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Clinical Article

NASAL SKIN FOLD ROTATIONAL FLAP CHEILOPLASTY FOR MANAGEMENT OF MAST CELL TUMOUR OF RIGHT UPPER LIP IN A DOG

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SUMMARY

A ten years old pug dog was presented to the clinic with a history of pinkish hairless masses on the right side of the upper lip from last 6 months. Clinically, the affected right lip was relatively firm and mass appears to be invading the full thickness of the skin. Cytological examination of impression smear of the abnormal mass revealed mass cell tumour. The mass was resected in rectangular shaped incision and right nasal skin fold flap was created by making an inverted U-shaped incision from the lateral edge of the upper margin of the resected mass. The created nasal skin fold flap was rotated clockwise on the recipient bed and then skin margins were repaired in simple interrupted suture pattern using nylon suture. The defect at nasal skin fold was also opposed together in a simple interrupted pattern. Post-operatively, broad spectrum antibiotic and analgesic was administered for 5 days and surgical wound was dressed with antiseptic ointment. The suture line healed in a couple of weeks and sutures were removed on the 14th day. However, there was a recurrence of the tumour after 6 months.

Keywords: Cheiloplasty, Lip, Mast cell tumour, Nasal skin fold rotational flap, Pug

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The neoplastic proliferation of mast cells is known as mast cell tumour. It is generally of two types, cutaneous form (most common malignant cutaneous tumours in dogs) and systemic form. Cutaneous form of mast cells in the dogs, accounts for between 16-21% of all the cutaneous tumours. As many as 50% of cutaneous MCT are considered malignant on the basis of their biological behaviour (O'Keefe, 1990). It is primarily the disease of old age dogs with no apparent sex predilection. Breed predilection for cutaneous mast cell tumour include Boxers, Boston terriers, Weimaraners, Shar-Pies, Golden retrievers, Labrador retrievers, Beagles, and Schnauzers (Reynolds *et al.*, 2019). Approximately 50% of cutaneous mast cell tumours (MCT) occur on the trunk and perineal region, 40% on the limbs, and 10% on the head and neck. A visceral form of MCT, referred to as disseminated or systemic mastocytosis. The gross appearance of cutaneous MCT is very variable, ranging from raised hairless masses to aggressive, invasive ulcerated lesions. The present report describes a case of mast cell tumour of right upper lip in a 10 years old male Pug dog and its plastic surgery by rotation flap of right sided nasal skin fold.

A ten-years-old male Pug dog weighing about 10 kilograms presented to the clinic with a history of raised hairless masses on the right side of the upper lip for 6 months (Fig. 1). The dog had already been operated for excision of the same mass 10 months ago. The physiological parameters were within the normal range and the dog had normal appetite and water intake. Clinically, the growth in the right upper lip was solid and infiltrated up to full thickness except labial mucosa. Cytology of impression smear of the mass revealed presence of polygonal cells with increased nucleus to cytoplasmic ratio and variable granulation suggestive of mast cell tumour (Fig. 2). For cosmetic purpose, it was decided to excise the tumour mass leaving labial mucosa intact and then cover with a rotation flap of the right side of nasal skin fold rather than its removal in full thickness including labial mucosa.

The upper right lip and face were prepared for plastic surgery i.e. cheiloplasty of the mast cell tumour of the right lip. The dog was anaesthetized using atropine sulphate (Tropine, Neon Laboratories Ltd.) @ 0.04 mg/kg body weight IM; 30 minutes later by xylazine hydrochloride (Xylaxin, Indian Immunologicals) @ 2 mg/kg body weight IM and finally induction was done by ketamine hydrochloride (Aneket, Neon Laboratories Ltd.) @ 10 mg/kg body weight IM. For maintenance of the anaesthesia, a mixture of ketamine and diazepam in the ratio of 3:1 (v/v) @ 1/3rd volume (0.67 ml) of the initial ketamine dose (2.0 ml) was administered IV when it required. After general anaesthesia, the dog was restrained in left lateral recumbency. The right upper lip and right face was painted with 5% povidone-iodine (Betadine, Win-Medicare Pvt Ltd, New Delhi). For excision of tumour, the skin incision was started at the extreme dorsum of the right lip,ventral to the right nostril and extended horizontally up to the junction of right and left upper lip i.e.

