EARLY TREATMENT OF PENILE FRACTURES: OUR EXPERIENCE

Borja Garcia Gomez, Javier Romero, Felipe Villacampa, Angel Tejido and Rafael Diaz.


Summary.- OBJECTIVES: To report our experience in early surgery of penile fractures.

METHODS: We review retrospectively all the cases that underwent surgery at our center from 1989 to 2009, with a total of 24.

RESULTS: The cause of the fracture was sexual intercourse in most cases, and in all of them, surgical management was performed according to clinical presentation and physical exploration. In only 7 cases an ultrasound was performed as a complementary test.

DISCUSSION: Early surgery allows prompt resolution of the problem with excellent functional outcomes and little side effects.

CONCLUSIONS: The prognosis after emergency surgery was excellent in this review.

Keywords: Penis. Fracture. Corpus cavernosum.

Resumen.- OBJETIVO: Aportar nuestra experiencia en el tratamiento precoz de las fracturas de pene.

MÉTODOS: Se revisan de forma retrospectiva todos los casos intervenidos en nuestro centro de forma retrospectiva entre 1989 y 2009, resultando un total de 24. Los datos se recogen de la historia clínica y se actualizan mediante entrevista telefónica.

RESULTADOS: La rotura se produjo durante la práctica de relaciones sexuales en mayoría de los casos, y en todos ellos la intervención quirúrgica se realizó de acuerdo con la historia clínica y los hallazgos de la exploración física. Sólo en 7 casos se optó por la ecografía como prueba complementaria. El resultado funcional es excelente.

DISCUSIÓN: La cirugía precoz permite una resolución del problema con excelentes resultados funcionales y escasos efectos secundarios.

CONCLUSIONES: Tras la cirugía de urgencia la evolución es excelente en nuestra serie.


INTRODUCTION

Penile fracture, or more correctly, cavernous body fracture, is described as rupture of the tunica albuginea due to trauma.
The actual incidence of this disease is difficult to establish, given the more than likely existence of cases unconsulted by the patient or published in the literature. It is considered, however, that its incidence in our setting is low (1-6). While it was first described in 1925 (7), because of its low frequency, there is no standard treatment protocol. The most widely accepted treatment in the literature is early surgery, though there are advocates of initial conservative management, followed by deferred surgery in case of persistent symptoms (8). The management of these patients is crucial because they are often young patients who may suffer serious sequelae, leading to deficient sexual and even voiding function.

In this article we report the experience of our center in early surgical treatment of traumatic penile fracture.

**MATERIALS AND METHODS**

Cases of penile fracture undergoing early surgery at our center in the period between January 1989 and January 2009 were retrospectively reviewed. There were a total of 24 cases. Median follow-up was 6 months (1-135).

Data were collected from patient medical records and twenty one cases were updated by telephone interview. Three of them were lost to follow-up at the time of the study.

The following variables are described: age (years), presence of previous morphological alterations of the penis, lesion etiology, clinical presentation, diagnostic tests used, surgical procedure performed, lesion description, suture material, initial postoperative course and functional outcome, including:

1. Evaluation of residual erectile function (performed by clinical interview, no validated questionnaires are available),
2. presence or absence of pain at the time of sexual intercourse (by clinical interview, no validated questionnaires are available), and
3. occurrence of physical sequelae in the penis: areas of fibrosis and/or deviation (evaluated by clinical interview and examination).

**RESULTS**

The mean age was 45 years (range 21-92 years).

In only 3 cases (12.5%) did we find a history of penile disease: two had some degree of deviation and the other had been diagnosed with Peyronie’s disease.

The etiology of the fracture is summarized in Table 1. As expected, sexual intercourse was the most common etiology.

Clinical presentation was the classic presentation in most of cases: during the etiological process the patient heard a sudden cracking or popping sound (12 cases). All except one (the open lesion) reported a practically immediate detumescence of the erect penis. All patients presented a hematoma of varying extent. Significant pain only appeared in 3 of the cases, in the others pain was mild or completely absent. No urethral bleeding occurred in any of the patients of this review, and only 1 had voiding difficulties.

