



ISSN: 0976-3031

Available Online at <http://www.recentscientific.com>

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research  
Vol. 9, Issue, 5(F), pp. 27008-27011, May, 2018

**International Journal of  
Recent Scientific  
Research**

DOI: 10.24327/IJRSR

## Research Article

# SURGICAL MANAGEMENT OF MAST CELL TUMOUR THROUGH WIDE MARGINATION AND THORACO DORSAL FLAP IN A DOG

Gokulakrishnan M<sup>1\*</sup>, Kirthika D<sup>2</sup> and Kannan T.A<sup>3</sup>

<sup>2</sup>M.V.Sc Scholar, Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai

<sup>1</sup>Department of Clinics, Madras Veterinary College, Chennai

<sup>3</sup>Department of Regenerative Medicine, Madras Veterinary College, Chennai

DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0905.2167>

### ARTICLE INFO

#### Article History:

Received 10<sup>th</sup> February, 2018

Received in revised form 6<sup>th</sup>

March, 2018

Accepted 24<sup>th</sup> April, 2018

Published online 28<sup>th</sup> May, 2018

#### Key Words:

Mast cell tumour-Thoraco

Dorsal Skin flap- Dog

### ABSTRACT

A 11 year old intact male dog was brought to Madras Veterinary College Teaching Hospital with a history of a mass extending from the scapula to the caudal elbow region. 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. 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 thoraco dorsal flap was planned and performed. A penrose drain tube placed and sutured insitu. The drain tube was removed on 3<sup>rd</sup> post-operative day. Subjective evaluation of the skin flap was done 0, 3<sup>rd</sup>, 7<sup>th</sup> 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.

**Copyright © Gokulakrishnan M et al, 2018**, this is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

## 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 thoracodorsal axial pattern flap is based upon the cutaneous branch of the thoracodorsal artery and associated vein. The moderately sized thoracodorsal direct cutaneous artery arborizes in a dorsal direction behind the scapula. The flap may be partially tubed to reach a distant defect or sutured to a bridge incision to transect the skin interposed between the donor and recipient sites. 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 male intact dog was brought to Madras Veterinary Teaching Hospital with an history of ulcerated mass of diameter 15cm and non-pedunculated. (Fig.1) Thoracic and abdominal radiograph revealed absence of metastasis.



**Fig1** Gross Appearance of Tumor

\*Corresponding author: **Gokulakrishnan M**

M.V.Sc Scholar, Department of Veterinary Surgery and Radiology, Madras Veterinary College, Chennai

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 .2)With the dog in lateral recumbency, the lateral cervical and thoracic skin was grasped, lifted, and allowed to spontaneously retract to a normal position. The forelimb was placed in relaxed extension perpendicular to the trunk.



Fig no 2 Defect after resection of Tumor

A felt - tipped marking pen was used to draw a line over the spine of the scapula, forming the cranial border of the flap. (Fig.3) The thoracodorsal vessel that originates at the caudal shoulder depression was palpated.



Fig no 3 Donor site preparation

The caudal incision was drawn onto the skin parallel to the cranial incision, equal to the distance from the cranial incision to the caudal shoulder depression. The flap was elevated below the level of the cutaneous trunci muscle, beginning at the end of the flap. Great care was taken to avoid injury to the

thoracodorsal artery and vein. (Fig.4) The thoracodorsal flap was pivoted and transfixed to the donor site.



Fig no 4 Flap elevation with thoraco dorsal vessel



Fig No 6 Final outlook of the flap

(Fig.5)Hypodermal layer was closed using PGA (3-0) in a continuous pattern. The skin was closed with cross mattress pattern using Polyamide (3-0). (Fig.6)



Fig no 7 Colour flow doppler images of skin flap at 3<sup>rd</sup> day

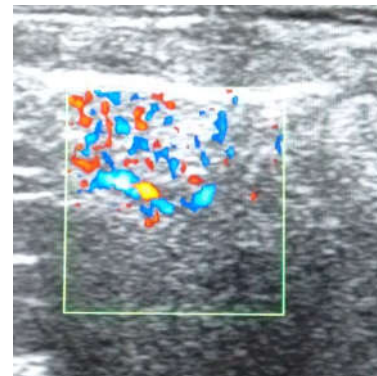


Fig no 8 Colour flow doppler images of skin flap at 14<sup>th</sup> day

Apenrose drain was placed insitu for 7 days. 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 3<sup>rd</sup>, 7<sup>th</sup>, 14<sup>th</sup> day is shown in Table 1. The colour of skin flap on 3<sup>rd</sup> 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 3<sup>rd</sup>, 7<sup>th</sup>, 14<sup>th</sup> day (Fig no:7,8). Histo-pathological evaluation of skin flap was done using Masson's Trichrome stain (Fig no:9).

