

## Penile injuries: A 10-year experience

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### Abstract

We report our 10-year experience with penile injuries. We retrospectively reviewed the records of 156 cases of male external genitalia injuries between May 2002 and December 2012. Of these, only 26 patients presented without urethral injuries and were included in this study. Patients were divided into 4 groups: Group 1 (n = 12) with patients with penile fractures injuries; Group 2 (n = 5) with patients with penile amputation injuries; Group 3 (n = 2) with patients with penile penetrating injuries; and Group 4 (n = 7) with patients with penile soft tissue injuries. Grading of injury was done using the American Association for the Surgery of Trauma (AAST)-Organ injury scale of penile injury. Penile injuries without urethral injuries are urological emergencies which require immediate attention.

### Introduction

Penile injuries can be due to several factors. Most occur in industrial, automobile accidents, or as a result of attempts at self-mutilation. The incidence of penile injuries is under-reported because many patients do not seek medical attention due to ethical and psychological reasons.<sup>1</sup>

Penile fracture is an uncommon urological trauma; there were 1331 cases reported between 1935 and 2001.<sup>1</sup> It is defined as a rupture of the tunica albuginea due to trauma or abrupt lateral bending of the penis in an erect state. Lesions on a flaccid penis or lesions in suspensor ligament of the penis are not included in this definition.<sup>2</sup> Forceful sexual intercourse is the most common cause of penile fractures; masturbation is also a reported cause. Other rare lesions could occur during a nocturnal erection and due to a partial rollover.<sup>3</sup>

Penile amputation is also uncommon in the general population and more common in patients with psychiatric problems. This amputation involves the complete or partial

transaction of the penis. In complete transaction both corpora cavernosa and the urethra are involved.

Penetrating injuries are common during wartime. Most male genitalia injuries in civilians are due to foreign bodies which are self-inserted through the urethra because of psychiatric illness, sexual curiosity or sexual practice while intoxicated.<sup>4</sup> Penetrating injuries can involve corpora, the urethra, or penile soft tissue alone.

Penile soft tissue injury can result through multiple mechanisms, including burns,<sup>5</sup> human bites to the penis,<sup>6</sup> animal bites<sup>7</sup> and degloving injuries that involve machinery.<sup>8</sup> The corpora, by definition, are not involved. In children, the most common soft tissue injury is zipper injury in uncircumcised young boys who zip up their pants too quickly and entrap their foreskin in the zipper.<sup>9-10</sup>

For optimal evaluation and management of genitourinary injuries, the European Association of Urology (EAU) created a consensus document (Table 1).<sup>11</sup>

### Methods

Records of 156 cases of male external genitalia injuries between May 2002 and December 2012 were retrospectively reviewed. Of these, only penile injuries without urethral injuries were included in this study (n = 26). These 26 patients were divided into 4 groups: Group 1 (n = 12) with patients with penile fractures injuries; Group 2 (n = 5) with patients with penile amputation injuries; Group 3 (n = 2) with patients with penile penetrating injuries; and Group 4 (n = 7) with patients with penile soft tissue injuries. Written informed consent was taken from all patients for photographing, recording and for scientific and medical education purposes. Grading of injury was done using the American Association for the surgery of Trauma (AAST)-Organ injury scale of penile injury (Table 1).

**Table 1. American Association for the surgery of Trauma. Organ injury scale of penile injury**

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

\*Advance one grade for multiple injuries up to grade III. Advance one grade for bilateral lesions up to grade V.

## Group 1

Group 1 patients presented with a clinical diagnosis of penile fracture in our hospital (Table 2). Primary assessment included a clinical history and physical examination (Fig. 1). Supplementary diagnostic evaluation with a Doppler ultrasound was done in most cases (Fig. 2) and magnetic resonance imaging was done in 2 cases where bilateral injury was suspected. Urinalysis was done in all cases to exclude urethral injury; in patients with microhematuria, a retrograde urethrocystogram was performed in 3 cases when urethral injury was suspected (Table 3).

