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ORIGINAL ARTICLE

War-related penile injuries in Libya: Single-institution experience

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KEYWORDS

Gunshot;
Penis;
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War-related penile injuries

ABBREVIATIONS

AAST, American Association for the Surgery of Trauma;
IED, improvised explosive device

Abstract ***Objective:*** To report on our initial experience in the management of war-related penile injuries; proper diagnosis and immediate treatment of penile injuries is essential to gain satisfactory results. Besides treating primary wounds and restoring penile function, the cosmetic result is also an important issue for the surgeon.

Patients and methods: The study was conducted in the Department of Urology at Benghazi Medical Center and comprised all patients who presented with a shotgun, gunshot or explosive penile injury between February 2011 and August 2017. The patient's age, cause of injury, site and severity of injuries, management, postoperative complications, and hospital stay, were recorded.

Results: In all, 29 males with war-related penile injuries were enrolled in the study. The mean (SD) age of these patients was 31.3 (10.5) years. The glans, urethra, and corporal bodies were involved in four (13.7%), 10 (34.4%), and 20 (68.9%) of the patients, respectively. According to the American Association for the Surgery of Trauma Penis Injury Scale, Grade III penile injuries were the most common

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(11 patients, 37.9%). The most common post-intervention complications were urethral stricture with or without proximal urethrocutaneous fistula (eight patients, 27.5%), followed by permanent erectile dysfunction (five patients, 17.2%).

Conclusion: In patients who sustain war-related penile injuries the surgeon's efforts should not only be directed to restoring normal voiding and erectile function but also on the cosmetic appearance of the penis.

Introduction

The global rise in terrorism, which is linked to easy access to the firearms and improvised explosive devices (IEDs), has led to an increase in the incidence of the external genital injuries, particularly in rebel areas [1,2]. However, injuries caused by gunshots to the external genitalia are relatively rare compared with injuries to the other parts of the body because anatomical shielding provides protection against these injuries [3]. As IEDs and landmines are planted at ground level, the destructive impact of these explosive devices is mainly on the lower limbs, pelvis, and external genitalia [1]. To date, there is no single appropriate therapeutic strategy or surgical technique suitable to treat all types of penile injuries [4]. Thus, the type, severity, and location of penile injuries should be considered in the choice of surgical approach and surgical technique(s) [5]. Although penile injuries are usually not life-threatening, they can have a significant impact on the victims' quality of life [6]. Despite good management and regular follow-up of external genital gunshot wounds, such wounds are fraught with the possibility of complications such as erectile dysfunction, urethral stricture, and infertility [7]. Therefore, the main therapeutic goals of penile injuries are to maintain or restore potency, fertility and natural urination strength, as well as to maintain the aesthetic shape of the penis [1,2].

The aim of our present study was to report our initial experience in the management of war-related penile injuries; emphasising that we have limited experience in these types of injuries, as there was no single case of shotgun, gunshot or explosive penile injury recorded before 2011; the date of war in Libya.

Patients and methods

The study was conducted in the Department of Urology at Benghazi Medical Center. This descriptive case series was carried out in a proactive manner by immediate registration of all operated cases sustaining shotgun, gunshot or explosive injuries to the penis from February 2011 to August 2017. The patient's demographic data, cause of injury, site and severity of primary penile injuries, surgical management as well as the surgical outcome, postoperative complications, and hospital stay, were recorded. These data were collected prospectively and analysed retrospectively. Patients who arrived dead or died during surgery were not enrolled in the study. Penile injuries were classified according to the cause of the penile injury, whether gun/shotgun bullets or shrapnel of explosive devises/projectiles. The causes of penile injuries due to gunshots were sub-classified according to the velocity of bullets into: low-velocity gunshot injuries (< 350 m/s), medium-velocity gunshot injuries (350–500 m/s), and high-velocity gunshot injuries (> 600 m/s) [8]. Penile injuries due to explosions were classified as: IEDs, personal landmine or explosion of a projectile. The proper assessment of penile injuries depends on clinical findings and imaging studies results, as well as on operative findings. Imaging studies, e.g. plain X-ray, are required to identify foreign bodies and/or bone fractures; however, a retrograde urethrogram can only be done in cases of superficial penile injuries, in which urethral injuries are not obvious. CT is usually performed to assess patients who sustain multiple serious injuries. The management of penile injuries depends on the severity of the injury, physical findings and haemodynamic stability of the patient; however, patients in shock underwent immediate laparotomy without any diagnostic imaging studies to treat life-threatening injuries. The grades of the penile injuries were classified according to American Association for the Surgery of Trauma (AAST) Penis Injury Scale [9] (Table 1).

All patients with penile injury underwent initial surgical repair by the same team and because the wounds

Table 1 AAST Penis Injury Scale.

AAST Grade	Description of injury
I	Cutaneous laceration/contusion
II	Buck's fascia (cavernous) laceration without tissue loss
III	Cutaneous avulsion Laceration through glans/meatus Cavernosal or urethral defect < 2 cm
IV	Partial penectomy
V	Cavernosal or urethral defect > 2 cm Total penectomy