Case Report

Male Genital Injuries in Infants Caused by the Bite of Pet Pups: Case Series and Literature Review

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Injuries to male genitalia of infants due to bite of a pet pup are a rare occurrence. Few dog bite injuries to the genitalia of male infants have been reported, however, similar injuries have not been reported by the bite of pet puppies. Male genital injury in three male infants aged 8, 10, and 11 months, by the bite of pet puppies aged 1–2 months, ranged from avulsion of penile and part of scrotal skin with loss of both testes in case 1, a near circumferential laceration of penile skin at the base of penis with scrotal laceration in case 2, and laceration in mid penile shaft resulting in degloving and complete transaction of distal penile urethra with scrotal laceration in case 3. All these infants were appropriately managed surgically (case 1 and 3) and conservatively (case 2) and were given thorough toileting of wound, antibiotics, prophylaxis for tetanus and rabies. Some of these injuries may require complex surgical procedures to reconstruct the male genitalia. Timely management with aggressive intent and conserving the local tissue is the key to success. We describe a case series of injury to the external genitalia of three male infants by the bite of pet puppies, their possible predisposing factors, treatment, and follow-up. A case report and series like this have not been reported in literature so far to the best of our knowledge.

Keywords: Dog bite, genital injury, infants, urethral injury

INTRODUCTION

Mammalian bites account for about 1% of all emergency department visits. School-aged children are most vulnerable, and pet dogs are involved in half of the cases. Injury to male external genitalia in animal attacks is rare, only a few cases are reported in the literature. We report three infants (managed in our department from 2003 to 2020) with genital trauma caused by the bite of about 1–2-month-old pet pups. On an internet search, we could not find any comparable injury in infants caused by the bite of pet puppies.

CASE REPORTS

Case 1

An 8-month-old infant was sleeping unattended over a mat on the floor in a room. One of the 2-month-old pet pups gained access to the infant and attacked the external genitalia. The infant was reported after 36 h of injury and examination revealed partially amputated penis and skin loss of the whole of the penile stump, scrotal skin loss, and absent both testes. Split skin grafting was done over a partially amputated bare penis, and delayed primary closure of scrotal laceration was done. On follow-up, graft uptake was good, and the infant voided in a good stream [Figure 1].

Case 2

A 10-month-old male infant lying unattended over the floor was attacked by one and a half-month-old pet pup. There was a scrotal laceration exposing right testis, an almost circumferential laceration at the base of the penis with only 3 mm of intact skin remaining over the urethra. Due to extensive penile and scrotal edema, the infant was managed conservatively, and both wounds healed after 1 month [Figure 2].
Case 3
A 11-month-old male infant was with his mother. The infant passed motions and soiled his clothes. As the mother left the child to bring his clothes, the two pet pups (1-month-old) came near the child. The smell of fecal matter probably made the puppies start licking the genital area and injured the genitalia of the infant. The infant presented in our emergency wing and his injuries were assessed. He had a laceration in the mid penile shaft and a complete transaction of the urethra. After general anesthesia to the infant, thorough toileting was done, and end-to-end urethral anastomosis was made. Scrotal skin was also closed, and penile skin was closed over the repair [Figure 3a-c]. In the postoperative period, he had a wound infection, and all the restoration of the urethra and part of skin repair gave way. He was managed with a daily dressing of the infected wound. The urethra was kept splinted with an 8 Fr per urethral catheter. The infected wound healed with an urethrocutaneous fistula at the site of urethral transaction.

Subsequently, repair of urethrocutaneous fistula was done with preputial flap transposition over the repair. This, too, gave way due to infection, and he was again operated upon when the infection settled. The fistula was closed with 5-0 vicryl, and full-thickness local tissue repair was done over the 8 Fr Foley’s catheter [Figure 3d-f]. The wound healed nicely, and the per urethral catheter was removed after 14 days. The child is voiding in a good stream and doing well.

Discussion and Review of Literature
In this sub-Himalayan state, to protect from repeated wetting and soiling, infants, and young children are made to wear specially designed pajamas called “Hagnu-Mutnu” [Figure 4]. These pajamas cover the leg, thighs, and waist, but keep external genitalia and perineal part exposed so that clothes do not get wet because of frequent urinations and defecations. The exposed external genitalia is more prone to injury, as happened in two of our three patients (Case 1 and Case 3). Thorough toileting of the wound, antibiotic prophylaxis and prophylaxis for tetanus and rabies form the cornerstone of the treatment. The surgical repair may be primary or delayed as the situation demands.

Bothra et al.\[1\] reported three cases of dog bite injuries to genitalia in male infants and children. None of these infants and children had an injury by the bite of a pup. The extent of injuries in these three patients varied from a small lacerated wound to loss of both testes and near-total amputation of the penis, where the penile stump was reconstructed after meatoplasty.