The diagnosis was established based fundamentally on data obtained from the medical history and physical examination. Only in 7 cases, due to uncertainty about the diagnosis, we performed cavernous body ultrasound to confirm it. While ultrasound described in all of them a thinned segment of the tunica albuginea together with an adjacent hypoechoic area, only in 2/7 was a good ultrasound correlation with the results of surgery confirmed. Retrograde urethrography or cavernosography was not performed in any case.

A bladder catheter was inserted before surgery in all cases. The approach was through a subcoronal incision in 22 (91.67%) of cases. In one case, a longitudinal incision was chosen because the hematoma was small in extent and a small lesion was suspected. In the case of the open lesion, debridement and wound cleaning were performed in the operating room.

### Table 1. Etiology of Fractures.

<table>
<thead>
<tr>
<th>Etiology</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual intercourse</td>
<td>18</td>
</tr>
<tr>
<td>Masturbation</td>
<td>3</td>
</tr>
<tr>
<td>Forced detumescence</td>
<td>1</td>
</tr>
<tr>
<td>Injury when turning over</td>
<td>1</td>
</tr>
<tr>
<td>Open lesion</td>
<td>1</td>
</tr>
</tbody>
</table>
After exposing the cavernous bodies or reaching the lesion area and evacuating the hematoma, a tear was identified, which was always transverse and between 0.5 and 4 cm in length. The other characteristics are defined in Table II.

Repair was carried out by closure of the albuginea with loose stitches of absorbable suture (Vicryl®) in 20 cases (83.3%) and nonabsorbable suture (Gore-Tex®) in the remaining 4 (17.7%). Circumcision was performed in 1 case based on intraoperative findings. In all but 2 cases (open lesion and another), an intraoperative erection test was performed with saline to check for absence of curvatures. Only in 1 case were stitches required in the contralateral cavernous body to correct the deviation induced. Closure was performed by absorbable suture (Vicryl Rapide®) without placing drainage and leaving a compressive bandage.

Antibiotic prophylaxis was administered routinely during surgery (cefazolin 2g in single doses) and at discharge (amoxicillin-clavulanate 875-125mg every 8 hours) for 7 days. After removing the bladder catheter and the dressing at 24 hours, mean patient stay in the hospital was 3 days (1-9), the longest stay corresponding to the patient with the open lesion.

Of the 21 patients who responded to the telephone interview, 20 reported good erectile function before surgery (this was no so in the patient with the open lesion). Of these, 100% of patients had good sexual potency after the episode, enabling them to maintain satisfactory sexual relations. No case reported residual pain. Two patients (10%) had a slight deviation, which did cause an impediment for their sexual relations. On physical examination, small areas of fibrosis were palpated in 2 cases, which did not cause any discomfort to the patient or result in important deformities in the penis.

<table>
<thead>
<tr>
<th>Side</th>
<th>Rupture location</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right</td>
<td>Distal</td>
<td>18</td>
</tr>
<tr>
<td>Left</td>
<td>Medial</td>
<td>5</td>
</tr>
<tr>
<td>Bilateral</td>
<td>Proximal</td>
<td>1</td>
</tr>
</tbody>
</table>

**DISCUSSION**

Despite being a study with the limitations inherent to a retrospective study and the lack of validated instruments to quantify some of the variables, we contribute a representative series in our setting. Thus, we first see that as in our experience, the most common etiology of penile fracture in Spain is sexual intercourse, which is generalizable to the whole Western world. There are however geographic variations such as in Japan, where the most frequent cause was masturbation (9-14), or Iran, where the first ranking cause is forced manual detumescence (7). There have been reports that involvement of the right corpus cavernosum is more common, a finding we have also confirmed, though we cannot find or provide a reason for this. In the articles by Zargooshi (7), where the most common mechanism is manual detumescence, they also report a higher prevalence of this side.

Lesion of the tunica albuginea is always distal to the suspensory ligament of penis, since the rupture is not included in the definition of cavernous body fracture (7). In our study, most fractures were in the proximal third of the penis, followed by the medial and distal third, which appears to correspond to the decreased lever effect with increasing distance from the suspensory ligament.

