

Conservative surgical management of traumatic penile laceration in a dog, using adjunctive medical-grade honey: A case report

Babatola O. Fabiyi *, Foluso B. Bolaji-Alabi, Noah S. Oyetayo and Adenike O. Olatunji-Akioye

Department of Veterinary Surgery and Radiology, Faculty of Veterinary Medicine, University of Ibadan, Ibadan, Nigeria.

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Abstract

Penile and preputial injuries in dogs present unique clinical challenges due to the vascularity, mucosal structure and susceptibility to contamination of the affected tissues. Optimal management requires preservation of function while minimizing complications such as infection, delayed healing and urethral damage. This case report describes the surgical management of a traumatic penile laceration in a two-year-old intact male Boerboel, and evaluated the adjunctive use of medical-grade honey in promoting the wound healing. Following a dog fight, the patient presented with preputial swelling and acute haemorrhage resulting from lacerations involving the glans penis. Surgical intervention included debridement of devitalised tissue and reconstruction of the penile mucosa using absorbable sutures, with urethral protection achieved via urinary catheterization. Postoperative management incorporated systemic antimicrobial and analgesic therapy, along with daily topical application of medical-grade honey. Clinical improvement was evident by day 5, with resolution of oedema and absence of discharges. Complete re-epithelialization and restoration of normal penile function were achieved by day 7, and no post-operative complications were observed during the six-month follow-up. The favourable outcome observed in the management of this case suggests that early surgical intervention combined with adjunctive honey-based therapy may enhance wound healing in penile injuries. The antimicrobial, anti-inflammatory and pro-regenerative properties of medical-grade honey likely contributed to modulation of the wound microenvironment.

Keywords: Penis injuries; Wound healing; Honey (medical grade); Anti-bacterial agents; Dogs; Surgical procedures.

* **Correspondence:** Babatola O. Fabiyi; Email: fabiyitola@gmail.com; Phone: +2348130051727

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Introduction

Penile and preputial injuries in dogs constitute a subset of external genital disorders that may be routinely encountered in small animal practice. These typically occur in intact males exposed to breeding activity or territorial aggression (Brook, 2003; Root Kustritz, 2008; Brook, 2009; Pavletic, 2022). Injuries range from superficial abrasions to deep lacerations involving the glans penis and urethral tissues. These injuries are often accompanied by haemorrhage and oedema, with secondary microbial contamination commonly present (Fossum, 2020). The vascular nature of penile tissue predisposes affected animals to profuse bleeding. Its exposed position during erection increases susceptibility to mechanical trauma (Pavletic, 2022).

Traumatic penile lesions present pathophysiological challenges. Bite wounds combine penetrating injury with crush components and are typically associated with polymicrobial contamination. This process results in devitalization of the tissue and an increased risk of infection (Weese *et al.*, 2019). The penile mucosa, characterized by minimal keratinization and high moisture content, is therefore vulnerable to sustained inflammation and delayed epithelial repair (Taylor and Smeak, 2021). Behavioural factors such as persistent licking and recurrent protrusion exacerbate tissue damage and disrupt early granulation. These factors also predispose affected animals to complications such as paraphimosis and urethral irritation, with wound dehiscence representing an additional concern (Brook, 2009; Shepherd, 2021; Lukanc *et al.*, 2023; Chuahuaicura *et al.*, 2025).

Delayed re-epithelialization and local infection can compromise both cosmetic and functional integrity of an injured penis. These complications are frequently associated with excessive scar tissue formation. Management typically includes the use of systemic

antimicrobial therapy and analgesia (Fossum, 2020; Pavletic, 2022; Yala *et al.*, 2025). Current protocols offer limited guidance on adjunctive therapies specifically targeted at enhancing healing of the genital mucosa, which differs biologically from cutaneous wounds (Singer and Clark, 1999).

Medical-grade honey is a wound care agent with reported efficacy in both human and veterinary medicine (Eyarefe *et al.*, 2017; Martinotti and Ranzato, 2018). Its therapeutic effects arise from its physicochemical and biological properties. These properties create a microenvironment that supports repair, including sustained anti-bacterial activity and modulation of local inflammatory responses. They also promote angiogenesis and epithelial regeneration. (Al-Waili *et al.*, 2011; Yaghoobi *et al.*, 2021). Systematic reviews and experimental studies report accelerated wound contraction and reduced infection rates in honey-treated wounds, compared with conventional wound dressings (Al-Waili *et al.*, 2011; Molan and Rhodes, 2015; Bischofberger *et al.*, 2016; Lukanc *et al.*, 2023; Main *et al.*, 2026; Peteoaca *et al.*, 2026). Topical honey applications in veterinary settings reportedly yielded improved outcomes in cutaneous wounds and burns. Comparable outcomes in surgical sites further support its role as an adjunct (Vogt *et al.*, 2021).

