

and maintains the erect penis in an upright position during sexual intercourse, and its defect would cause significant deformations hindering normal erections and intercourse (1). Since 1979, patients with defects in the suspensory ligament were recognized in the urological literature (2), including congenital etiology. Nevertheless, the authors of the present paper, in the best of my knowledge, described systematically by the first time the clinical history, physical findings and treatment of suspensory ligament abnormalities.

Here, I would like to highlight some points described by the authors in the article. The PSL has susceptibility to trauma following sexual intercourse, particularly with forced downwards pressure, leading to penile instability, deformity and a variable degree of erectile dysfunction (ED). Penile pain was the predominant symptom in 11 of the 15 patients who presented after sexual trauma, and ED was the presenting symptom in 13 of the 35 men. Other symptoms were penile instability and deformity. Concerning diagnosis, the authors showed that it is made clinically, characterized by the presence of a palpable gap between symphysis pubis and the penis. Nevertheless, this is not always present, and in this series only 15 of the 35 men had this sign; thus, the authors emphasize that a supportive history such as penile trauma or evidence of penile deformity/instability on examination also helps in formulating the diagnosis. The surgical technique for treating PSL abnormalities presented here is simple and offers good results.

The authors pointed out that a fractured penis is one of the differential diagnoses to PSL trauma since the mechanism of injury is usually similar in both conditions and both can present with the patient complaining of hearing a “snap”. Nevertheless, the authors teach us that men with a fractured penis usually have significant swelling and immediate detumescence; whereas men with PSL rupture usually do not have these signs.

The final message of the authors from the present series is that abnormality of the PSL is a subtle diagnosis and men with this injury could present with a variety of symptoms and a variable degree of ED.

I recommend this paper for all urologists involved with andrology and reconstructive surgery.

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## RECONSTRUCTIVE UROLOGY

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### **Fournier’s Gangrene: A Review of 43 Reconstructive Cases**

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*Plast Reconstr Surg.* 2007 Jan;119(1):175-84

Background: Fournier’s gangrene is a rare and potentially fatal infectious disease characterized by necrotic fasciitis of the perineum and abdominal wall, along with the scrotum and penis in men and the vulva in women.

Fournier's gangrene is a true surgical emergency. Skin loss can be very incapacitating and difficult to repair. **Methods:** The authors reviewed retrospectively the clinical records of a series of 43 patients with Fournier's gangrene between the years 1985 and 2003 who, after initial treatment by the Departments of Urology and Surgery, were referred to the Department of Plastic Surgery for reconstruction. The following parameters were evaluated: age, gender, interval between onset of symptoms and diagnosis, clinical symptoms, lesion site, results of bacteriologic cultures, cause and predisposing factors, treatment and reconstructive procedures, length of hospital stay, and outcome.

**Results:** The mean patient age was 56.6 years. Fifteen patients (34.9 percent) had diabetes mellitus. The cause of Fournier's gangrene was found in 32 patients (74.4 percent). The most common presentation was scrotal swelling, and scrotal involvement was found in 40 cases (93.0 percent). All of the patients underwent surgical debridement, and several reconstruction techniques were used. The mean length of hospital stay was 73.6 days. Two patients died.

**Conclusions:** Management of this infectious entity should be aggressive. Several techniques that are used to reconstruct the lost tissue have shown good results. The superomedial thigh skin flap has proven to be a reliable method of resurfacing large scrotal defects. Reconstructive surgery makes the return to a normal social life possible in many cases.

### **Editorial Comment:**

This long-term retrospective study underlines the importance of Fournier's gangrene, which is a rare but very lethal emergency that should be diagnosed early and treated aggressively. The article updates the clinical picture with the required knowledge to efficiently handle these cases.

There is no predicting age, but predisposing factors such as diabetes, colorectal disorders and/or alcohol abuse in addition to hypertension, obesity and cigarette consumption are frequently seen in the constellation with Fournier's gangrene. The authors found a predominant involvement of the scrotum with scrotal swelling or scrotal lesions in more than 90% of male cases. Surprisingly, however, Fournier's gangrene was also seen in 21% of females (1).

After hemodynamic stabilization, an aggressive surgical debridement is a must with corresponding infusion therapy. Frequently the repeated debridement is necessary before a reconstruction can be planned. In 80% of the cases, the cause of the gangrene was polymicrobial with *Escherichia coli*, *Staphylococcus aureus* and *Pseudomonas aeruginosa* being the predominantly found microbial. In addition, the increasing role of methicilin resistant *S. aureus* (MRSA) in genitoperineal infection needs to be stressed (2).

