Case Report

Supra-pubic penile burial for degloving penoscrotal injury

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Abstract

In this communication we report a young male who presented shortly after an industrial injury to his genitalia resulting in a degloving injury of his penis and testicles. He was managed by initial debridement and dressing, followed by staged reconstruction in form of faccio-cutaneous flap covering for the testicles and burial of the penis for 6 weeks then a zigzag release was done that healed satisfactory with normal appearance, function and erection. Literature described different modalities of treating such injuries which is mainly done through a multidisciplinary approach which wasn't available at our setting.

Keywords: Penile, scrotal and degloving injuries

Introduction

Genital injury occurs mainly due to industrial machines, such as pulleys, chains and rotary discs, when they catch the operators’ clothes and pull out the skin of the penis. Although, not common, this kind of injury occurs occasionally; particularly in farm industry. In 1958, Kubacek presented the first case report of this type of injury(1). Such lesions, although not life-threatening, they are incapacitating and have a devastating psychological impact as well as challenging for first responders and surgeon because of the skin loss involved(2). Staged reconstruction or flaps with skin grafts are the main modalities described for treating such lesions in literature; however, we preferred to use a simple short staged reconstruction tailored to the available facilities ending with a good result. Moreover, it can be done by general surgeons at district hospitals far away from the optimal setting.

Case report

A 27 years old single worker sustained a degloving injury to his genitalia when his clothes were caught in a machine pulley. He arrived to the hospital approximately 12 hours after the trauma. At presentation he was awake, haemodynamically stable with a denuded injury involving the whole shaft of
the penis and the scrotum which was heavily contaminated with dirt, oil and machinery grease. He received the initial management at a rural hospital including analgesia, intravenous fluids, light dressing and intravenous third generation cephalosporin by the referring doctor. Careful debridement and removal of dirt was done under general anaesthesia, which allows assessment of the extent of penile damage and confirms the viability of the testicles. It reveals total avulsion of penile and scrotal skin sparing only the glanular skin. Blood investigations; urine analysis, complete blood count, coagulation profile and renal function tests revealed no abnormality. Swab was taken for culture and sensitivity and the patient subjected to regular dressing and continued on injectable Ceftriaxone until it was clean, healthy with no growth on culture. No imaging studies were done and a 2 ways Foley’s catheter passed smoothly (Fig 1).

Five days later, the patient was taken to the theatre after being consented for a staged operation under spinal anaesthesia in which medial right upper thigh rotational fascio-cutaneous flap (Type B fascio-cutaneous flaps based on the perforating branches superficial femoral arteries) was made to cover the testicles with ease. An oblique 3 cm incision was made at the left groin just above the superficial inguinal ring. A subcutaneous tunnel was made between the original wound and this incision, the denuded penis passed through this tunnel. Tension free suturing of the skin edges was done using vicryl 2/0. Two drains left behind coming through the new made scrotum. Postoperative course include antibiotics and regular careful dressing checking for the viability of the glans penis. One week later, the patient was discharged with clean wound, his penis buried in the supra-pubic area and left to take there (Fig 2).

Six weeks later, the second stage operation was carried under spinal anaesthesia, in which two zigzag incisions (Fig 3) were made on both sides of the buried penis and the skin was mobilized en-block with the penis, then the skin was successfully utilized to enclose the penis.
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The supra-pubic defect was easily approximated and closed after minor undermining (Fig 4) and the catheter was removed after one week and the patient was discharged on regular follow-up as an outpatient.

Fig 4: Second stage operation

Two months later, the patient has satisfactory healing (Fig 5). He has no complains about the size, shape, sensation or erection. His main concern was the hair growth over the shaft which he starts shaving. He observed that the contour of the scrotum was not fully restored and there is mild curvature which was not bothering him.

Fig 5: Final result

Discussion
Fournier gangrene accounts for approximately 75% of cases that involve genital skin loss. The remainder of soft tissue loss cases are typically due to avulsion injuries, human or animal bites, and burns. Traumatic penile injury can result through multiple mechanisms, including infection, burns, human or animal bites, and degloving injuries that involve machinery. The corpora, by definition, are not involved.