Honey-based therapies may be applied to penile injuries, supported by the shared structural and functional characteristics of mucosal tissues. Genital mucosa shares with oral mucosa features of rapid cellular turnover and high vascularity. It additionally requires a moist environment for healing (Waasdorp *et al.*, 2021). These features suggest that interventions capable of maintaining hydration are advantageous in this anatomical context. Concurrent modulation of microbial load and inflammation is also desirable. However, evidence directly addressing the use of honey in genital wound healing in

veterinary patients remain limited (Vogt *et al.*, 2021).

Optimizing healing of penile injuries is critical to preserving normal urination and maintaining reproductive function, particularly in breeding male animals (Pavletic, 2022). Conservative surgical approaches that retain penile structure require adjunctive strategies that support healing. This present case report describes the surgical management of a traumatic penile laceration in a dog, and evaluated the adjunctive use of medical-grade honey in promoting wound healing and functional recovery. To the best of the knowledge of the authors, this is one of the few reports describing adjunctive honey use in penile mucosal injury in dogs.



Figure 1. Pre-operative appearance of the penis and prepuce showing a traumatic laceration involving the glans penis, with associated haemorrhage and tissue disruption.

Case Presentation

A two-year-old intact male Boerboel (34 kg) was presented with acute penile haemorrhage following a dog fight. The owner reported continuous bleeding from the distal penis and progressive preputial swelling. At presentation, the dog was alert but exhibited restlessness. A rectal temperature of 39.4 °C and a heart rate of 160 beats/minute were recorded. The respiratory rate was 42 breaths/minute. These clinical findings were consistent with acute pain and physiological stress. Physical examination revealed partial penile protrusion with a deep, irregular laceration near the glans penis (Figure 1).

Surgical Management

Pre-operative stabilization consisted of intravenous crystalloid therapy with lactated Ringer's solution (Dele Fluids Ringer Lactate Solution®; HMA Medical Ltd., Ilorin, Nigeria) at 10 mL/kg/h and pentazocine (Next Pharm Pentazocine Injection 30 mg/mL®; Alpa Laboratories Pvt. Ltd., Indore, India) at 2 mg/kg IM.

Anaesthesia was induced with diazepam (Jarzepam® Injection 10 mg/2 mL; Swiss Parenterals Pvt. Ltd., Ahmedabad, India) at 0.5 mg/kg IV and ketamine (KFC Ketamine 50 mg/mL®; Shukra Pharmaceuticals Ltd., Ahmedabad, India) at 10 mg/kg IV following premedication with atropine (Atropine Injection 600 µg/mL®; Macarthys Laboratories Ltd., Romford, United Kingdom) at 0.04 mg/kg IM.

The trachea was intubated with a cuffed endotracheal tube, and the patient was positioned in dorsal recumbency. The prepuce and the surrounding area were clipped and aseptically prepared.

A urinary catheter was placed to facilitate urethral identification and prevent iatrogenic injury. Haemostasis was achieved by ligation

of bleeding vessels using 3-0 chromium catgut absorbable suture material. The wound was copiously lavaged with sterile isotonic saline (0.9% NaCl) using a 20 mL syringe and an 18-gauge needle to provide moderate pressure prior to debridement. Devitalised tissue was debrided. The penile mucosa was then apposed using 4-0 chromium catgut absorbable sutures in a simple interrupted pattern. The preputial skin was closed routinely with 3-0 nylon suture (Figure 2).



Figure 2. Immediate post-operative appearance following surgical debridement and reconstruction of the penile mucosa, showing wound margin apposition and restoration of anatomical alignment, in a case of traumatic laceration involving the glans penis of a dog.

Post-operative Management

An Elizabethan collar was applied immediately post-operatively to prevent self-trauma. Analgesia was maintained with pentazocine (2 mg/kg) for 3 days. Intramuscular amoxicillin (Biomox Injection 500 mg®; Shandong Xier Kangtai Pharmaceutical Co., Ltd., Xinyan Town, Yanzhou City, Shandong, China) at 15 mg/kg

was administered for 3 days based on microbial culture and sensitivity test results, which identified *E. coli* as the predominant isolate and demonstrated susceptibility to amoxicillin. The urinary catheter was removed after 24 hours. A medical-grade honey preparation (Activon® Tube; Brightwake Limited, Kirkby-in-Ashfield, Nottinghamshire, United Kingdom) was applied topically to the penile mucosa once daily prior to repositioning the penis within the prepuce.

Outcome

By day 5, the oedema had reduced and discharges stopped (Figure 3). Complete re-epithelialization of the lesion was observed by day 7, with restoration of normal penile function (Figure 4). Throughout the 6-month follow-up period, no post-operative complications, including urethral stricture, were detected.



Figure 3. Post-operative day 5 appearance of the lacerated glans penis of the dog, showing marked reduction in oedema, absence of discharges, and early progression of re-epithelialization.

