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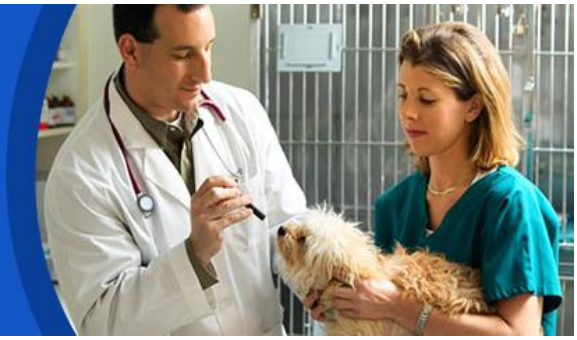

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Surgical management of a true cyst in the proximal one-third of the tail in a dog: A case report

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Abstract
A six-year-old intact female German shepherd dog was presented with a painless, well-circumscribed, soft, fixed swelling on the dorsal aspect of the proximal one-third of the tail. Clinical palpation and survey radiographic examination suggested a cystic lesion without involvement of the coccygeal vertebrae. Haematological and serum biochemical parameters including hepatic and renal profiles, were within normal physiological limits, confirming suitability for general anaesthesia. Surgical excision of the lesion was performed under general anaesthesia. Intraoperatively, evacuation of clear serous fluid and identification of a well-defined epithelial lining confirmed the diagnosis of a true cyst. Complete excision of the cyst wall, including the secretory epithelium, was meticulously achieved to prevent recurrence. Post-operative antimicrobial and analgesic therapy resulted in uneventful wound healing, and no recurrence was observed during a 30-day follow-up period. This case highlights the importance of complete excision of the cyst along with its epithelial lining in the successful surgical management of true cysts in the tail of dog.

Keywords: Dog, true cyst, tail, surgical management, proximal one-third

Introduction
A cyst is defined as a pathological, closed, sac-like structure lined by epithelium and containing fluid, semi-solid, or gaseous material produced by the secretory activity of its lining cells (Slatter, 2003; Nandi, 2010; Fossum, 2019) [10, 7, 2]. Based on histopathology, cysts are broadly classified into true cysts, which possess an epithelial lining, and pseudocysts, which lack epithelial lining and commonly arise secondary to trauma, inflammation, or tissue degeneration (Tobias and Johnston, 2018) [11].
Cutaneous cysts in dogs commonly originate from epidermal, follicular, sebaceous, or apocrine gland structures and are frequently encountered in clinical practice (Miller *et al*., 2020; Gross *et al*., 2021) [6, 3]. Although many cysts are clinically benign, slow-growing and painless. Surgical intervention is warranted when lesions increase in size, interfere with function, become infected, or pose cosmetic or mechanical concerns (Pavletic, 2018; Williams *et al*., 2018) [8, 13]. Cystic lesions involving the tail are relatively rare and present unique surgical challenges due to continuous movement, limited skin elasticity, and proximity to coccygeal vertebrae and neurovascular structures (Venugopalan, 2018) [12]. Complete surgical excision of the cyst along with its epithelial lining remains the treatment of choice to minimize recurrence (Slatter, 2003; Nandi, 2010; Fossum, 2019) [10, 7, 2].

Case History and Clinical Findings
A six-year-old intact female German shepherd dog was presented to the Teaching Veterinary Clinical Complex (TVCC), Durg, with a solitary swelling located on the dorsal aspect of the proximal one-third of the tail. The owner reported incidental observation of the swelling during grooming, the duration and rate of growth could not be determined due to dense hair coat. There was no history of trauma, bite injury, discharge, or previous surgical intervention of tail.

On clinical examination, the swelling was soft, fixed, well-demarcated, non-painful, and moderately adherent to underlying tissues. The overlying skin appeared normal without erythema, ulceration, discharge or alopecia. General clinical parameters, including rectal temperature, heart rate and respiratory rate were within normal physiological limits.

Diagnostic Evaluation

Diagnosis was based on detailed clinical palpation and radiographic examination. Palpation findings were suggestive of a fluid-filled cavity consistent with a cystic lesion. Lateral radiographic examination of the tail ruled out involvement of coccygeal vertebrae and excluded bony pathology such as osteitis or neoplasia, which is critical for surgical planning in tail masses (Venugopalan, 2018) [12]. Routine haematological and serum biochemical investigations including liver and kidney function tests, revealed values within normal reference limits, deemed the patient safe for general anaesthesia and surgical intervention.

