

Total phallic reconstruction after penile amputation for donkey bite: Case report and review of the literature

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Summary *There are very few reported cases of traumatic amputation of the male genitalia due to animal bite. The management involves thorough washout of the wounds, debridement, antibiotic prophylaxis, tetanus and rabies immunization followed by immediate reconstruction or primary wound closure with delayed reconstruction, when immediate reconstruction is not feasible. When immediate reconstruction is not feasible, long-term good functional and cosmetic results are still possible in the majority of cases by performing total phallic reconstruction. In particular, it is now possible to fashion a cosmetically acceptable sensate phallus with incorporated neourethra, to allow the patient to void while standing and to ejaculate, and with enough bulk to allow the insertion of a penile prosthesis to guarantee the rigidity necessary to engage in penetrative sexual intercourse.*

KEY WORDS: Penis; Animal bite; Phalloplasty; Male genital trauma.

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CASE REPORT

A 7-year old boy, living in rural Iran, was bitten through his clothing in the genital area by a donkey. The bite resulted in a partial penile amputation leaving a short penile stump while scrotum and testes were intact (Figure 1). Immediate penile reconstruction was not possible due to the absence of specialist medical facilities.

Since the residual penile stump was inadequate for penetrative sexual intercourse, at age 23 the patient underwent total penile reconstruction with the use of a *Radial Artery based Free Flap* (RAFF).

Total phallic reconstruction was carried out in 3 stages, each one performed at 6 monthly intervals.

The first stage involved the formation of the phallus, the second stage the sculpture of the neo-glans and the last stage, the insertion of the components of a 3-pieces inflatable penile prosthesis.

Preoperatively an Allen's test was performed in to confirm the patency of the palmar arteries. The flap was formed by two sections separated by a 1 cm wide de-epithelialized strip. The medial section, which was tubularised to form the neo-urethra was of rectangular shape and meas-

ured 4 x 17 cm. The lateral skin plate, which was 14 cm long and 13 cm wide, was wrapped around the neo-urethra in a tube-within-a-tube fashion (3). The vascular supply was the disconnected from the forearm and the phallus was transferred to the recipient pubic region. The penile stump was disassembled with preservation of the crura, the neurovascular bundle and urethra. Inferior epigastric artery, long saphenous vein, deep dorsal vein of the penis, ilioinguinal nerves and deep dorsal nerve of the penis were carefully isolated and prepared for the subsequent microsurgical anastomosis. The arterial anastomosis was performed between the inferior epigastric artery and the radial artery. Venous drainage was guaranteed by the deep dorsal vein of the penis and the long saphenous vein. Orgasmic sensation was guaranteed by the anastomosis between one of the flap nerves to the deep dorsal nerve of the penis while cutaneous sensation was ensured by the ilioinguinal nerve anastomosis. The native urethra stump was spatulated and anastomosed primarily to the phallic neo-urethra. An urethral stent and a suprapubic catheter placed in order to protect the urethral anastomosis whilst healing (4).

The defect on the donor forearm was covered with a full-thickness skin graft (FTSG) harvested from the patient's lower buttock creases (5) (Figure 2).

After 6 months, a neo-glans was sculptured according to the *Norfolk technique* using a FTSG strip harvested from a relatively hairless area of the abdomen.

Finally, 6 months later, a 18+1 cm long *Titan Touch*[®] inflatable penile prosthesis was inserted into the phallus to guarantee the rigidity necessary to engage in penetrative sexual intercourse. The crura were used to house the rear aspect of the cylinders while a *Dacron*[®] tip was fashioned to house the tip of the cylinders thus preventing distal erosion (Figure 3).

After follow-up of 72 months from the last stage of the operation, the patient is fully satisfied with the cosmetic and functional results of surgery. He is able to void while standing and ejaculate from the tip of the phallus. Unfortunately his penile implant got infected 3 times, which required explantation and led to phallus shortening. As a consequence, at present, his penile implant is 16 cm long.

No conflict of interest declared.

Figure 1.
Penile amputation.



Figure 2.
Donor site forearm.



Figure 3.
Phalloplasty with penile prosthesis.



Animal	N	%
dog	34	66,6
snake	4	7,8
viper	2	3,9
horse	2	3,9
monkey	2	3,9
donkey	2	3,9
mule	1	1,9
alligator	1	1,9
rat	1	1,9
pig	1	1,9
parrot fish	1	1,9

DISCUSSION

To date, including the present case, there are 57 published cases of animal bites to male genitalia.