Six patients who presented within 6 hours had classical surgical technique consisting of sub-coronal incision with penile degloving and exposure of corpora cavernosum and urethra; their corpora cavernosum lesions were identified and treated with interrupted vicryl 3-0 sutures (Fig. 3).

The bladder catheter was maintained for 12 hours after surgery. Patients were discharged after 1 week and followed



**Fig. 1.** Photograph of fracture of penis with "eggplant deformity."

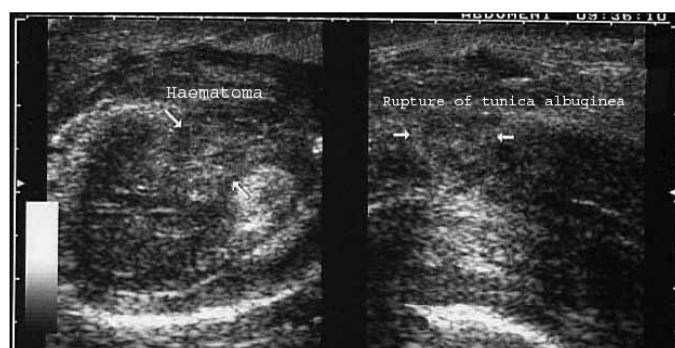
for 6 months to 1 year. Out of the remaining 6, 3 patients (with penile fracture injuries with delayed presentation between 3 to 6 weeks) were treated with different surgical technique with longitudinal incision instead of classical circumferential degloving incision of the affected area; their lesions were proximal and felt as a gap which was visualized and the extension of the defect was seen after clot evacuation. The cavity was exposed and cavernosa lesions were repaired with 3 interrupted 3-0 vicryl sutures.

Table 4 shows lesions observed during surgical exploration. These patients were discharged after 5 days and followed for 6 months to 1 year. Of these, 3 patients were managed conservatively because they refused surgical intervention. Conservative therapy consisted of cold compresses, pressure dresses, anti-inflammatory medication, fibrinolytics and suprapubic urinary diversion for 1 week; the latter was done in 1 patient with penile edema and difficulty passing urine. These patients developed nodule at the rupture site with painful erection, painful coitus, and erectile dysfunction within 1 year of follow-up.

## Group 2

**Table 2. Group 1. Patient characteristics and clinical presentation of penile fracture cases (n = 12)**

Particulars	No. patients	Percentage
Age, years		-
Range	20-55	-
Mean	28	-
Marital status		
Married	10	83.3%
Unmarried	2	16.7%
Duration before presentation	6 hours	50%
	3-6 weeks	50%
Etiology		
Forceful coitus following papaverine injection to penis	3	25%
Forceful abnormal coitus	5	41.6%
Forceful coitus with woman on top	1	12%
Masturbation	3	25%
Rolling over in bed with erect penis	Nil	-
Clinical presentation		
Cracking sound, pain, swelling and detumescence, deformity	12	-
Bleeding for urethra	Nil	-



**Fig. 2.** Doppler ultrasound study showing disruption of tunica albuginea with intracavernosal hematoma (marked by arrows).

**Table 3. Diagnostic evaluation of Group 1 penile fracture cases (n = 12)**

Investigation	No. patients	Percentage
Doppler ultrasound evaluation	10	83.3%
Magnetic resonance imaging	2	16.7%
Retrograde urethrocystogram	3	25%

We recorded the patient characteristics and clinical presentation of patients with penile amputation injuries (Table 5). We used clinical history and a physical examination as our primary assessment (Fig. 4). No supplementary diagnostic investigation was done in these patients.

