STAGED URETHROPLASTY FOLLOWING SEVERE ELECTRIC BURNS TO PERINEUM AND GENITALIA: A CASE REPORT

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ABSTRACT

Objective: *This study aims to know the surgical treatment of electrical injuries, perineum, and scrotum.* ***Case(s) Presentation:*** *A 55-year-old male sustained electric burns to the back, perineum and scrotum.The patient failed to void following removal of the catheter 6 weeks later, hence the patient was referred to the urology department for further management.The patient was counselled for a two-phase urethral surgery.* ***Discussion:*** *In our case, the patient had sustained perineal and scrotal burns when he sat over a live wire. This led to the loss of skin and soft tissues, needing massive musculoskeletal and skin grafts.Our patient underwent a number of revision surgeries leading to repeated scarring of the perineal tissues and skin.* ***Conclusion****: Electrical injuries to the perinium and genitalia are rare. Hence the surgical strategy of electrical injuries requires a step-wise approach. Initially, conservative debridement needs to be performed so as to preserve any tissue of questionable viability and ensure subsequent adequate soft-tissue coverage. The reconstructive surgical procedures bring about satisfactory outcomes.*

Keywords:*Electrical injury, perineum, scrotum, surgical strategy.*

ABSTRAK

Tujuan: *Penelitian in bertujuan untuk mengetahui penanganan bedah pada cedera listrik, perineum, dan skrotum.* ***Presentasi Kasus:*** *Seorang pria berusia 55 tahun menderita luka bakar listrik di punggung, perineum, dan skrotum. Pasien gagal berkemih setelah pelepasan kateter 6 minggu kemudian, sehingga pasien dirujuk kebagian urologi untuk penanganan lebih lanjut.Pasien dikonseling untuk operasi uretra dua fase.* ***Diskusi:*** *Pada kasus ini, pasien mengalami luka bakar pada perineum dan skrotum ketika dia duduk di atas kabel listrik. Hal ini menyebabkan hilangnya kulit dan jaringan lunak, sehingga memerlukan cangkok muskuloskeletal dan kulit secara besar-besaran.Pasien kami menjalani sejumlah operasi revisi yang menyebabkan jaringan parut berulang pada jaringan perineum dan kulit.* ***Simpulan:*** *Cedera listrik pada perinium dan genitalia jarang terjadi. Oleh karena itu,strategi bedah cedera listrik memerlukan pendekatan bertahap. Awalnya,debridemen konservatif perlu dilakukan untuk mempertahankan jaringan yang viabilitasnya dipertanyakan dan selanjutnya memastikan cakupan jaringan lunak yang memadai.Prosedur bedah rekonstruktif memberikan hasil yang memuaskan.*

Kata kunci: *Cedera listrik, perineum, skrotum, strategi bedah.*

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INTRODUCTION

Electrical injuries occur whenever a high-energy current travels through the body due to contact with a live electrical wire or source. Injuries occur as a result of the flow of current through the body, as a cause of arc flash, or whenever the clothes catch fire. In the first two instances, the body converts electric energy to heat energy, which results in a thermal burn.Electric injuries to the perineum and genitalia are rare but devastating.[1] Thermal burns and injuries to these areas generally occur in conjunction with injuries involving other anatomic sites, however, they may be isolated too.[2] Resuscitation and stabilization of these patients remain the first priority, followed by management of these wounds.

The surgical treatment of electric injuries of extremities has been well established and includes appropriate debridement, temporary wound coverage, and final adequate soft-tissue reconstruction.[3-4] However the management of genital and perinealinjuries still remainscase-based andcontroversial.[5-6] Management of these injuries

requires a multidisciplinary approach including Plastic and reconstructive surgery, Urologic and Andrologic teams.

CASE(S) PRESENTATION

A 55-year-old male sustained electric burns to the back, perineum and scrotum (Figure 1). He was initially admitted and managed by the plastic surgery department of our hospital. The perineal area and scrotum were debrided including right orchidectomy as the testes had sloughed out due to thermal burns. The penoscrotal part of the urethra too had been necropsied. Excision and anastomosis of that part of the urethra were performed by the plastic surgeons. The patient also had thermal injuries over the back and left calf area. The raw area following debridement was covered with split-thickness skin graft and musculocutaneous graft over the perineum and medial aspect of the right thigh.