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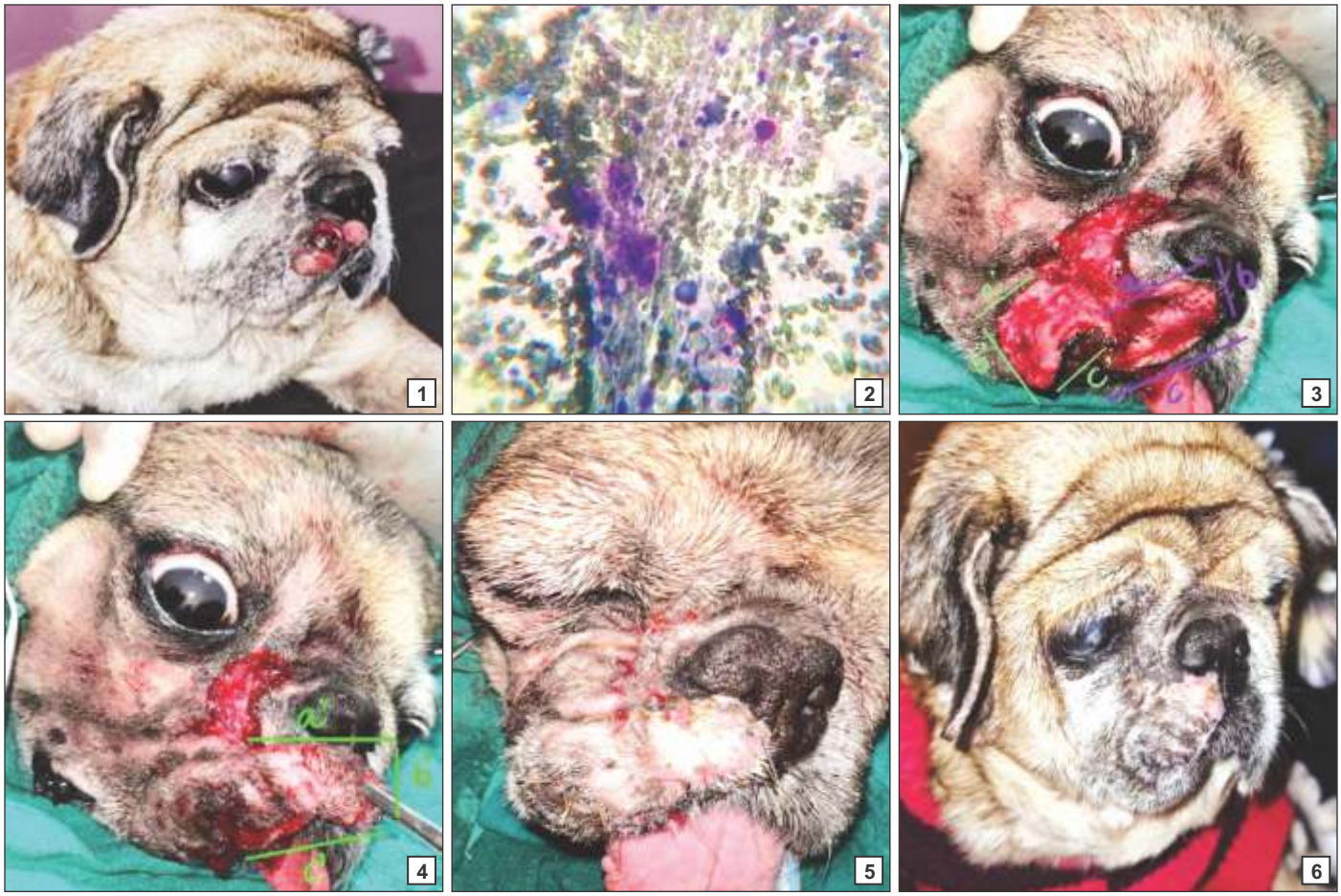