Discussion

The present case demonstrates that traumatic penile laceration involving the glans penis can be managed with conservative surgical reconstruction. Management of the present

case resulted in restoration of normal function and re-epithelialization within seven days. The absence of complications indicates that preserving penile integrity is achievable even in the presence of acute haemorrhagic injury. Earlier reports had shown that successful outcomes depended on timely intervention combined with appropriate peri-operative care (Fossum, 2020; Pavletic, 2022).



Figure 4. Post-operative day 7 appearance of the lacerated glans penis of the dog, showing complete re-epithelialization of the lesion with restoration of normal penile morphology.

Healing time in this case was shorter than that reported for comparable soft tissue injuries involving mucocutaneous junctions, where re-epithelialization typically extended beyond 10 – 14 days. Healing duration reportedly depended on the extent of contamination and tissue loss (Gurtner *et al.*, 2008; Gushiken *et al.*, 2021; Yala *et al.*, 2025).

Reports on canine penile trauma remain limited. Available literature indicates that outcomes are frequently complicated by oedema and infection, with self-trauma further worsening the condition (Eming *et al.*, 2014; Weese *et al.*, 2019; Gushiken *et al.*, 2021; Shepherd, 2021). The earlier resolution

observed in the present case highlights an interaction between early surgical management and post-operative wound modulation.

The penile mucosa possesses biological characteristics that support rapid repair, including high vascular density and a moist environment. This reportedly facilitates epithelial migration (Waasdorp *et al.*, 2021). However, these advantages are counterbalanced by a susceptibility to persistent inflammation and microbial colonization. Bite injuries introduce polymicrobial contamination and devitalization of the tissue. This prolongs the inflammatory phase and impairs progression to granulation and re-epithelialization (Weese *et al.*, 2019). The resolution of oedema and absence of discharge by day 5 indicated that the local wound environment transitioned efficiently from inflammation to proliferation. Earlier reports by Chuhuaicura *et al.* (2025) posited that such transition is a key determinant of healing in mucosal tissues.

The surgical approach adopted in this case probably directly contributed to the accelerated positive outcome. Early debridement removed necrotic tissue. Such tissue would otherwise serve as a substrate for bacterial proliferation and sustained inflammation. Precise haemostasis minimized haematoma formation. Haematoma formation impairs oxygen diffusion, thereby delaying tissue repair. Apposition of the penile mucosa using fine absorbable sutures facilitated anatomical restoration. It also reduced additional tissue trauma. Finally, placing a urinary catheter allowed identification and protection of the urethra during reconstruction. This reduced the risk of iatrogenic injury and stricture formation (Fossum, 2020; Pavletic, 2022).

Adjunctive application of medical-grade honey probably improved the wound environment. Honey-based dressings reportedly maintain a

hydrated interface and also exert anti-bacterial effects even in the presence of wound exudate: This process limits bacterial proliferation without compromising viable tissue (Molan and Rhodes, 2015; Lukanc *et al.*, 2023). Modulating the inflammatory response reduced oedema and improved progression towards repair. The observed reduction in swelling and absence of purulent discharge by day 5 is consistent with these effects. These findings suggest that the topical application of honey stabilized the wound microenvironment during the early post-operative period (Main *et al.*, 2026).

Evidence supporting the use of medical-grade honey in wound management has been severally reported in both human and veterinary contexts, particularly for cutaneous wounds and chronic ulcers (Al-Waili *et al.*, 2011; Eming *et al.*, 2014; Vogt *et al.*, 2021). These studies report improved wound contraction and reduced infection rates with honey dressed wounds, compared with conventional dressings. Enhanced re-epithelialization has also been reported. In veterinary practice, honey-based topical therapies reportedly yield favorable outcomes in contaminated wounds and challenging healing environments (Bischofberger *et al.*, 2016; Peteoacă *et al.*, 2026). Although documentation of its use in genital mucosal injuries remains limited, the biological behaviour of mucosal tissues suggested possible similarity in its therapeutic effects. (Waasdorp *et al.*, 2021).

Integrating adjunctive topical therapy with standard surgical management helps maintain a controlled wound environment. This reportedly limits contamination and supports epithelial repair (Taylor and Smeak, 2021). The availability and ease of application of medical-grade honey further support its consideration as part of a multimodal approach to wound care in veterinary patients (Bischofberger *et al.*, 2016; Lukanc *et al.*, 2023; Peteoacă *et al.*, 2026).

It is recommended that future research should focus on controlled clinical studies evaluating honey-based therapies in genital and other mucosal wounds in animal species. Comparative trials against standard topical agents will provide essential evidence. Subsequent research should incorporate objective wound scoring systems and microbiological profiling. Furthermore, investigating long-term functional outcomes, particularly in breeding animals, will clarify the clinical relevance of such interventions.

Conclusion

Conservative surgical management combined with adjunctive topical honey therapy was associated with healing of penile laceration injury in a dog without complications within seven days. However, further studies are required to determine the efficacy of topical honey therapy and define its role within evidence-based protocols for managing genital injuries in dogs.

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Conflict of Interest

The authors declare no conflicts of interest.

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