditional abdominal orchiopexy is an open surgical procedure that’s performed in one step. The spermatic vessels are clipped to free the testis from the abdomen, and the vas deferens is immediately pulled down into the scrotum before it has a chance to grow into its new role. As a result, the testis has a greater chance of being damaged from decreased blood flow.

“If you try to do the procedure all at once, you’re going to lose 25 to 30 percent of the testis...”
because it’s not getting enough blood supply."

Bloom says, “The two-step procedure, on the other hand, routes the blood supply without disturbing the testis. It’s minimally invasive, it gets the testis ready to come down in a single operation, and it reduces the total time on the operating table.”

Bloom pioneered this two-step procedure in the United States and was the first in the world to accomplish the initial vessel-blocking step laparoscopically. He’s also one of the few American urologists who’ve been teaching the technique to others.

Bloom and his U-M colleagues since 1985 have performed laparoscopy for nonpalpable testes on more than 100 children, all with excellent results. Patient follow-up has found each of the repositioned gonads to be developing on schedule and with no post-surgical complication. Long-term fertility in these patients has yet to be determined. However, it is known that the cancer rate remains a bit higher; about 10 percent of men with testicular cancer have a history of UDFT. Because such people are statistically more prone to developing cancer, the importance of testicular self-examination is stressed from adolescence through adulthood for those who’ve undergone the corrective procedure, says Bloom, a member of the U-M Comprehensive Cancer Center.

While two-step orchidopexy is still only available at a handful of centers nationwide, its use is gradually increasing as more urologists gain the skills and confidence to perform laparoscopy on testes.

“Laparoscopy is the rage today. It’s high-tech, innovative and plays well in Peoria, but caution is the watchword when working with babies and children,” he says.

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