The USC Institute of Urology is continuing to expand its research, clinical practice and collaborations, both nationally and internationally. We recently had our second annual conference titled “Practical Urology” with invited well-known lecturers from all over the world in February 2017. We had over 240 attendees. Also in its second year is our new Urology Apprentice course, which gives visitors from all over the world the opportunity to have an in-depth experience of the entire spectrum of advanced robotic, laparoscopic and open urologic surgeries. We are approaching the 112th AUA annual meeting and we look forward to seeing many of you in Boston for the Alumni reception. In other news, Dr. Stuart Boyd is being honored by Boston Scientific with a lifetime achievement award at the AUA conference. We are most energized by the clinical growth of USC Urology and our momentum in federally-funded research and trials. In September 2017, USC Urology clinic will relocate to a brand new state-of-the-art building. We look forward to welcoming you there soon.

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In this issue of UIP, we share two clinical cases with you; an exciting complex case from our andrology team to discuss small testicular mass and male infertility and the other from reconstructive team discussing adult urethral stricture management after childhood hypospadias surgery.

We are also providing a snapshot of different educational programs at USC Urology that is available to national and international colleagues. Also, some information about our upcoming third annual meeting as well as other upcoming programs at USC Urology. We look forward to having you join us soon!

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LEARNING OBJECTIVES:
1. Review the impact of undescended testicles and inguinal hernia repair on male fertility.
2. Determine the role for partial orchiectomy in the management of small testicular masses.
3. Assess the options for paternity in men with azoospermia.

CASE
This is a healthy 35 year old male with an 18 month history of primary infertility. He had a history of a left undescended testicle, for which he underwent orchidopexy at 2 years of age. He also underwent right inguinal hernia repair with mesh at 20 years of age. His libido, erections and ejaculation were intact. A review of systems for other causes for reproductive impairment was negative.

His wife was 33 years old and had a normal female factor evaluation.

Examination revealed a well-developed and androgenized male. He had no visual field defects or gynecomastia. He had bilateral inguinal scars. His genitourinary exam demonstrated that the left testis was small at 12 cc, with a long axis length of 2 cm, high-riding in the scrotum, and therefore difficult to palpate. The right testis was normal sized at 20 cc, with a length of 4.5 cm, and firm. Bilateral vasa were palpable and there was no varicocele.

Because the difficult exam and prior undescended testis, a scrotal ultrasound was obtained. This identified a 6 mm right testis mass, concerning for malignancy (Figure 1).

Two semen analyses were checked, which demonstrated normal volume azoospermia. Gonadotropin testing revealed: FSH 7.0 mIU/mL (normal 1.6-8 mIU/mL), LH 4.7 mIU/mL (normal 1.5-9.3 mIU/mL), and total testosterone 325 ng/dL (normal 270-1000 ng/dL). Since he had a sperm concentration of < 5 x10^6/mL, he had karyotype and Y chromosome microdeletion testing, both of which were normal. Serum tumor markers (hCG, LDH, AFP) were checked because of the testicular mass, and were within normal range.

WHAT WE DID
Since we needed to determine if: 1) spermatogenesis was present and 2) the mass represented a malignancy, we decided to proceed with excision of the left testicular

Figure 1. Testicular ultrasound demonstrating a 6mm mass, concerning for malignancy

Figure 2. Intraoperative microscopy demonstrating spermatozoa within the obstructed testicle
mass (testis sparing surgery) and concurrent intraoperative biopsy of the adjacent normal testicular tissue. Intraoperative ultrasound was used to identify and excise the mass with a rim of normal tissue. Frozen pathology revealed a focus of Leydig cell hyperplasia, with no malignancy. Sampling of the adjacent tissue revealed no mature spermatozoa. Rare spermatids were found, and since there have been reports of successful fertilization using these (1), they were frozen for possible future use.

The couple was counseled of their options for fertility, including donor sperm, adoption or surgical exploration of the right testicle for possible sperm extraction. Since in vitro fertilization (IVF) is more successful with spermatozoa (spermatids are only used on an experimental basis), we decided to look for sperm within the right testis. We placed him on clomiphene citrate for 3 months prior to his surgical exploration, since this has been shown to increase surgical sperm retrieval rates in men with azoospermia (2). Of note, this is an off-label use of this medication.

