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A case report on surgical excision of mammary gland tumour in a dachshund bitch under isoflurane anaesthesia

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Abstract

Mammary gland tumours are among the most frequently diagnosed neoplasms in intact female dogs, with a higher incidence in middle-aged to geriatric animals. This case report describes the successful surgical management of a mammary gland tumour in an 8-year-old Dachshund bitch under inhalational anaesthesia. The animal was presented with a solitary mammary mass without systemic illness. Pre-operative haematological and biochemical parameters were within normal physiological limits. Histopathological examination of a pre-surgical biopsy confirmed the mass as squamous cell carcinoma, following which surgical excision was planned.

Pre-anaesthetic medication consisted of butorphanol (1 mg/kg) and atropine (0.05 mg/kg) administered intramuscularly. Anaesthetic induction was achieved using propofol (5 mg/kg intravenously), followed by endotracheal intubation and maintenance with isoflurane at 2% concentration in oxygen. Complete surgical excision of the tumour was performed, and the surgical wound was closed using a simple interlocking suture pattern. Intra-operative monitoring revealed stable physiological parameters throughout the procedure.

Post-operative recovery was smooth and uneventful, with no immediate or delayed complications observed. The dog showed satisfactory wound healing and return to normal activity during the follow-up period. This case demonstrates the effectiveness and safety of isoflurane-based inhalational anaesthesia combined with standard surgical techniques for the management of mammary gland squamous cell carcinoma in geriatric canine patients. Early histopathological diagnosis, careful anaesthetic planning, and meticulous surgical intervention play a crucial role in achieving favourable outcomes in canine mammary neoplasia.

Keywords: Canine mammary tumour, squamous cell carcinoma, isoflurane anaesthesia

Introduction

Canine Mammary Gland Tumours (MGTs) account for approximately 42-50% of all tumours in female dogs, with a higher prevalence in intact bitches and geriatric age groups (Sorenmo *et al.*, 2013) [4]. Dachshunds are reported to be among the predisposed breeds for mammary neoplasia (Egenvall *et al.*, 2005) [1]. Early diagnosis and surgical excision remain the primary treatment of choice, particularly for localized tumours without evidence of metastasis (Withrow & Vail, 2019) [5].

Inhalational anaesthesia using isoflurane is widely preferred in small animal surgery due to its rapid induction, ease of depth control, and minimal cardiovascular depression, making it especially suitable for older patients (Hall *et al.*, 2014) [2]. This case report documents the clinical presentation, anaesthetic management, surgical procedure, and outcome of a mammary gland tumour excision in an elderly Dachshund bitch.

Case history and clinical examination

An 8-year-old intact female Dachshund was presented with a history of a gradually enlarging mass in the mammary region. Physical examination revealed a firm, well-circumscribed mass involving one of the caudal mammary glands. The animal was alert, with normal appetite and vital parameters.

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Fig 1: Clinical presentation of a mammary tumor in an 8-year-old dachshund bitch

Diagnostic evaluation

Preoperative haematological and serum biochemical investigations were conducted to evaluate the surgical fitness of the patient. All assessed parameters, including haemoglobin concentration, total leukocyte count, liver enzyme levels, and renal function markers, were within normal physiological reference ranges. Based on the clinical examination and laboratory findings, the patient was considered fit to undergo surgical intervention.

Pre-surgical histopathological examination of the mammary mass confirmed the diagnosis of squamous cell carcinoma. Microscopic evaluation of the tissue sections revealed sheets of malignant squamous epithelial cells characterized by prominent cellular pleomorphism and the presence of central keratinization (keratin pearl formation), which was clearly evident under oil immersion microscopy. These histopathological features were consistent with squamous cell carcinoma, thereby justifying the decision to proceed with surgical excision.