In our experience, the medical history and physical examination are sufficient to diagnose cavernous body fracture. We used ultrasound as a supplemental test in cases in the more doubtful cases, but we did not find a good correlation. In case of diagnostic suspicion, a surgical examination was always chosen, and in all cases surgical diagnosis confirmed the clinician’s impression. Cavernosography has been described as a simple and rapid test to perform that guides the surgeon on the location and size of the lesion; but we have not used it in any case because it remains an invasive test and because none of the surgeons considered it would change the patient’s management. In addition, there is a risk that fibrosis of the cavernous body occurs after contrast administration and the possibility that it does not detect small tears (4). Urethrocytography is indicated in cases where urethral bleeding or difficult urination symptoms occur, to detect lesions associated with the urethra (9). The frequency of these lesions ranges from 20-38% described in the West and 0-3% in the East, probably related to the etiology most prevalent in each area, representing a greater or lesser strength of the etiological mechanism: masturbation and manual detumescence versus sexual intercourse (7).

In our experience, there were no cases of suspected associated urethral fracture, so we did not perform
urethrography. Only one patient reported some voiding difficulties before surgery, but he could be catheterized without difficulty and presented no problems in the postoperative period. Despite the fact that some authors think that catheterization is not required for this procedure, we performed it routinely because it helps intraoperative location of structures and allows urethral rest in the immediate postoperative period.

In most cases, we chose a subcoronal incision for complete exposure of both cavernous bodies and urethra, in order to correctly identify the lesion and facilitate subsequent repair. In one case, a longitudinal incision was performed because the hematoma present led to the suspect a small lesion in a very specific area. In recent years advocates have appeared of inguinoscrotal incision which would facilitate examination of the cavernous bodies without interference from the hematoma and edema induced, leaving also a less visible scar and reducing the risk of distal penile vascular involvement (15). For repair of lesion of the tunica albuginea, we preferred to use absorbable suture (Vicryl®) that does not leave a foreign material with the consequent risks of infection and cosmetic alterations; but in recent years the introduction of Gore-Tex®, a very malleable material, has allowed use to use this suture with less fear of these side effects.

We routinely performed Gitte’s test with saline to check water-tightness of sutures and absence of deviations, only requiring contralateral stitches for their correction in one case. It is not a routinely recommended step, but we think it is easy to perform, has no side effects, and give us an idea of the cosmetic and functional outcome (4).

Mean stay in our hospital was 3 days, with a range of 1 to 9 days. Although the case that spent more days was the one with the open lesion, we did find a trend to shorter stays in recent years, probably due to the general loss of fear of this condition as we acquired experience. As it is generally a clean surgery, the use of antibiotics is controversial. Only the usefulness of a short prophylactic cycle has been demonstrated. We chose to administer 2g of cefazolin intrasurgically, covering most skin pathogens, and amoxicillin-clavulanate 875-125 every 8 hours for 7 days, covering most urinary and fecal pathogens that may have contaminated the field. This latter regimen could be reduced to 3 days.

There are advocates of conservative treatment with compressive bandages, administration of NSAIDs, and drugs to prevent erection, and even proteolytic enzymes, as well as longer catheterization (8). However, there is agreement that this approach increases complications such as the formation of abscesses, penile curvatures, or persistent hematomas requiring delayed surgery. In addition, late complications such as fibrosis and angulation were found in 35% of cases and impotence in 62% (16). Aside from increased complications, it raises the mean stay of the patient to about 14 days (5). Despite the fact that we did not use a validated instrument for measuring erectile function pre and postsurgery, it appears that the percentages in our experience are somewhat higher. Fibrosis occurred in only 2 patients.

CONCLUSIONS

Cavernous body fracture is an uncommon emergency in our setting. In our experience, diagnosis should be clinical and in the case of doubt a surgical approach should be adopted. In some cases performance of penile ultrasonography may be considered. After early surgery, we observed a good course in our series, so we recommend this approach.

REFERENCES AND RECOMMENDED READINGS

(*of special interest, **of outstanding interest)