The patient underwent a right microsurgical testicular sperm exploration. While spermatogenesis was not at normal levels, mature sperm were found (Figure 2). He was likely obstructed on the right side from his prior inguinal hernia repair with mesh. The couple underwent a successful IVF cycle with 8 embryos. One of these was implanted and the wife is presently pregnant with a baby boy.

**DISCUSSION**

There were several factors to consider in the management of this couple.

Based on the patients examination, semen analyses and hormone levels, it was not clear if he had an obstructive or production etiology for his azoospermia (or a combination). The distinction between obstructive and nonobstructive azoospermia may usually be made by exam and gonadotropin levels; Men with FSH 7.6 mIU/mL or greater, or testicular long axis 4.6 cm or less, usually have nonobstructive azoospermia (3). This patients FSH was in the higher range of normal (7.0 mIU/mL), but he had a history of bilateral inguinal operations, which could have resulted in vasal or epididymal obstruction. This picture was not completely consistent with either a production or a blockage issue. This is a patient who we would consider a percutaneous biopsy to determine if spermatogenesis is present.

Undescended testicles demonstrate varying degrees of hypospermatogenesis, and earlier orchidopexy results in greater preservation of reproductive function (4). This patients’ discrepancy in testicular size was consistent with the left testis being undescended. Ultimately, it was not producing sperm.

The testis mass was 6 mm and on the same side as the undescended testicle. Undescended testicles are associated with an increased risk of both malignancy and infertility. This mass was small and the tumor markers were negative. While radical orchietomy is still considered the standard of care, a growing body of evidence shows that testis-sparing surgery may be an acceptable option for testicular masses < 2 cm (5). This is particularly germane given this patients borderline low testosterone level (325 ng/dL), as the unnecessary removal of additional testicular tissue may have predisposed him to earlier symptomatic hypogonadism (and the risks of testosterone replacement therapy).

**References:**

LEARNING OBJECTIVES:
1. To identify why the adult urethral stricture patient after childhood hypospadias repair differs from the general population.
2. To recognize how to properly treat the adult urethral stricture patient after childhood hypospadias repair.

CASE:
A healthy 18 year old male with was referred to the office without any voiding complaints other than a noticeable increase in urinary staining of his undergarments. His past surgical history was remarkable for bilateral orchidopexy and mid-shaft penile hypospadias repair at age two. As a result personal embarrassment, he concealed these wetting symptoms from his mother for several years.

Attempted cystourethroscopy and retrograde urethrography were unsuccessful due to a severely stenotic urethral meatus. Observed voiding demonstrated an acceptable, downward directed urinary stream. Close physical inspection of the ventral penile shaft with loupe magnification revealed a 2 mm pinpoint urethrococutaneous fistula.

WHAT WE DID:
Stage One

The patient was placed supine on the operating table and prepped and draped in standard surgical fashion. After several unsuccessful attempts at urethral intubation with a glidewire, a urethromeatoplasty was performed. An incision was made at the ventral 6 o'clock position for 2 cm until healthy urethral mucosa was encountered. The urethral mucosa was re-approximated to the penile skin with interrupted 4-O PDS suture to accommodate proximal placement of a 16-Fr red rubber catheter.

Our attention then turned to the urethrococutaneous fistula (Figure 1) which was 3 cm proximal to the urethromeatoplasty. A circumferential elliptical incision was made with 3 X 3 cm dimensions to completely remove the fistula tract and perform a first stage Johanson urethroplasty. The remaining healthy urethral plate was carefully re-anastomosed to the skin with several interrupted 4-O PDS suture with a resultant penile urethrostomy (Figure 2). A 16-Fr urethral catheter was removed ten days later.
Stage Two

After three months, the patient was placed supine on the operating table and prepped and draped in standard surgical fashion. The urethra easily accommodated a 16 Fr red rubber catheter. An elliptical 3 X 4 cm circumferential incision was then made around the penile urethrostomy (Fig. 3). The superficial tissue and skin were carefully mobilized to preserve blood supply. Re-tubularization of the urethral plate with a running, tension free, watertight anastomosis was performed with 4-O PDS suture (Fig. 4). Three additional layers of periurethral tissue were utilized for coverage of the urethral suture line. The skin was then closed (Fig. 5) and a 14- Fr urethral catheter was removed ten days later in the office.