Figs. 1 to 6. **(1)** Pug dog showing hairless pinking multiple mass on the upper right lip. **(2)** Cytology of the growth showing large, polygonal cells with increased nucleus to cytoplasmic ratio and variable granulation. **(3)** The photograph showing skin margin of the upper right lip after excision of the tumour (a-dorsal length, b-width of the incision and c-ventral length of the incision) and created nasal skin fold flap in U-shape (a'=a, b'=b & c'=c). **(4)** After axial rotation of the nasal skin fold flap over the recipient bed. Note how a' exactly matched with margin of 'a' of the graft bed. **(5)** After repair of the axial rotation flap skin with recipient bed skin and donar site in simple interrupted pattern using 3-0 nylon suture. **(6)** After sutures removal. Note the good cosmetic appearance of the upper right lip.

philtrum (a) and then turned at right angle to incise philtrum (b) and then again turned at right angle to incise the skin close to labial mucosa up to the level of point from where incision was started (c) and finally connected to original point to remove a rectangular piece of skin along with tumour (Fig. 3). After preparation of recipient bed, an inverted U-shaped flap was made by starting an incision from point of first incision for tumour excision, in the skin fold of right nasal area proximally up to the height equal to the length of the excised rectangular skin (c') with tumour. After this, incision was given in curved fashion, the distance of which (b') equal to width of the removed tumour (b), and then continued downward (a') and parallel to the first vertical incision of flap (c'). Now flap was created by separating the fascia and finally rotated from its axis and placed over the recipient bed created by excision of the tumour mass (Fig. 4). The skin edges of the flap and recipient bed were opposed together in a simple interrupted pattern using 3-0 nylon suture. The vertical skin defect created in the right nasal skin fold area was repaired together in a simple interrupted pattern using 3-0 nylon suture (Fig. 5).

Post-operatively, the dog was given antibiotic Intacef Tazo (Intas Pharmaceutical Pvt. Ltd.) @ 20 mg/kg body weight IV, analgesic Melonex (Intas Pharmaceutical Pvt. Ltd.) @ 0.2 mg/kg body weight IM.Antiseptic ointment mupirocin 2% (Interban, Corise healthcare Pvt. Ltd., Mumbai) was applied daily on the surgical wound till healing of the sutured site. Sutures were removed on the 14th day post-operatively (Fig. 6). An uneventful recovery with good cosmetic appearance was noticed up to 6 months but after it, recurrence of the growth along with soft tissue swelling of the right side of the face was observed.

The optimal treatment of mast cell tumour depends on the tumour grade, clinical stage, surgical and radiation therapy (Thamm *et al.*, 1999; Wouters *et al.*, 2022). Treatment options for cutaneous mast cell tumour include surgical excision, radiation therapy and chemotherapy (Thamm *et al.*, 1999). In this particular case, cheiloplasty was planned due to the reason that the owner wanted the cosmetic appearance of the lip despite knowing the fact of

recurrence of the mast cell tumour. However, the procedure is very useful in benign non-recurring types of the tumour. Fulture *et al.* (2006) have evaluated a two-centimetre lateral surgical margin for excision of grade I and grade II cutaneous mast cell tumours in dogs. In this case, tumour recurrence has started after 6 months with soft tissue swelling in the surrounding area of the right side of the face. Since the dog was aged so the owner was reluctant for any type of further surgical intervention. So, from the present case study, it can be concluded that cheiloplasty by axial rotation nasal skin fold flap can be a good surgical technique for repair of the benign non-recurring tumour but not for the mast cell tumour or any metastatic tumour except only in those cases where the aim of treatment is palliative.

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