Two patients who presented within 2 hours of their injury had an amputated penis re-implanted by microsurgical technique where blood vessels and nerves were re-anastomosed and the corpora approximated. Postoperatively, these patients were put on third generation cephalosporines, anti-inflammatory drugs, analgesics, and pressure dressing. Patients had skin necrosis during the postoperative period which was managed by local dressing. The other 3 patients, for whom amputated penile remnant was not available, refashioning of the stump was done after hemostasis and the urethral catheter was retained for 1 week. These patients were hospitalized for 1 week and followed for 1 year.

### Group 3

We recorded the patient characteristics and clinical presentation of patients with penile penetrating injuries (Table 6). Primary assessment included a clinical history and physical examination. Supplementary diagnostic evaluation was x-ray and ultrasound. In the thorn-prick injury, the thorn was left in the penile soft tissue and removed. In the second case, in which the patient presented with an accidental self-inflicting

**Table 4. Group 1. Operative findings and management/ follow-up of penile fracture cases (n = 12)**

Operative findings	No. patients	Percentage	Follow-up
<b>Tunica tear</b>			
Single	10	83.3%	12 months
Double	2	16.7%	12 months
Associated urethral involvement	Nil	-	-
<b>Management</b>			
Immediate repair	6	50%	12 months
Delayed repair	3	25%	12 months
Conservative	3	25%	12 months
<b>Follow-up</b>			
Immediate repair: No complications	6	50%	12 months
Delayed repair: Minimal complications	3	25%	12 months
Conservative: Complications present	3	25%	12 months

**Fig. 3.** Photograph of fractured penis showing rupture of the corpora cavernosum.

injury by stitching needle, the caudal end of the needle was palpable. Immediate exploration under fluoroscopic guidance was done and the needle was removed intact (Fig. 5). There were no complications during surgery or 1 year postoperatively.

### Group 4

We recorded the patient characteristics and clinical presentation of patients with penile soft tissue injuries (Table 7). Primary assessment included a clinical history and physical examination.

Patients were managed with wound exploration and primary suturing. In the 4 cases of zipper injuries, the foreskin (ventral prepuce) was trapped in their pant zippers. To remove the foreskin between the locked teeth of the zipper, we found that cutting the cloth between the interlocked dentition was generally adequate. Removal was more challenging for the

**Fig. 4.** Photograph showing amputation of the penis with bleeding surface.

**Table 5. Group 2. Patient characteristics and clinical presentation of penile amputation cases (n = 5)**

Particulars	No. patients	Percentage
<b>Age, years</b>		
Range	18–52	
Mean	35	
<b>Marital Status</b>		
Married	4	80%
Unmarried	1	20%
<b>Etiology</b>		
Amputated by wife due to marital dispute	2	40%
Self-mutilation with mental illness	2	40%
Amputated by quack, while doing circumcision	1	20%
<b>Management</b>		
Re-implantation of penile stump with micro-surgical technique	2	40%
Re-fashioning of stump	3	60%

skin caught within the buckle of the fastener. Due to the patients' pain, edema or complicated entanglement, we cut the median bar of the zipper with bone or wire cutters to separate the 2 faceplates and release the entrapped skin (Fig. 6). These cases were managed by local anesthetic spray or with short general anesthesia. In the patient with the degloving injury, primary repair was done. All patients were hospitalized for 2 to 3 days and followed for 6 to 12 months. All patients with the dog bite had a course of antirabies prophylaxis vaccination in addition to wound management and the dog was observed for 2 weeks.

## Results

Between May 2002 and December 2012, 26 patients were assessed and managed under the care of urology department



