

Reconstruction of Distal Limb Crush Injury with Paw Pad Transposition in a Dog

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Abstract

A four year old female Spitz-cross was brought to the hospital with the history of trauma. On physical examination, animal had a crush injury in the distal part of the right hind limb with loss of phalanges and necrotic tissues in the affected area. Clinical examination revealed no abnormalities. Animal was stabilized and wound bed was prepared for reconstruction. Animal was maintained with Ringer's Lactate bandage, systemic antibiotic and supportive therapy. Granulation of the wound was achieved after a week of treatment and surgery was fixed. Condition was surgically treated with Paw pad transposition flap and the animal made an uneventful recovery.

Key words: Paw pad Flap, Reconstruction and Dog

In dogs there are numerous causes of distal limb and paw wounds, which includes automobile accidents, snake / insect bites, cellulitis, chronic interdigital pyoderma, tumor etc. Among which automobile accidents place a major role in distal limb injuries in dogs (Fowler, 2006). Based on the extent of damage the treatment options may varies between amputation and reconstruction (Rahal *et al.*, 2007).

Case History and Observations

A Four year old female Spitz cross dog was brought to the veterinary clinical complex, veterinary college and research institute, Tirunelveli with a history of, crush injury in the distal right hind limb. On further enquiry, the owner reported that the injury happened five days before due to automobile accident

and it was treated by the field veterinarian but there was no response to the treatment. On physical examination all the vital parameters were normal except the conjunctival mucous membrane was congested and non weight bearing lameness noticed at the right hind limb. On further examination of right hind limb, degloving injury noticed at the dorsal aspect of digits with the exposed crushed bone pieces and pain was evinced on palpation. Necrotic and putrified tissues were noticed on dorsal aspect of digits (Fig. 1). After the hemato-biochemical analysis, the case was selected for reconstruction.

Treatment and Discussion

Pre-surgically, wound bed was prepared by, initial wound debridement followed by lavage and wet to wet bandaging with Ringer's Lactate solution every three days once (Fig. 2), until the surgery. Inj. Ceftriaxone @ 22 mg/kg and INJ. Meloxicam @0.2 mg/kg was administered for five days and three days respectively. Complete healthy granulation was noticed on 12th day (Fig. 3) and the surgery was fixed. Animal was premedicated with inj. Xylazine @ 1mg/ kg i.m and inj. Atrophine sulphate @ 0.02mg/ kg s.c. The distal right hindlimb was shaved and scrubbed with 4 per cent Chlorhexidine surgical scrub solution. Anaesthetic induction and maintenance were done using inj. Ketamine @ 5mg/ kg i.v and Diazepam @ 0.5mg/kg i.v. Animal was placed in left lateral recumbency and the wound bed was prepared intra-operatively by trimming of the epithelialisation edges of the wound and scarification of the granulation tissues. The defect was reconstructed by paw pad transposition to the cranial aspect and sutured with Polyamide size 2-0 (Fig. 4). Post operatively it

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Fig.1 Picture showing wound in the distal part of the hind limb with necrotic tissues



Fig. 2 Picture showing wound bed with no necrotic tissue and initiation of granulation

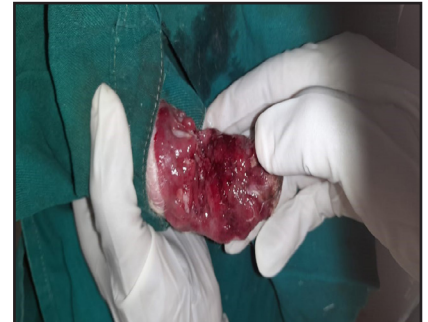


Fig. 3 Pre-operative picture showing complete granulation of the wound bed



Fig. 4 Intra-operative picture showing transposed paw pad.



Fig. 5 Post-operative picture showing, animal had weight bearing on its right hind limb

was maintained with systemic antibiotic and wound management with topical antibiotic dressing and soft cotton bandaging. Sutures were removed on 7th day of post operative day, after the complete healing of surgical site. Post-operatively animal had weight bearing on its right hind limb without any complications (Fig. 5). Animal had an uneventful recovery.

Foot pad is the toughest part of canine skin producing cushioning, designed to withstand abrasive forces. Digit amputation can be done when there is complete loss of footpads and phalanges. Whereas Paw pad transposition done if the intact of foot pads but loss of phalanges (Shaw *et al.*, 2014). Depending on the location of the injury, paw pad can be used as local flaps to provide the suitable weight bearing surface (Neat and Smeak, 2006).

Summary

A case of distal hind limb crush injury in a four year female dog was successfully treated by paw pad transposition surgery.

Reference

- Fowler, D. (2006). Distal Limb and Paw Injuries. *Vet. Clin. North. Am. Small. Anim. Pract.*, **36(4)**: 819-845.
- Neat, B. C. and Smeak, D. D. (2007). Reconstructing weight-bearing surfaces: digital pad transposition. *Compend. Contin. Educ. Vet.*, **29(1)**: 39-46.
- Rahal, S. C., Mortari, A. C. and Filho M. M. M. (2007). Mesh skin graft and digital pad transfer to reconstruct the weight-bearing surface in a dog. *Can. Vet. J.*, **48(12)**: 1258-1260.
- Shaw, T., James, F., Beierer, L. and Hosgood, G. (2014). Bilateral phalangeal fillet technique for metacarpal pad reconstruction in a dog. *Can. Vet. J.*, **55(10)**: 955-960.