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Research Article

SURGICAL MANAGEMENT OF MAST CELL TUMOUR THROUGH WIDE MARGINATION AND CAUDAL EPIGASTRIC FLAP IN A BITCH

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ABSTRACT

A 11 year old intact female dog was brought to Madras Veterinary College Teaching Hospital with a history of a mass extending from the inguinal region to the caudal mammary gland. On clinical examination, the mass was ulcerated, non-pedunculated and painful. Haemato-biochemical analysis was done, which revealed thrombocytopenia, neutrophilia (shift to left), monocytosis and a marginal increase in ALP levels. Thoracic and abdominal radiograph taken to rule out metastasis and uterine involvement. Fine needle aspiration cytology revealed mast cell tumour. After the animal was stabilised with haematinics, antihistaminic and antibiotics, wide margination and excision of tumour was planned. As the defect after excision was extensive to be opposed through standard suturing technique, a caudal epigastric flap was planned and performed. A penrose drain tube placed and sutured insitu. The drain tube was removed on 3rd post-operative day. Subjective evaluation of the skin flap was done 0, 3rd, 7th day post-operatively which reveals no abnormality. Complete skin flap uptake was observed without any complications and recurrence of tumour. The patient had an uneventful recovery.

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INTRODUCTION

The reconstruction of large skin defects originated from the excision of large tumours or trauma may require the use of reconstructive techniques given the possibility of there not being enough skin to cover the skin wound in some situations.

Axial pattern flaps from the caudal superficial epigastric artery are skin flaps supplied by a large artery. They are the most versatile flaps for closing defects in the caudal part of the body and may be employed to close defects on the lateral abdomen, sacrum, dorsal pelvis, base of the tail, perineum, penile sheath, inguinal region, proximal pelvic and metatarsal region in cats (Moore *et al.*, 2013). The caudal superficial epigastric artery originates from the external pudendal artery and vein in the inguinal ring, supplying the mammary glands number 3, 4 and 5 in dogs, as well as the overlying skin. The viability of the artery may be established before the surgical procedure through color flow Doppler ultrasound (Reetz *et al.*, 2006).

Mast cell tumours represent 20% to 25% of skin tumours in dogs. The most important factor in determining prognosis and treatment is the histological grade (Nelson and Couto 1998).

A 11 year old female intact dog was brought to Madras Veterinary Teaching Hospital with an history of ulcerated mass of diameter 8-10cm and non-pedunculated. Thoracic and abdominal radiograph revealed absence of metastasis. Hemato-biochemical analysis revealed thrombocytopenia, neutrophilia (shift to left), monocytosis and marginal increase in ALP levels. Fine needle aspiration cytology revealed grade II mast cell tumour. The pet was prescribed with hematinics, antihistaminics, and antibiotics and was scheduled for surgery. Diphenhydramine hydrochloride 1mg/kg body weight was administered 15mins prior to surgery to avoid any anaphylactic reaction secondary to mast cell tumour degranulation. The animal was anaesthetized as per the standard protocol, and was placed in left lateral recumbency. Wide margin excision was done, deep subcutaneous tissue was excised to a depth along with the mass (fig. 1) Caudal epigastric flap margin dimensions were done using felt pen marker. Margins of the flap were medially from the ventral abdominal midline, extending from pubis to a point between 1st and 2nd mammary glands and laterally, parallel and equidistant with the medial border. Skin was incised along the borders of outline of flap, the skin was undermined with precaution of retaining the subdermal plexus, following which the flap was rotated and transfixed to the donor site. (fig 2 and 3) Hypodermal layer was closed using

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PGA (3-0) in a continuous pattern. The skin was closed with cross mattress pattern using Polyamide (3-0). A penrose drain was placed insitu for 7 days. (fig 4) Light soft cotton bandaging was applied without any pressure on flap to avoid impairment of venous return. Histo-pathological analysis of tumour revealed Grade II mast cell tumour. Post-operative antibiotics, analgesics, anti histaminics were administered for seven days. Post-operative bandaging done on alternate days. post operative subjective analysis of skin flap on 3rd, 7th, 14th day is shown in Table 1. The colour of skin flap on 3rd day was red, portions of the flap passed from red to pink overtime without necrosis. vascularity of skin flap was assessed using Color Flow Doppler Ultrasonography on 3rd, 7th, 14th day (Fig no:5,6). Histo-pathological evaluation of skin flap was done using Masson's Trichrome stain (Fig no:7).