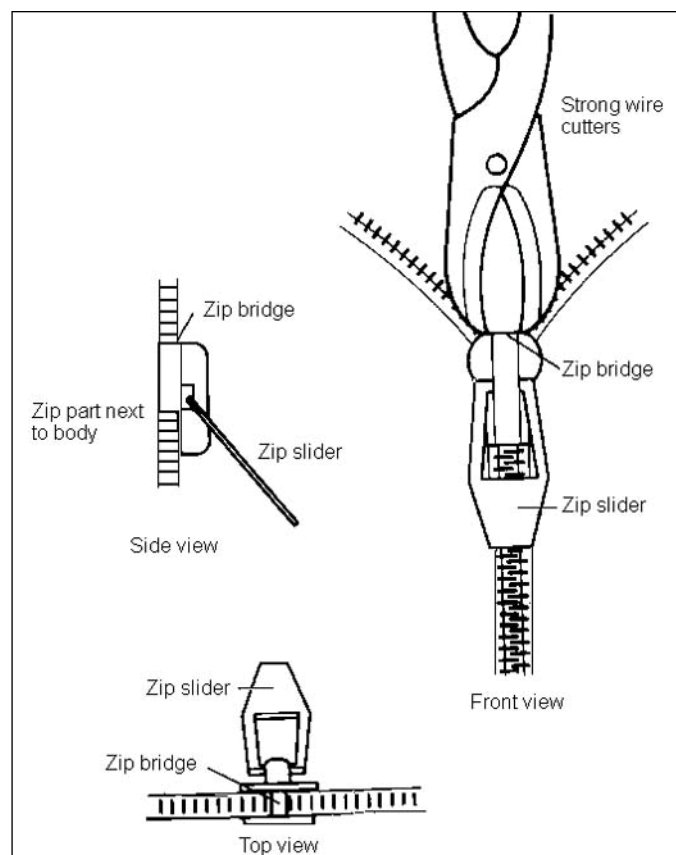
**Fig. 5.** Photograph of penetrating penile injury with a 6-cm needle being extracted from the peno-scrotal junction.

**Table 6. Group 3. Patient characteristics and clinical presentation of penile penetrating injuries (n = 2)**

Particulars	No. patients	Percentage
<b>Age, years</b>		
Range	21–30	
Mean	23	
<b>Marital Status</b>		
Married	1	50%
Unmarried	1	50%
<b>Etiology</b>		
Thorn prick injury while climbing a tree	1	50%
Self-insertion of a 6-cm long needle for autoerotic reasons	1	50%
<b>Clinical presentation</b>		
Pain and swelling of penis	1	50%
Pain and swelling of penis with the caudal end of the needle palpable at penoscrotal junction	1	50%

Management: Surgical exploration and removal of foreign body with no complication on follow-up period of 1 year

at same hospital. Patient ages ranged from 22 to 52 years (median: 35). The interval from injury to presentation ranged from 6 hours to 6 weeks (median time: 11 hours). Of the total patients, 23 (88%) were submitted to surgical exploration and only 3 (11.5%) were conservatively managed. The mean



**Fig. 6.** Diagram showing mechanism of removal of entrapped foreskin in zipper.



**Table 7. Group 4. Patient characteristics and clinical presentation and management of penile soft tissue injuries cases (n = 7)**

Particulars	No. patients	Percentage
<b>Age, years</b>		
Range	8–22	
Mean	10	
<b>Marital Status</b>		
Married	Nil	-
Unmarried	7	100%
<b>Etiology</b>		
Degloving penile injury following a road traffic accident	1	14.3%
Dog bite	2	28.6%
Zipper entrapment injury	4	57.1%
<b>Management</b>		
Primary suturing of degloving injury	1	14.3%
Wound exploration and suturing of dog bite	2	28.6%
Foreskin removal by cutting the sliding piece of zipper	4	57.1%

follow-up after surgery was 8 months (range: 3–18). Grading of injury was done using the American Association for the Surgery of Trauma (AAST)-Organ injury scale of penile injury. We divided patients into 4 groups.

In the 12 patients in Group 1, 6 (50%) patients had immediate surgical exploration and 3 (25%) with delayed presentation after 6 weeks were treated with longitudinal incision of the affected area instead of classical circumferential degloving incision. The remaining 3 patients (25%) were managed conservatively because of painful erection, painful coitus, erectile dysfunction and penile curvature after 1 year follow-up.

