Case Report

Injury of the External Genitalia in 10-Year-Old Boy

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Abstract

Degloving injury of penis and scrotum is very rare in child population and requires early reconstructive surgery for good outcomes. We report a 10-year-old boy with complete avulsion of the scrotum and partial of the penis caused by a bicycle chain due to off-road bicycling. The patient has been treated successfully with a single-staged surgery.

Keywords: Boy, degloving injury of penis and scrotum, one-stage repair

Introduction

In our days, sports such as off-road bicycling and motorbike riding have been associated with increasing percentage of genital trauma, especially in boys. Genital injury can be caused also by blunt, penetrating, or thermal trauma.[1,2]

In the majority of cases, the management is conservative but differs according to the site and the extent of the injury. The small size of the testes and their mobility in the scrotum in this age seems to be a protective factor. Avulsions may vary from lacerations to emasculation.[3]

Scrotal, penile, and perineal skin loss may follow severe infections such as Fournier's gangrene.[1] Less than 50% of the scrotal skin loss can often be closed primarily without difficulties immediately after trauma, with the remaining surrounding tissue. Serious scrotal injuries with exposed testes represent challenging problems to the reconstructive surgeons.

Clinical evaluation includes palpation of the penis and testes and ultrasonography control which provide useful information about the testicular integrity and blood flow.

Case Report

A 10-year-old boy presented to the Pediatric Surgery Emergency Room with a complete degloving injury of the scrotum and partial injury of the penile skin, caused by the bicycle chain while off-road bicycling approximately 7 h ago [Figure 1]. The suspensory ligament at the root of the penis was also exposed as result of the injury. An ultrasound exam was performed immediately in the Emergency room without pathological signs concerned the blood flow and the testicular integrity. No additional pathological signs from the abdominal organs. The boy was catheterized carefully with a 10 Fr Foley catheter, and he was taken in the operation room for reconstructive surgery. Absorbable suture reattaches the penile stump to the pubis, serving the role of the previous suspensory ligament. The exposed penile shaft was regloved with the same penile skin stretched to cover the defect with interrupted technique. After the penile shaft coverage, an interrupting stage by stage suturing of the scrotal skin was performed [Figure 2]. Previously, the testes placed in pouches which were created on medial side of thighs and a Penrose drain was inserted. The immediate cosmetic result was excellent and his postoperative period was smooth. The Foley catheter and the Penrose drain were removed on his 4th postoperative day, and the patient was discharged on 6th day. After 7 months' follow-up, the cosmetic result is excellent, and the boy has a good urinary flow without dysfunction in erectile state [Figure 3].

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Figure 1: Complete degloving injury of the scrotum and partial injury of the penile skin



Figure 2: The exposed penile shaft was regloved with the same penile skin stretched to cover the defect with interrupted technique. After the penile shaft coverage, an interrupting stage by stage suturing of the scrotal skin was performed



Figure 3: After 7 months follow up the cosmetic result is excellent

Discussion

Penile and scrotum injuries may occur through mechanisms such as burns, bites, and degloving injuries from bicycling and motorbike riding.[1,2] Avulsions in this area vary from lacerations to emasculations [Figure 1].[3] Surgical repair of skin loss to the penis must be undertaken immediately because the denuded penis is more prone to secondary infection.

The scrotum is an anatomical male reproductive structure that consists of a suspended dual-chambered sack of skin and smooth muscle that is present in most terrestrial male mammals and located under the penis. One testis is typically lower than the other, which functions to avoid compression in the event of impact. The perineal raphe is a small, vertical, slightly raised ridge of scrotal skin under which is found the scrotal septum. It appears as a thin longitudinal line that runs front to back over the entire scrotum.

The scrotum contains the external spermatic fascia, testes, epididymis, and ductus deferens. It is a distention of the perineum and carries some abdominal tissues into its cavity including the testicular artery, testicular vein, and pampiniform plexus. The scrotal skin is extremely loose. Beneath the dartos fascia lie the intercolumnar and cremasteric fascia and muscle, structures important for the thermoregulation of the test is to maintain adequate spermatogenesis. For this reason is very important the testicles to be replaced to their original location as possible

Two ligaments suspend the pendulous penis from the anterior abdominal tissues and the pubis, known as the fundiform ligament and the suspensory ligament, respectively. The fundiform ligament is a continuation of Scarpa's fascia and the linea alba as it travels downward to fuse with Buck's fascia. The suspensory ligament is the more inferiorly located of the two structures and is a thickening of Colles' fascia. In case of penile disruption, absorbable suture reattaches the penile stump to the pubis, serving the role of the previous suspensory ligament. This technique was used successfully in our case.

There is no standard approach to treat penile and scrotal skin injuries individualized techniques should be used for each patient.[3] In traditional treatment, the exposed tissues are covered with viable flaps from the remaining skin. The surgeon can use the posterior scrotal skin for primary closure in case of absent of available skin.[1] Staged reconstruction such as banking of the testicles in the inner thighs and reconstruction of the scrotum by tissue expansion or combination of flap and split skin graft can provide better results but the time its take to complete the procedure extends up to 7 months.[4,5] In our case, the exposed penile shaft was regloved with the same penile skin stretched to cover the defect with interrupted technique. After the penile shaft coverage, an interrupting stage by stage suturing of the scrotal skin was performed. Previously, the testes placed in pouches which were created on medial side of thighs and a Penrose drain was inserted [Figure 2].

Surgical repair of avulsions in penis and scrotum must be undertaken immediately because prolonged exposure of denuded penis and scrotum increases the risk of secondary infections and damages in the vascularity. After the surgical repair, the most important and frequent complications are the postoperative infection and the partial graft loss with associated risks of fistula formation, curvature, and erectile dysfunction. In our case, the surgical repair was done in the first 6 h of the incident, and the cosmetic result was excellent with no postoperative infection [Figure 3].

Conclusion

Due to avulsions in penoscrotal area, surgical repair must be undertaken immediately. The selected technique is individualized for each patient and depends on the degree of skin loss.

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Conflicts of interest

There are no conflicts of interest.

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