A search was conducted using the following words: “trauma”, “male genitalia”, “penis”, “testis” and “animal bite” from December 1966 to December 2016.

The majority of cases are due to dog 34 (66.6%), followed by snake 4 (7.8%), viper 2 (3.9%), horse 2 (3.9%), monkey 2 (3.9%), donkey 2 (3.9%), mule (1.9%), alligator 1 (1.9%), rat 1 (1.9%), pig 1 (1.9%), parrot fish 1 (1.9%) (Table 1 and 2).

Animal bites cause penetrating genital trauma, and might increase the risk of infection. Genital bites are much

Table 1.
Cases reported in literature.

Animal	N	Author	Injury	Man/child
dog	1	Aineskog H, et al. 2016	penile skin avulsion	adult
parrot fish	1	Kobayashi SA, et al. 2015	avulsion of penile foreskin	adult
snake	1	Tamou Sambo B, et al. 2015	penoscrotal gangrene	adult
viper	1	Koffi NR, et al. 2015	swelling	child
viper	1	Hussain T, et al. 2015	swelling and hemorrhagic bullae	adult
dog	1	Miodrag A, et al. 2014	penile skin avulsion	adult
mule	1	Lakmichi MA, et al. 2011	complete penile avulsion	adult
rat	1	Haldar P, et al. 2011	transection of the urethra	child
snake	1	Kossoko H, et al. 2011	urethra injury	adult
dog	3	Bothra R, et al. 2011	emasculatoin, 2 lacerated wound	child
dog	1	Frank M, et al. 2010	genital avulsion	adult
dog	1	Saleh D, et al. 2009	lest testicular rupture	adult
dog	1	Bertozzi M, et al. 2009	damage of the right vas deferens	child
dog	1	Hon KL, et al. 2007	swelling	child
snake	1	Babata AL, et al. 2006	scrotum gangrene	adult
dog	1	Leung AK, et al. 2005	skin avulsion	child
dog	1	Ku JH, et al. 2005	amputation penis and testes	child
dog	1	Budhiraja S, et al. 2002	loss of right testis	child
Pig	1	Georgiou P, et al. 2001	subtotal avulsion of penile skin	adult
dog	8	Gomes CM, et al. 2000	5 skin loss,2 spermatic cord avulsion,	8 children
horse	1	Gomes CM ,et al. 2000	1 partial penis avulsion	adult
donkey	1	Gomes CM, et al. 2000	1 complete scrotal avulsion	adult
dog	7	Cummings JM, et al. 2000	skin avulsion	4 adults 3 children
monkey	2	Singla SL, et al. 1997		
dog	1	Redman J. F., 1995	complete testes avulsion	child
alligator	1	Katlowitz NM, et al. 1995	testes avulsion	
dog	2	Tuggle DW et al. 1993	external genitalia loss	children
dog	1	Wolf et al. 1993	both testes loss	child
dog	1	Piza-Katzer H, et al. 1989	skin damage	adult
dog	2	Donovan JF et al. 1989	penile and scrotal skin avulsion	children
non specified animals	6	Landercasper J, et al. 1988		
snake	1	Sinha SN, et al. 1975	scrotal skin necrosis	
horse	1	Noto L 1966	elephantiasis	

Table 2.
Cases reported in literature.

more common in children (60%) than adults (40%). Morbidity is directly related to the severity of the injury and to the time elapsed before seeking for medical assistance.

Treatment includes thorough washing and irrigation with normal saline solution, debridement and broad-

spectrum antibiotics prophylaxis, as the main risk is infection. Primary closure is often recommended in most cases delaying reconstructive surgery to a later date.

When the victim is a child, or the wound has been caused by an animal, infectious complications are usually minor, as medical treatment is sought reasonably quickly. *Pasterurella multocida* is often present (20-50% of dog bites). Cellulitis often results in premature sepsis (within 24 hours).

Antibiotic treatment should be broad-spectrum beta-lactam with beta-lactamase inhibitors. Fluoroquinolones, cotrimoxazole or chloramphenicol are valid alternatives. The duration of treatment should be individualised and last at least 10-14 days.

Rabies vaccination will depend on local sanitary policy. Appropriate tetanus vaccination is required.

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