In the 5 patients in Group 2, 2 (40%) had microsurgical re-implantation of the penile stump with local dressing; functional recovery was satisfactory. In 3 (60%) patients, we refashioned the stump due to lack of amputated penile remnant with either urethral dilatation or meatoplasty performed during the 6-month to 1-year follow-up.

In the 2 patients in Group 3, patients had minimal surgical exploration with no complications (i.e., erectile dysfunction, painful erection or plaque formation) 1 year postoperatively.

In the 7 patients in Group 4, wound exploration and primary suturing was done in 2 (28.6%) cases with good healing of the wound during the postoperative period, with a 3- to 6-month follow-up. One case (14.3%) having had a road traffic accident and degloving injury had circumcision and primary suturing of wound with satisfactory wound healing 6 months postoperatively. Among the 4 (57.1%) cases of zipper injury, patients recovered well 3 months postoperatively.

## Discussion

Sporadic reports of penile injury give the impression that it is rare; however, it is likely under-reported or hidden due to social embarrassment. Our study is limited by the small number of cases and its single-centre nature. Therefore, we reviewed 10 years' worth of records for this study.

Penile injuries are confirmed by their clinical presentation. The typical history and associated physical examination findings exclude the need for other diagnostic evaluations. A marked thinning of the tunica albuginea, when combined with abnormal bending, leads to excessive intracavernosal pressure and often a transverse laceration of the proximal shaft.<sup>12</sup> Classic features include the patient reporting an audible "popping" sound, rapid detumescence, pain, penile swelling and deviation of the penis often to the side opposite the injury secondary to mass effect of the hematoma at the injury site. Following injury, if Buck's fascia remains intact, the hematoma develops and results in the characteristic "eggplant deformity."<sup>13</sup> The defect at the fracture site is often palpable and has been described as the "rolling sign." This represents a firm, mobile, tender mass, where the penile skin can be rolled over the blood clot.<sup>14</sup> An ultrasound has a limited role in penile fractures, but useful in penile penetrating injuries.<sup>15</sup> Magnetic resonance imaging has been highly accurate to demonstrate corpus cavernosum lesions.<sup>16</sup> Urinalysis was done in all cases of penile fracture patients to exclude urethral injury that was then confirmed by ascending urethrography/urethroscopy. This is in accordance with the international recommendation on urethral injury with a fracture penis.<sup>17</sup> The incidence of urethral injury is between 20% to 38%.<sup>17</sup> Treatment is immediate surgical repair because the complication rate of conservative management is 25% to 53%.<sup>18</sup>

Complications of penile fracture are penile curvature, erectile dysfunction, pain during intercourse, high-flow priapism, pseudodiverticulum and fistula.<sup>19</sup> Surgical treatment by sub-coronal incision is the standard incision for fracture penis. Longitudinal incision laterally over the same side is easy and equally good with no short- or long-term complications in delayed cases.<sup>2</sup> The justification for extensive exposure is to have a complete access to all the 3 corporal bodies, as well as the neurovascular bundle. However, it is well-known that most patients have a small unilateral tear of the corpus cavernosum. Mansi and colleagues reported that extensive degloving may also carry a high risk of complication, such as wound infection, abscess formation and subcoronal skin necrosis.<sup>20</sup>

Since 1970 in Thailand there has been an epidemic of penile amputation as philandering punishment by humiliated wives.<sup>21–23</sup> In 1929, Ehrish and colleagues reported macroscopic penile re-implantation in which arterial anastomosis was not performed.<sup>24</sup> Although the final cosmetic

and functional results of the macroscopic re-implantation was gratifying, skin necrosis was common.<sup>25-27</sup> Cohen and colleagues reported re-implantation of the penis by microsurgical technique, in which the blood vessels and nerves were also anastomosed.<sup>28</sup> The results were highly satisfactory and skin necrosis was not as common.<sup>29</sup> Erection returned in all cases, making intercourse possible, but penile sensation was less.<sup>30</sup>

