

# Direct Gunshot Wound to the Testicular Artery: A Rare Case Report

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## Abstract

Gunshot wounds (GSWs) to male genitalia are rare. They have mainly been described in the military and urban trauma settings, such as in sports activities or violent interactions. Male genitalia can be injured in an isolated way or in association with other genitourinary traumatism. GSWs can also determine vascular injuries which can be life-threatening. We report a rare case of direct GSW of the testicular artery and a scrotal hematoma without a primary injury of the testis. We present the case of a 29-year-old man with a direct GSW to the testicular artery. The patient underwent a surgical left inguinal exploration and orchiectomy. Intraoperative findings showed an actively bleeding from the left testicular artery at the level of the superficial inguinal ring. Dartos fascia and tunica vaginalis were thickened and testis was ischemic but not directly injured by GSW. After the surgery, cessation of bleeding and clinical stabilization occurred. The patient was discharged after 5 days. The pathology report showed an extensive ischemic infarction, heavy infiltration by acute inflammatory cells, excessive tissue edema, and congested blood vessels. Surgical exploration should be performed in all cases except for the most insignificant and superficial wound. All patients with a GSW to the external genitalia should be evaluated with an index of suspicion for other associated lesions. In this context, fertility and sexuality can be negatively impacted. Moreover, people with violence-related disabilities manifest a complex array of psychosocial and relational problems.

**Keywords:** External genitalia, gunshot wound, scrotum, testicle, testicular artery

## INTRODUCTION

Gunshot wounds (GSWs) to the male genitalia are rare. They have mainly been described in the military and urban trauma settings, such as in sports activities or violent interactions.<sup>[1]</sup> Even though the external genitalia are relatively protected from severe damage (mobility within the scrotum, the elasticity of the scrotal skin, protective reflex mechanism of the cremaster), the scrotum and testis are at risk of trauma because of their extracorporeal

position.<sup>[2]</sup> Particularly, GSWs can cause serious vascular injuries which can be life-threatening.<sup>[3]</sup> The appropriate management of these injuries is

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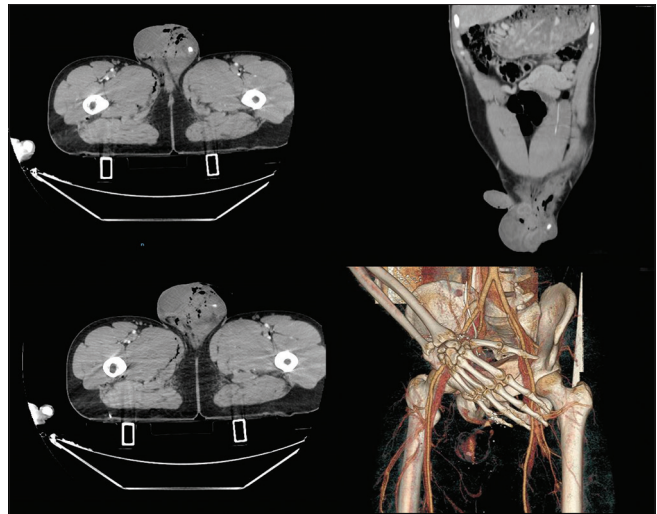
essential in decreasing long-term morbidity.<sup>[4]</sup> We report a rare case of direct GSW of the testicular artery and a scrotal hematoma without a primary injury of the testis.

### CASE REPORT

A 29-year-old man was admitted to our emergency department with a GSW to the genitalia. His surgical history was negative. His medical history included “Mediterranean anemia.” He did not take any anticoagulant drugs. Blood count showed a lower hematocrit, (hemoglobin = 8.4 g/dl, red blood cells =  $4.04 \times 10^6$ /ul, MCH = 20.5 pg, and MCV = 64.7fl, and platelets =  $66.0 \times 10^3$ /ul. The patient was clinically unstable, hypotensive, and tachycardic. The blood pressure was 60/40 and pulse rate was 150 beats/min. The patient immediately received one blood transfusion. Physical examination revealed a GSW with a visible entrance bullet hole located at the left root of the scrotum. The exit wound was at the bottom of the left hemiscrotum near the scrotal raphe. The patient had a scrotal hematoma and the left testis was painful. The right hemiscrotum was normal. We do not have information about the range, caliber, and type of bullet.