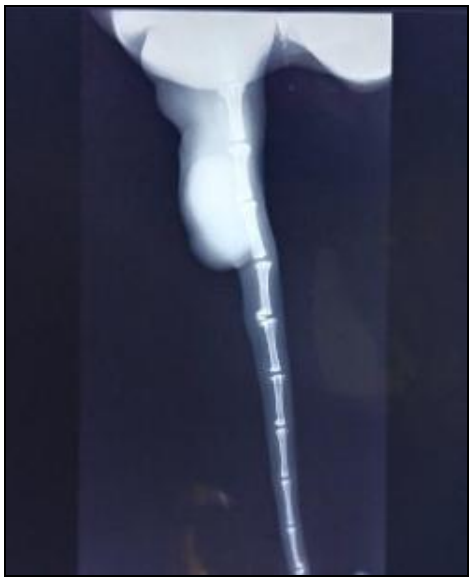

Fig 1: Lateral radiograph of tail

Surgical Management

The dog was pre-medicated with atropine sulphate (0.04 mg/kg IM) to counteract vagal stimulation and reduce salivary secretions followed by xylazine hydrochloride (1 mg/kg IM) to provide sedation and muscle relaxation. General anaesthesia was induced using ketamine hydrochloride (5 mg/kg IV) and maintained according to standard small-animal anaesthetic protocols (Hall *et al*., 2014; Lumb and Jones, 2015) [4, 5].

After securing the dog in sternal recumbency, the tail region was prepared for surgical intervention by routine clipping of hair, aseptic skin preparation with povidone-iodine and sterile draping, application of a tourniquet at the tail base to minimize bleeding. A fusiform skin incision was made over the swelling. Immediately upon incision, clear serous fluid exuded, confirming the cystic nature of the lesion. Careful blunt and sharp dissection was employed to separate the cyst wall from caudal vertebrae, the inner secreting epithelial membrane was meticulously separated from adjacent tail musculature and excised completely. Complete removal of the epithelial lining is crucial, as remnants are known to result in cyst recurrence (Slatter, 2003; Nandi, 2010; Fossum, 2019) [10, 7, 2]. The surgical site was thoroughly irrigated with sterile normal saline solution, haemostasis was achieved by ligation of blood vessels using absorbable suture material vicryl 3-0. Routine surgical wound closure was performed, first muscle and then subcutaneous tissues were closed using absorbable suture material vicryl 2-0 in a simple continuous pattern to eliminate dead space. Skin was apposed using non-absorbable suture nylon 2-0 in a simple interrupted pattern, ensuring tension-free primary closure of the wound.

Post-operative management included antimicrobial therapy ceftriaxone at 20 mg/kg IM once daily for five days to reduce complication, analgesia and anti-inflammatory management were achieved using meloxicam at 0.2 mg/kg SC on day one followed by 0.1 mg/kg orally for three days in accordance with recommended soft-tissue surgical protocols (Plumb, 2018) [9]. Daily antiseptic wound dressing using povidone-iodine ointment and application of an Elizabethan collar to prevent self-mutilation. Skin sutures were removed on the 12th postoperative day following satisfactory wound healing and no recurrence observed during a 30-day follow-up period.

Fig 2: Before surgery

Fig 3: During surgery

Fig 4: After surgery

Discussion

Intraoperative findings of clear serous fluid and the presence of an epithelial cyst wall were consistent with a true cyst which confirmed the diagnosis of a true cyst. Standard veterinary surgical texts emphasize that aspiration or simple drainage of cysts results in a high likelihood of recurrence; therefore, complete excision of the cyst wall and epithelial lining is essential for definitive management (Slatter, 2003; Nandi, 2010; Fossum, 2019) [10, 7, 2].

Recent clinical studies have reinforced that recurrence of cutaneous cysts is rare when complete surgical excision is accomplished without rupture of the cyst wall (Pavletic, 2018; Williams *et al*., 2018) [8, 13]. In the present study, no recurrence was observed, which can be attributed to complete excision of the inner secretory lining and the cyst wall. Tail surgeries require meticulous surgical technique and secure wound closure due to continuous movement and limited surrounding soft tissue. Primary tension-free closure of proximal tail wounds has been shown to result in satisfactory healing outcomes (Delurențu *et al*., 2020) [1], which was consistent with the outcome observed in the present case.

Conclusion

The present case report demonstrates that accurate diagnosis by thorough clinical evaluation, supported by radiography and laboratory investigations, followed by meticulous surgical excision of a true cyst along with its epithelial lining results in excellent clinical outcomes with minimal risk of recurrence. Surgical excision remains the treatment of choice for true cyst of the tail in a dog when performed with appropriate surgical planning and technique.

Conflict of Interest

Not available

Financial Support

Not available

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