In penile penetrating injuries with minimal surgical exploration, the foreign body can be removed with fluoroscopic guidance. Removal of the inserted foreign bodies, like a needle, depends on the size of the foreign body, its angle and depth of penetration.<sup>31</sup> The penis is mobile and protected by its position, but in erectile state, it is more prone for injury. The penis is shielded by the surrounding long pelvis posterior and upper thigh laterally, thereby preventing injury.<sup>32</sup>

A number of methods have been described to manage zipper entrapment of the penile skin. Initially, this problem was prevented by circumcising children by circumcision, but in late 1970s, Flowerdew and colleagues<sup>33</sup> described a method using a bone cutter to separate the median bar of the fastener to undo the zipper.

## Conclusion

There are a few cases of penile injuries without urethral injuries and they are urological emergencies which require immediate attention. Most penile injuries have a typical history, and classic clinical features and rarely require other diagnostic evaluation. Therefore, early surgical management in penile fracture cases provides better results than delayed and conservatively managed cases.

**Competing interests:** Dr. Reddy, Dr. Shaik and Dr. Sreenivas all declare no competing financial or personal interests.

This paper has been peer-reviewed.

## References

- Eke N. Fracture of penis. *Br J Surg* 2002;899:555-65. <http://dx.doi.org/10.1046/j.1365-2168.2002.02075.x>
- El-Sherif AE, Dawleh M, Allowneh N, et al. Management of fracture of the penis in Qatar. *Br J Urol* 1991;68:622-5. <http://dx.doi.org/10.1111/j.1464-410X.1991.tb15427.x>
- Schonberger B. Verletzungen der männlichen Genitalorgane. *Z Urol Nephrol* 1982;5:879-83.
- Moon SJ, Kim DH, Chung JH, et al. Unusual foreign bodies in the urinary bladder and urethra due to autoeroticism. *Int Neurourol J* 2010;14:186-9. <http://dx.doi.org/10.5213/inj.2010.14.3.186>
- Amkele S, Lee G, Stock J, et al. 20-year experience with iatrogenic penile injuries. *J Urol* 2003;170:1691-4. <http://dx.doi.org/10.1097/01.ju.0000084147.28987.7f>
- Wolf JS, Turzan C, Cattolica EV. Dog bites to the male genitalia: characteristics, management and comparison with human bites. *J Urol* 1993;149:286-9.
- Gomes CM, Ribeiro-Filho L, Giron AM, et al. Genital trauma due to animal bites. *J Urol* 2000;165:80-3. <http://dx.doi.org/10.1097/00005392-200101000-00020>
- Perovic SV, Djinic RP, Bumbasirevic MZ, et al. Severe penile injuries: A problem of severity and reconstruction. *BJU Int* 2009;104:676-87.
- Wyatt JP, Scobie WG. The management of penile zip entrapment in children. *Injury* 1994;25:5. [http://dx.doi.org/10.1016/0020-1383\(94\)90186-4](http://dx.doi.org/10.1016/0020-1383(94)90186-4)
- Nolan JF, Stillwell TJ, Sands JP Jr. Acute management of the zipper-entrapped penis. *J Emerg Med* 1990;8:305. [http://dx.doi.org/10.1016/0736-4679\(90\)90011-J](http://dx.doi.org/10.1016/0736-4679(90)90011-J)
- Lynch TH, Martinez-Pineiro L, Plas E, et al. EAU Guidelines on Urological Trauma. *Eur Urol* 2005;47:1-15. <http://dx.doi.org/10.1016/j.eururo.2004.07.028>