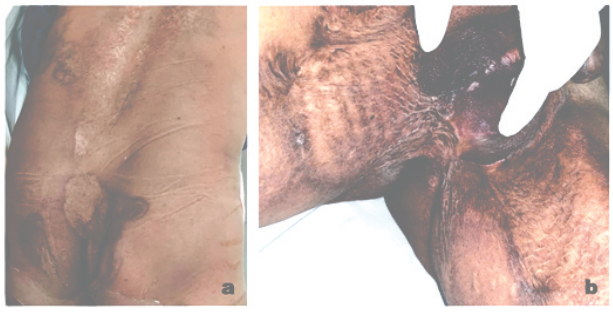

Figure 1a. Healed burn scars over the back and gluteal region. **b)** Healed scars over the perineum and scrotum

The patient failed to void following removal of the catheter 6 weeks later, hence the patient was referred to the urology department for further management. A suprapubic catheter was introduced and the patient was asked to follow up at a later date. The patient had several complications of the perineal wounds for which a number of revision surgeries were performed. Two years later a voiding cystogram and retrograde urethrogram(Figure 2) were performed which revealed a complete bulbar urethral stricture with no contrast passing beyond the obliterated part of the urethra.

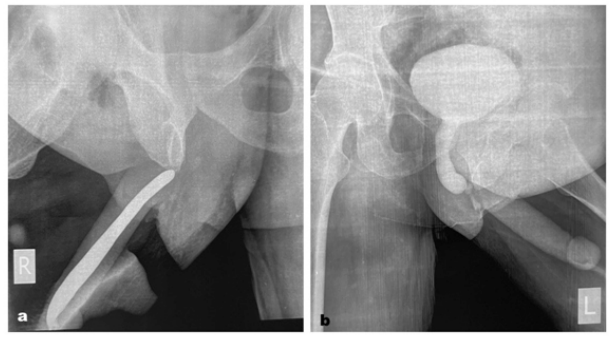

Figure 2a.retrogradeurethrogram showing bulbar urethral stricture. **b)** Voiding cystourethrogram showing bulbar urethral stricture.

The patient was counselled for a two-phase urethral surgery. In the first step (Figure 3) the proximal and distal segments of the urethra were identified. The in-between scar tissue was excised. A buccal mucosal graft was grafted onto the perineal area so as to bridge the two ends. The graft was quilted onto the underlying perineal tissues. Twelve weeks later the buccal mucosal graft was tubularized

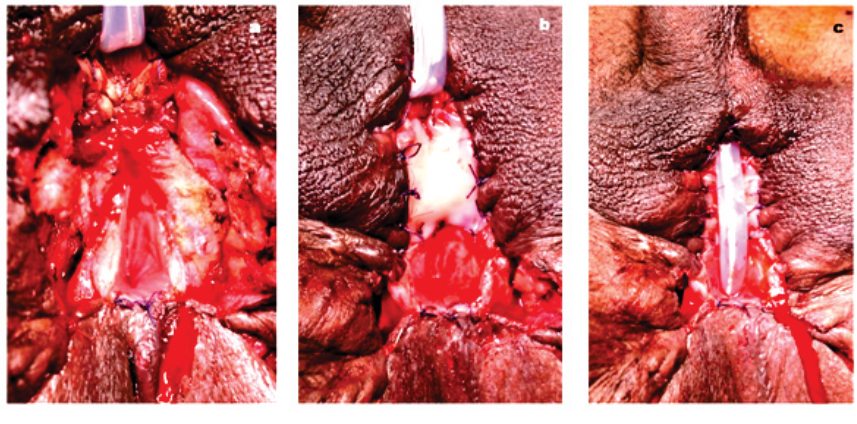

Figure 3a. The proximal (P) and the distal (D) ends of the urethral sediments were identified and the rest of the scar tissue was excised. **b**.buccal mucosal graft placed in between the proximal and distal ends of the excised urethra. **c.** stage-I urethroplasty completed.

and the urethral continuity was maintained. Additional tissues were used to cover the neourethra and this was further covered by skin grafts. The catheter was removed after 6 weeks and the patient voided via naturalis.

DISCUSSION

The impact of electrical injury varies from small burns to devastating tissue injury leading to death in some instances. The severity of the injury depends on the voltage of the electric current and the duration of contact; the higher the voltage, the more severe is the tissue damage. The involvement of the perineum and the genitalia are not common in electrical injury as compared to extremities like upper and lower limbs. In our case, the patient had sustained perineal and scrotal burns when he sat over a live wire. This led to the loss of skin and soft tissues, needing massive musculoskeletal and skin grafts. Injuries to the male urethra need to be identified and treated appropriately so as to prevent further complications and surgeries.

Our patient underwent a number of revision surgeries leading to repeated scarring of the perineal tissues and skin. Performing aurethroplasty in such cases is a huge task. Local tissues are scarred and ischaemic, making reconstructive procedures complicated. Moreover, the impact of disfigurement of the perineum and scrotum leads to psychological and mental impairment in any individual.[7]

CONCLUSION

In conclusion, electrical injuries to the perinium and genitalia are rare, hence the surgical strategy of electrical injuries, irrespective of the involved anatomical areas, requires a step-wise approach. Initially,conservative debridement needs to be performed so as to preserve any tissue of questionable viability and ensure subsequent adequate soft-tissue coverage. The reconstructive surgical procedures bring about satisfactory outcomes.

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