He underwent computed tomography scan that showed a volumetric increase of the scrotum, blood, and air nuclei. Active bleeding was detected from the spermatic cord in the arterial phase, increasing in the following phases [Figure 1].

Informed consent was obtained and the patient was prepared for surgery. He underwent a surgical left inguinal exploration (a surgical incision was performed prolonging the entrance bullet hole to the groin) ligation of the injured artery and left orchiectomy. Intraoperative findings showed active bleeding from the left testicular artery at the level of the superficial inguinal ring. Dartos fascia and tunica vaginalis were thickened and testis was ischemic but not directly injured by GSW. Moreover the tunica albuginea of the testis was not damaged. Irrigation of tissues involved with saline solution, hematoma evacuation, and debridement of devitalized tissue was performed. The surgical incision and the exit GSW were closed with an absorbable, synthetic, braided suture. After the surgery, cessation of bleeding and clinical stabilization occurred. The patient was



**Figure 1:** Arterial phase computed tomography abdomen demonstrated an active bleeding from the spermatic cord

discharged after 5 days. The pathology report showed an extensive ischemic infarction, heavy infiltration by acute inflammatory cells, excessive tissue edema, and congested blood vessels.

The patient underwent a semen analysis 6 months after the surgery. The comparison with preoperative semen analysis (performed 1 year before surgery) showed a decrease in sperm concentration (68 million vs. 37 million) but a similar percentage of progressive sperm motility (45% vs. 42%) and normal shape of sperms (7% vs. 6%). We did not suggest to perform sperm conservation.

### DISCUSSION

Male genitalia can be injured in an isolated way or in association with others genitourinary traumatism. These injuries, and their sequelae, can affect patients of any age or background. Consequently, the incidence of scrotal or testicular injury in a trauma activation is generally considered to be <1%.<sup>[2]</sup>

The most relevant penetrating trauma of the scrotum is the result of GSWs; they are certainly less common than blunt injuries. Bilateral testicular injuries are present in about 6%–30% of cases.<sup>[5]</sup> The damage of the projectile is related to its caliber and velocity. Indeed, these kinds of injuries are frequently life-threatening, in particular when vascular damage occurred. General management consists of meticulous hemostasis, vigorous saline lavage, removal of

foreign bodies, hematoma evacuation, conservative debridement of devitalized tissue, repair of associated injuries, and primary wound closure.<sup>[2]</sup> Infection is rare in properly debrided wounds. The use of an injury severity score such as the American Association for the Surgery of Trauma could be useful to facilitate the management of some complex genitalia lesions.<sup>[6]</sup> In the presence of scrotal swelling on physical examination, deep injuries to the scrotum, or a suspected urethral injury surgical exploration is mandatory.<sup>[7]</sup> In selected cases the testis is viable for reconstruction in absence of an adequate tunica albuginea tissue. Ferguson and Brandes described their experience of using polytetrafluoroethylene grafts and tunica vaginalis grafts to repair the tunica albuginea defect.<sup>[8]</sup> We report the first case in the literature of a direct GSWs of the testicular artery without direct testicular involvement. In these cases, a lesion of the superficial femoral artery should always be excluded from the study.<sup>[9]</sup>

All body damages, such as blast injuries, burns, shrapnel injuries, vision loss, hearing loss, and in particular genitalia injuries can frequently have significant sexual, endocrine, psychological, and relationship issues that are noteworthy. In our case, the patient experienced a decrease in sperm concentration but a similar values of progressive sperm motility and normal shape of sperms.<sup>[10]</sup>

## CONCLUSIONS

Surgical exploration should be performed in all cases except for the most insignificant and superficial wound. All patients with a GSWs to the external genitalia should be evaluated with an index of suspicion for other associated lesions. People with violence-related disabilities manifest a complex array of psychosocial and relational problems that require a multidisciplinary approach to deal with physical, psychological, and sexual health.

## Declaration of patient's consent

The authors certify that they have obtained the appropriate patient consent form. In the form, the

patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that no names and initials will be published and all due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

## Author contributions

F. C. was involved in protocol/project development and manuscript writing/editing; M. F. performed acquisition of data and manuscript writing/editing; N. A. L. performed acquisition of data and critical revision of the manuscript; S. S. contributed to manuscript writing/editing; P. F. was involved in supervision and protocol/project development.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

## Compliance with ethical principles

No prior ethical approval is required for single case reports. However, the patient provided consent for publication.

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