Most of the time an orchiectomy or penectomy was not necessary. In the author's opinion, the superomedial skin flap was the most reliable method of reconstruction in large scrotal defects after formation of healthy granulation tissue. Fasciocutaneous or musculocutaneous flaps were performed only in special cases. For functional, physiological and psychological reasons, the reconstruction of the scrotum is essential and may require a multi-modal approach instead of split- and full-thickness skin grafts, which can be used only in minimal lesions.

With the regimen outlined in this paper, only one out of the 43 patients died due to multiple organ failure. Others have reported a mortality rate up to 67% (1) whereas a decreased mortality rate of 22.8% was achieved by using the Fournier's Severity Index (3).

From this and other reports it can be concluded that the earliest possible diagnosis and aggressive therapy, repeated surgical debridement, and combined aggressive broad-spectrum antibiotic coverage keeping in mind the increasing role of MRSA decrease morbidity and mortality of Fournier's gangrene. The reconstructive surgical approach helps to restore physiological function of external genitalia and thus a return to a normal social life.

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## **Complications of Porcine Small Intestine Submucosa Graft for Peyronie's Disease**

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**Purpose:** We report outcomes and complications of the use of porcine small intestine submucosa for correcting penile curvature due to Peyronie's disease.

**Materials and Methods:** A retrospective study was performed in patients with severe penile curvature (greater than 60 degrees) requiring surgical correction for sexual function. Preoperatively all patients underwent evaluation, including history, physical and penile duplex ultrasound. Of these patients 19 underwent tunical grafting with 1-layer Surgisis small intestine submucosa. Postoperatively patients were evaluated with clinic visits and telephone interviews to assess results.

**Results:** A total of 19 patients 46 to 69 years old (mean age 54) were treated with tunical incision or excision and grafting with small intestine submucosa between March 2002 and July 2005. Average followup was 15 months (range 3 to 43). Patients reported less penile pain with intercourse after surgery. There was no difference in Sexual Health Inventory for Men scores. Preoperatively 12 men (63%) had erectile dysfunction, defined as Sexual Health Inventory for Men less than 21, while 10 (53%) reported postoperative erectile dysfunction. Seven of the 19 patients (37%) had recurrent penile curvature (greater than 10 degrees) and 5 (26%) had recurrent Peyronie's disease plaque. Our complication rate was 37%, including hematoma at the graft site in 5 cases (26%), graft infection in 1 (5%) and Peyronie's disease recurrence requiring plication in 1 (5%).

**Conclusions:** Small intestine submucosa carries potential for grafting applications because it is easy to use and readily available. Our experience resulted in a 37% complication rate, which exceeds those previously reported with saphenous vein graft repair.

## **Editorial Comment**

The surgical management of penile deformations due to Peyronie's Disease with various types of grafts is still under discussion. Autologous tissue used for corporeal reconstruction include tunica vaginalis, fascia lata, fascia temporalis, rectus sheath, and venous patches, reports on heterologous tissue include cadaveric fascia and xenogenic tissue such as porcine small intestine submucosa (SIS, Stratasys®), dermal porcine collagen

(Permacoll®) (1), and bovine pericardium graft (2). Due to either limited availability or immunogenic problems bioabsorbable artificial materials such as tissue sealant coated collagen fleece (Tachosil®) (3) have been tested lately (4,5).

In the current report, the authors present a retrospective study dealing with complications in the application of small intestine submucosa (SIS). The treatment of 19 patients with a follow-up of 15 months is currently the largest study concerning xenogenic material in penile reconstruction. The use of SIS was successful in a recent report in 11 of 12 treated patients (6). The same author reported about straightening of the penis and reconstruction of tunica albuginea defects due to excised plaques with penile prosthesis implantation in conjunction with SIS (7). Contrary to this report, the authors in this paper reported a complication rate of 37% mainly due to hematoma, infection or disease recurrence.

Do we have a new standard for penile reconstructive surgery now with off the shelf bioartificial material such as small intestine submucosa available? Nineteen selected patients clearly cannot be representative for all patients with Peyronie's disease necessitating surgery. We need larger series with randomization, direct comparison of various materials, standardizations in the timing of surgery, selection of patients, surgical technique, postoperative management, and evaluation of the outcome. In addition, with a complication rate in more than a third of the patients in this study and an improvement in sexual function of merely 10 % (which is in 2 patients) there is ample room for better materials, advancements in surgical technique, and further studies.

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