DISCUSSION:

Hypospadias, the most common congenital penile anomaly occurs in 1/300 live births. Although numerous surgical techniques have been developed, no single method is considered the standard of care. Urethral strictures and fistulas are known complications of hypospadias repairs.

The incidence of urethral stricture after hypospadias surgery in pediatric populations occurs in about 6.5% after short follow-up. However, urethral strictures can occur decades after initial surgical correction. Although urethral strictures and fistulas present as long-term complications, the true incidence is unknown.

Adult urethral stricture patients with previous hypospadias repair differ from the usual population of stricture patients. First, despite severe urethral strictures, they sometime present without voiding complaints. Second, these patients have complicating problems seldom seen in other stricture patients including renal failure and urethocutaneous fistula. Third, they have a poor quality of tissue which requires more complex repairs such as staged Johanson operations with or without buccal grafts.

Adult urethral stricture disease after childhood hypospadias repair continues to be a challenge for Reconstructive Urologists. Poor tissue quality with concomitant urethocutaneous fistula do represent major factors influencing surgical strategy. Two-stage urethroplasties with or without buccal mucosal grafts can achieve durable long-term results. We suggest patients undergoing childhood hypospadias repair receive life-long follow-up to detect latent urethral strictures.

Reference:

The last two years, USC Institute of Urology has put forth a significant effort on improving the training of our residents and fellows, while continuing to contribute towards the medical education of domestic and international urologists. We have also focused on providing exceptional patient education seminars on Men’s Health in English and Spanish, Pre-cystectomy educational classes for bladder cancer patients and hosting our long standing monthly Prostate Cancer Patient Seminars.

One of the two major meetings we are hosted for urologists worldwide is “Practical Urology” conference which took place the last week of January. Our 2017 Practical Urology meeting was attended by over 246 urologists; 96 from the United States, and 150 international, and over 23 industry companies supported our exhibit area. Our next Practical Urology meeting is scheduled for February 2018 and will be held in a larger venue, showcasing live surgeries, round table discussions, debates, case discussions, and a fraternity dinner for all participants which will be held in the Catherine and Joseph Aresty Conference Center, Los Angeles, CA.
Our second major meeting, “LA Live”, was held again in 2016 before the annual AUA meeting. We had a total of 70 guest faculty and more than 250 participants.

We have also hosted our second resident preceptorship program in November 2016 where 17 residents from China and the United States participated in a two-day lecture and hands on lab rotation at the Keck Hospital of USC.

Our department has also started a one-week Apprentice immersion course where attendees receive personalized morning and afternoon lectures from our faculty, observation of exciting cases in OR’s, and a one day visit to the Intuitive Headquarters in Sunnyvale, CA where they participate in a wet lab. We have had 9 Apprentice courses to date, and a total of 40 urologists have been participating from 14 different countries.

We are excited to run all of these courses and look forward to continue our long standing tradition of academic excellence in the field.
USC Institute of Urology Upcoming Conferences

**Urology Apprentice Course**
This course provides an in-depth review of the entire spectrum of robotic / laparoscopic and open urologic surgery. Close mentoring by expert USC faculty, OR observation, practical didactic talks, and breakfast/lunch sessions with faculty. 
USC Institute of Urology, USC Health Science Campus

**3rd Annual Conference “Practical Urology”**
The course is designed to showcase state-of-the-art practices in urology. Topics covered in this conference include urologic oncology (kidney cancer, prostate cancer, bladder cancer, testis cancer, penile cancer), female urology, reconstruction, incontinence, erectile dysfunction, benign prostatic hyperplasia, urolithiasis, infertility, and complications of robotic surgery. This meeting will be held annually.
February 1 – 3, 2018
Aresty Auditorium, USC Health Science Campus

**“L.A. live” International ROBOTIC & OPEN Live Surgery, Pre-AUA Symposium**
This course is designed to provide step by step instructions for various urologic surgeries, including female pelvic medicine, reconstructive, endo-urology, open and robotic procedures. Through demonstration during “live surgery”, each attendee should gain practical knowledge of basic, intermediate, and advanced skills that they can transfer into their own practice. May 16-17, 2018
Aresty Auditorium, USC Health Science Campus

For more information on the USC Institute of Urology or our upcoming events, please contact Alan Arredondo at alan.arredondo@med.usc.edu