Fig no:1. Excision of mass



Fig no: 2. Donor Skin Preparation

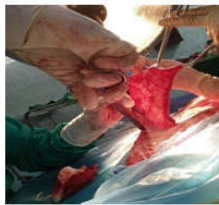


Fig no: 3. Incise & Undermine the Flap



Fig no: 4. Transfer the Flap into the Recipient Bed



Table 1 Subjective analysis of Skin Flap

	Colour of skin flap R(Red), P(Pink)	Odour of flap N (Nil)	Exudate of the flap Me(Medium), N(Nil)
Day 3	R	N	Me
Day 7	P	N	N
Day 14	P	N	N

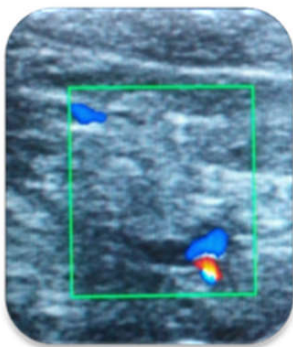


Fig no: 5. Colour flow doppler images of skin flap at 3rd day

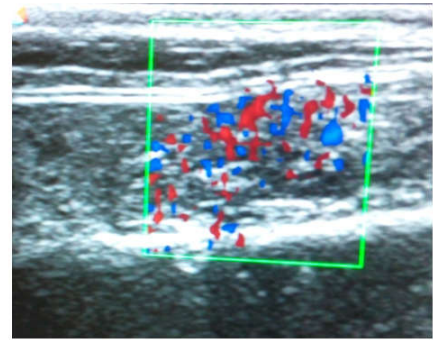


Fig no: 6. Colour flow doppler images of skin flap at 14th day

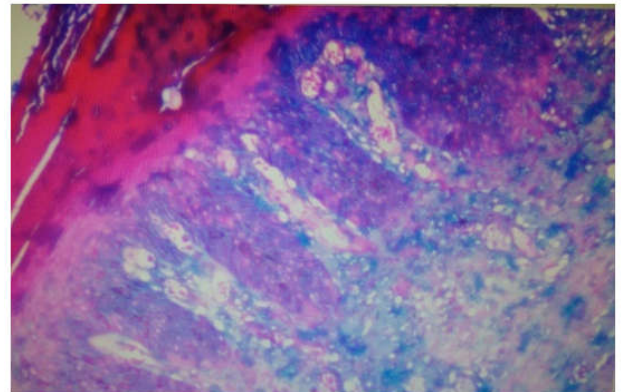


Fig no 7 Skin flap matured collagen fibres (14thday) with complete Flap uptake Masson's Trichrome stain

Mast cell tumours represent 20% to 25% of skin tumours in dogs. (Nelson and Couto. 1998). The most important factor in determining prognosis and treatment is the histological grade (Nelson and Couto. 1998). Grade II MCTs are composed of intermediately differentiated cells. They tend to be locally invasive or have moderate metastatic as obtained in the present case. Treatment for MCTs includes surgery, radiation therapy, chemotherapy, or a combination of these. In cases where complete excision cannot be achieved or metastasis are present, surgery followed by radiation therapy is the best option. Treatment with surgery, radiation therapy, or both has proven to be curative in some cases (Fan *et.al.*, 2001). Chemotherapy is recommended to slow systemic metastasis and increase survival time (Rassnick *et.al.*, 1999). Drugs used in chemotherapy protocols for MCTs include prednisone (McCaw *et.al.*, 1994), vincristine (McCaw *et.al.*, 1997), vinblastine (Thamm *et.al.*,1999), or a combination of these. Treatment with CCNU is the newer protocol (Rassnick *et.al.*, 1999). The excision of a malignant tumour with wide margins on lower extremities often represents a challenge for the surgeon. An axial pattern flap allows immediate skin closure and avoids numerous bandage changes, as well as the complications sometimes associated with 2nd intention healing, such as excessive scarring, contracture, and delayed healing. They can be designed to incorporate a direct cutaneous vessel (Fossum *et.al.*, 2002). Axial pattern flaps incorporating a direct cutaneous vessel have a better blood supply and, therefore, a survival rate twice that of random subdermal plexus pedicles (Slatter D. 1993) as observed in the above case.

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