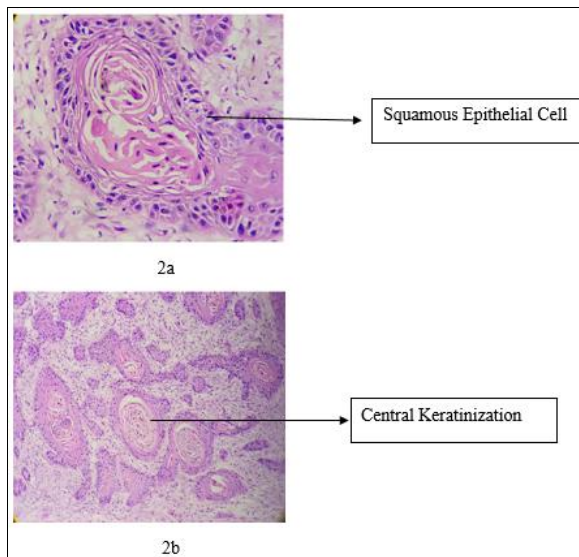


Fig 2a & b: Showing microscopic slide under oil immersion

Anaesthetic and surgical management

The dog was pre-medicated and anaesthetized following a standard anaesthetic protocol. Pre-anaesthetic medication consisted of butorphanol (1 mg/kg) and atropine (0.05 mg/kg) administered intramuscularly to achieve analgesia and reduce vagal reflexes. Anaesthetic induction was carried out using propofol at a dose of 5 mg/kg intravenously, followed by endotracheal intubation. General anaesthesia was maintained with isoflurane at a concentration of 2% in oxygen, delivered through an appropriate anaesthetic circuit. The depth of anaesthesia remained stable throughout the procedure, and

intra-operative monitoring revealed normal heart rate, respiratory rate, and oxygen saturation, indicating stable physiological parameters.

Following induction, the surgical site was prepared aseptically using standard surgical scrub and draping techniques. The mammary tumour was excised completely with adequate surgical margins to ensure removal of neoplastic tissue (Figure 3). Haemostasis was achieved as required during the procedure. The surgical wound was closed routinely using a simple interlocking suture pattern, ensuring proper tissue apposition.

The intra-operative and immediate post-operative periods were uneventful, and the animal recovered smoothly from anaesthesia. This protocol demonstrated the safety and effectiveness of isoflurane-based inhalational anaesthesia combined with standard surgical techniques for mammary tumour excision in a geriatric canine patient.



Fig 3: Gross appearance of the mammary tumour mass after surgical excision

Haemostasis was achieved, and the incision site was closed routinely. The skin was sutured using a simple interlocking suture pattern, ensuring proper apposition and tension distribution (Figure 4).



Fig 4: Surgical closure following excision of the mammary gland tumour, accomplished using a simple interlocking suture technique

Postoperative care and outcome

Post-operatively, the dog was managed with appropriate antibiotic and analgesic therapy to prevent infection and ensure adequate pain control. oral amoxicillin-sulbactam was administered at a dose of 10 mg/kg body weight twice daily for 10 days. analgesia was provided using firocoxib at 5 mg/kg body weight twice daily for effective post-operative pain management.

Local wound care included the application of Tab Deep TBR dressing once daily for 10 days, and pinpoint spray was used to protect the surgical site and prevent contamination. the surgical wound was monitored regularly for signs of inflammation, discharge, or dehiscence. The patient was presented for the first post-operative review three days after surgery, during which the wound appeared clean with no evidence of infection or complications. progressive wound healing was observed on subsequent evaluations. sutures were removed on the 14th post-operative day following complete wound healing. The animal showed good recovery with return to normal activity and appetite. no post-operative complications were noted, and the overall prognosis was considered favourable.

Discussion

Surgical excision remains the gold standard for the treatment of canine mammary tumours, particularly when detected early and when systemic involvement is absent (Sorenmo *et al.*, 2019) [3]. The use of isoflurane anaesthesia provided a safe and controlled anaesthetic plane in this geriatric patient. Simple interlocking sutures offered adequate wound closure with good cosmetic and functional outcomes.

Normal pre-operative blood parameters played a crucial role in minimizing peri-operative risks and ensuring uneventful recovery.

Conclusion

This case demonstrates that mammary gland tumours in elderly dogs can be effectively managed through surgical excision under isoflurane anaesthesia with proper mediaton. Proper pre-operative evaluation, appropriate anesthetic management, standard surgical techniques and post operative care contribute to successful outcomes and uneventful recovery.

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