- Bilsch M, Kromann-Andersen B, Schou J, et al. The elasticity and the tensile strength of the tunica albuginea of the corpora cavernosa. *J Urol* 1990;143:642-5.
- Tan LB, Chiang C, Huang C, et al. Traumatic rupture of the corpus cavernosum. *Br J Urol* 1991;68:626-8. <http://dx.doi.org/10.1111/j.1464-410X.1991.tb15428.x>
- Naransingh V, Raju GC. Fracture of the penis. *Br J Surg* 1985;72:305-6. <http://dx.doi.org/10.1002/bjs.1800720419>
- Martinez Perez E, Arnaiz Esteban F. Fracture of the penis: two new cases: Review of the Literature: Usefulness of ecography. *Arch Esp Urol* 1997;50:1099-102.
- Susuki K, Shimizu N, Kurokawa, et al. Fracture of the penis: Magnetic resonance imaging of the corpus cavernosum. *Br J Urol* 1995;76:803-4. <http://dx.doi.org/10.1111/j.1464-410X.1995.tb00782.x>
- Muentener M. Long-term experience with surgical and conservative treatment of penile fracture. *J Urol* 2004;172:576-9. <http://dx.doi.org/10.1097/01.ju.0000131594.99785.1c>
- Ekwere PD, Al Rashid M. Trends in the incidence, clinical presentation and management of traumatic rupture of the corpus cavernosum. *J Natl Med Assoc* 2004;96:229-33.
- Nicolaisen GS, Melamed A, Williams RD, et al. Rupture of the corpus cavernosum: Surgical management. *J Urol* 1983;130:917-9.
- Mansi MK, Emran M, El-Mahrouky A, et al. Experience with penile fractures in Egypt: Long-term results of immediate surgical repair. *J Trauma* 1993;35:67-70. <http://dx.doi.org/10.1097/00005373-199307000-00011>
- Muangman V. Amputated penis: A man's nightmare. *Thai J Surg* 1980;1:84-5.
- Kochakorn V, Muangman V, Krauwit A. Traumatic penile amputation: results with primary reattachment. *J Urol* 1997;157:Abst 857.
- Bhangananda K, Chaiyavatanata T, Pongnumkul C. Surgical management of epidemic of penile amputations in Siam. *Am J Surg* 1983;146:376-82. [http://dx.doi.org/10.1016/0002-9610\(83\)90420-8](http://dx.doi.org/10.1016/0002-9610(83)90420-8)
- Ehrish WS. Two unusual penile injuries. *J Urol* 1929;21:239-41.
- Jordan GH, Gilbert DA. Management of amputation injuries of male genitalia. *Urol Clin North Am* 1989;16:359-67.
- Schulman ML. Reanastomosis of the amputated penis. *J Urol* 1973;109:432-3.
- Engelman ER, Polito G, Perly JB, et al. Traumatic amputation of the Penis. *J Urol* 1974;112:774-8.
- Cohen BE, May JW, Daly JSF, et al. Successful clinical replantation of an amputated penis by microvascular repair. *Plast Reconstr Surg* 1997;59:276-80. <http://dx.doi.org/10.1097/00006534-197759020-00023>
- Ishida O, Ikuta Y, Shirane T, et al. Penile replantation after self-inflicted complete amputation: Case report. *J Reconstr Microsurg* 1996;12:23-6. <http://dx.doi.org/10.1055/s-2007-1006448>
- Heyman AD, Bell-Thomson J, Rathod DM, et al. Successful reimplant of the penis using microvascular techniques. *J Urol* 1977;118:879-80.
- Krishna Reddy SV. Unusual penetrating injury to the male genitalia. *Int Neurourol J* 2013;17:38-40. <http://dx.doi.org/10.5213/inj.2013.17.1.38>
- Morey AF, Metro MJ, Carney KJ. Consensus on genitourinary trauma: External genitalia. *BJU Int* 2004;94:507-15. <http://dx.doi.org/10.1111/j.1464-410X.2004.04993.x>
- Flowerdew R, Fishman U, Churchill BM. Management of penile zipper injury. *J Urol* 1977;117:671.

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