Yaqub et al.\[2\] in a review article, reported that the animal bite wounds tend to get infected, as also happened to one of our patients who required three surgeries to maintain the urethral continuity.

Bertozzi et al.\[3\] reported a case of a scrotal dog bite in a child in which resection of vas on the right side was repaired by microsurgical vasoepididymal anastomosis.

Horst et al.\[4\] reviewed male genital injuries with particular reference to diagnostics and treatment. They concluded that a correct therapeutic approach is necessary for the preservation of fertility and penile erection. In the patients in whom bilateral testis are lost, an attempt may be made to cryopreserve the sperms by testicular or microsurgical sperm extraction. A review article by Smith et al.\[5\] estimated that nearly half of the population suffers from an animal bite wound during their lifetime. These are treated by prophylactic antibiotics as these wounds may have multiple organisms.
contaminating them. Complications include infection, disfigurement, and dismemberment.

Gomes et al.[6] reported two men and eight boys suffering from genital injuries due to animal bites (8 by dogs, one by a horse, and one by a donkey). They recommend debridement and wound irrigation with saline and povidone-iodine solution. Minimal or no skin loss was there in 5 patients where primary skin closure was done. Two of these five patients were required to repair urethral laceration also. Moderate to extensive skin loss in another five patients included degloving injuries in two, traumatic spermatic cord injury in one, complete scrotal and penile skin avulsion in an infant and partial penectomy in one patient. Satisfactory results were achieved following the reconstructive procedure in these patients. All patients received antibiotic prophylaxis. Morbidity was directly related to the initial wound severity. Tetanus and rabies prophylaxis was also given to all patients.

Budhiraja and Ghei[7] reported a case of scrotal trauma in an infant due to a bite of a stray dog, resulting in loss of the right testes. Redman[8] reported a case of scrotal avulsion injury in a 9-year-old boy suffering from myelodysplasia due to injury sustained during sleep by the pet dog bite. There was blood on the dog’s muzzle, which suggested that the scrotal avulsion was caused by the pet dog in the child who was desensate from the waist down, was asymptomatic, and no longer bleeding. The distal half of the scrotum was absent. The injury was allowed to heal secondarily. Inguinal exploration on both sides performed later revealed blind-ending internal spermatic vessels and vasa at the level of internal rings.

Donovan and Kaplan[9] reported two injury cases to the external genitalia of male infants by the dog bite. Both infants received prophylaxis for rabies and tetanus and prophylactic antibiotics. The children required surgical debridement and split skin grafting for repair. They recommended a thorough investigation of the child’s environment in these situations.

Saleh et al.[10] reported a case of a dog bite to the adult scrotum, delayed presentation to the hospital after 3 days of sustaining injury resulting in necrotic and nonviable left testis on exploration. A left scrotal orchidectomy was performed. Pathological findings correlated with intraoperative findings, and it was hypothesized that injury resulted in a necrotic testis which got ruptured later. In this case, what looked like a minor laceration of the scrotum due to penetrating injury by dog bite caused blunt damage and loss of left testis.

Nara et al.[11] reported a bilateral testicular loss due to a dog bite in an infant. A 3-month-old child had a scrotal injury by a miniature Dachshund. His mother was temporarily caring for the dog in the absence of his owner. There was penile and scrotal skin loss. Both testes were absent. Even spermatic cords stumps could not be identified. Urethral patency was assured with the putting in of a Foley’s catheter. Tetanus immunoglobulins were given, and he received antibiotic prophylaxis. The infant was referred to a higher center after 8 days. The child was managed conservatively, and in 30 days, Foley’s catheter was removed, and the child voided. In a review article, Bertozzi and Appignani[12] reported that children have a 3.2 times higher incidence of dog bite injury than adults, and 15%-20% of dog bite wounds...
became infected with polymicrobial organisms. They recommended that the antibiotic of choice is amoxicillin with a beta-lactamase inhibitor.

**CONCLUSION**

Injury to the external genitalia of male infants caused by the bite of pet puppies has not been reported in the literature to the best of our knowledge. Injury can vary from abrasion, minimal loss of penile or scrotal skin, partial or subtotal amputation of the penis, testicular injury leading to loss of one or both the testes. Thorough toileting, debridement of wound, prophylaxis for tetanus and rabies, and antibiotic prophylaxis form the cornerstone of treatment in such cases. Few cases may require primary or delayed reconstructive surgical procedures, and some may require hormonal replacement at puberty when both the testicles have been lost.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/ her/their images and other clinical information to be reported in the journal. The patients understand that their names and initial s will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.

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