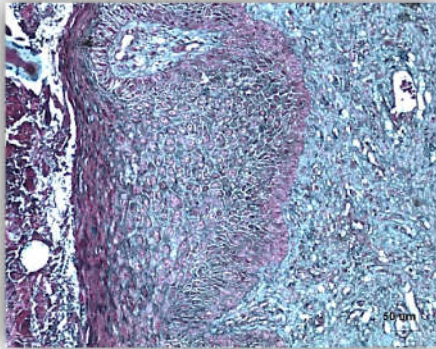


Fig no 9 Skin flap matured collagen fibres (14th day) with complete Flap uptake Masson's Trichrome stain

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

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. 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. (Hunt *et al.*, 2001) They can be designed to incorporate a direct cutaneous vessel (Anderson *et al.*, 2004). 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 (De Vos and Butinar, 2008) as observed in the above case. Thoracodorsal axial pattern flaps of considerable length can be developed to cover defects involving the shoulder, forelimb, elbow, axilla, and thorax in the dog and cat. (Aper and Smeak, 2003) Development of long thoracodorsal axial pattern flaps may necessitate division of the opposite cutaneous branch of the thoracodorsal artery and vein. (Fahie and Smith, 1999) When feasible, it is preferable to position forelimb defects for immediate flap transfer rather than repositioning the patient intraoperatively. The thoracodorsal axial pattern flap is a robust flap capable of covering a variety of defects in the dog and cat. (Hunt *et al.*, 2001) Distal limb coverage is dependent upon body conformation and limb length for the dog. (Pavletic, 2010)

Reference

Anderson, D.M., Charlesworth, T.C. and White, R.A.S. 2004. A novel axial pattern skin flap based on the lateral thoracic artery in the dog. *Vet Comp Orthop Traumatolol.* 17: 73 - 77

Aper, R. and Smeak, D. 2003. Complications and outcome after thoracodorsal axial pattern flap reconstruction of forelimb skin defects in 10 dogs, 1989 - 2001. *Vet. Surg.* 32: 378 - 384.

De Vos, J. P. and Butinar, J. 2008. A transposition flap for reconstructing a large skin defect over the stifle and proximal tibia in a dog after removal of a hemangiopericytoma. *Vlaams Diergeneeskundig Tijdschrift.* 78. 242-253.

Fahie, M.A. and Smith, M.M. 1999. Axial pattern flap based on the cutaneous branch of the superficial temporal artery in dogs: an experimental study and case report. *Vet. Surg.* 28: 141 - 147.

Fan T.M, Kitchell B.E. and Daliwahl R.S. 2001. Mast cell neoplasia in dogs. *Vet Med.* 96:919-929.

Hedlund C. S. 2006. Large trunk wounds. *Veterinary clinics Small Animal Practice.* *Vet Clin Small Anim.* 36: 847-872

Hunt, G.B., Geraldine, B., Penelope, L.C., Julius, M., Liptak and Richard, M. 2001. Skin Fold Advancement Flaps for Closing Large Proximal Limb and trunk defects in dogs and cats. *veterinary surgery.* 30:440-448.

McCaw D. L, Miller M. A and Bergman P.J. 1997. Vincristine therapy for mast cell tumours in dogs. *J Vet Intern Med.* 11:375-378.

McCaw D. L, Miller M. A and Ogilvie G. K. 1994. Response of canine mast cell tumours to treatment with oral prednisone. *J Vet Intern Med.* 8:406-408.

Nelson R. W. and Couto CG. 1998. *Small Animal Internal Medicine.* 2nd ed. St. Louis: Mosby. 1148-1152.

Pavletic M. M. 2010. *Atlas of small animal wound management and reconstructive surgery* (3rd ed., pp. 81-124, pp. 241-284, pp. 307-430). Wiley-Blackwell, Cambridge.

Rassnick K.M, Moore A.S. and Williams L.E. 1999. Treatment of canine mast cell tumours with CCNU (Lomustine). *J Vet Intern Med.* 13:601-605.

Reetz J. A, Seiler G, Mayhew P. D. and Holt D. E. 2006. Ultrasonographic and Color-Flow Doppler

- ultrasonographic assessment of direct cutaneous arteries used for axial pattern skin flaps in dogs. *Journal of the American Veterinary Medical Association*. 228: 1361-1365.
- Suvika. and Effendy A.W.M. 2012. The use of Modified Masson's Trichromestaining in collagen evaluation in wound healing study. *Malaysian journal of veterinary research*3: 39-47.
- Thamm D. H, Mauldin E. A. and Vail D. M. 1999. Prednisone and vinblastine chemotherapy for canine mast cell tumour-41 cases (1992-1997). *J Vet Intern Med*. 13:491-497.
- Trevor, P.B., Smith, M.M. and Waldron, D.R. 2002. Clinical evaluation of axial pattern skin flaps in dogs and cats: 19 cases. *J Am Vet Med Assoc*. 201: 608-612.

**How to cite this article:**

Gokulakrishnan M et al.2018, Surgical Management of Mast Cell Tumour Through Wide Margination And Thoraco Dorsal Flap In A Dog. *Int J Recent Sci Res*. 9(5), pp. 27008-27011.  
DOI: <http://dx.doi.org/10.24327/ijrsr.2018.0905.2167>

\*\*\*\*\*