There is no written literature about the size of traumatic penile injuries in Sudan, although seven cases of fractured penis have been reported by A Doumi et al from Western Sudan. We believe that traumatic penile injuries are less common in Sudan than in industrial countries due to the agricultural nature which is mostly non machinery. Even there, avulsion injuries to the penis and scrotum are less frequent than penile fractures or penetrating injuries due to gun shots.

Avulsions may vary from simple lacerations to virtual emasculations. Generally, lesions reach only the skin, causing minimal bleeding without producing damage to the cavernous body, the spongy body or the testes. It requires careful selection of which tissue to debride, as well as proper selection of grafts and flaps for reconstruction, aiming to achieve a satisfactory aesthetic result, normal voiding and re-established sexual function.

The penis is particularly susceptible to avulsion injuries. The overlying skin of the penis is loose and elastic. The penile skin must be highly mobile to accommodate both the rigid and flaccid state of the penis. This loose base predisposes the skin to be ripped off easily from the penis. The natural cleavage plane along the shaft of the penis is between the Buck's fascia and the loose areolar tissue that surrounds it. The avulsed segment of the skin from the penis includes the loose areolar tissue with its subcutaneous veins, the Dartos fascia, and the skin as a unit. Because the Buck's fascia is preserved, the corpora cavernosa and corpus spongiosum, including the urethra, are spared, as are the deep dorsal vein and dorsal artery, and nerve. Surgical repair of soft tissue loss to the penis...
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should be undertaken quickly. Prolonged exposure of the denuded penis increases the risk of secondary infection as well as significantly compromise the vascularity. Scrotal skin avulsion is especially difficult to repair. The skin of the scrotum is extremely loose, and the deeper layers contain the Dartos, which is a thin layer of smooth muscle fibers. Beneath the Dartos lie the intercolumnar fascia and the cremasteric fascia and muscle, which are important for thermoregulation of the testicles to maintain adequate spermatogenesis(6). It is therefore important that the testicles be replaced as close to their original location as possible. Testicular sparing is the rule with this injury, and the cremasteric reflex has been implicated as a cause(6). In traditional treatment, after cleaning and debridement of devitalised tissues, the exposed tissues are covered with viable flaps from the remaining skin. When there is no available skin, penile burial in the scrotum or in the suprapubic region is performed. Other techniques, such as banking of the testicles in the inner thighs or reconstruction of the scrotum by tissue expansion, as described by Still and Goodman(7), are also applicable. Staged reconstruction has a better functional outcome, a sensate and hair-bearing scrotum, and more reliable coverage without the problems of graft take and graft contracture which may cause painful erection. However some staged operations like that described by Luiz et al(8) which extend to 7 months may have emotional impact on the patient which we aim to minimize without jeopardizing the satisfactory outcome. We feel that combination of the flap and split skin graft described by Sengathir(9) may have given a better scrotal contour and less curvature. No standard approach is used to treat soft tissue injuries to the penis, as the mechanism of injury is quite varied. Individualised approaches should be used for each patient(3). Although the procedure we describe here does not include skin grafting which is often needed in major avulsions, we ended with satisfactory results. It can be done by general surgeon with no special facilities at district hospitals to save the valuable time and avoid infection. However, Michael Ward(10) highlighted the role of multidisciplinary approach, with urology and plastic teams, to offer the highest level of surgical care for patients with polytraumatic injury, including significant genital trauma: penile degloving, bilateral testicular avulsion and bilateral spermatic cord laceration. There is an increasing role in recognizing potential quality of life issues beyond the scope of a trauma or general surgeon to spare reproductive and endocrine difficulties later in life. We recommend that these types of injuries should be referred to specialized hospital at which the reconstruction can be carried out by a multidisciplinary team. However, in remote areas where service is conducted by a general surgeon with good understanding of the principles the described operation might be a suitable solution.

References
5. Gencosmanoglu R, Bilkay U, Alper M, Gurler T, Cagdas A. Late results of split-