

BIPEDICLE SLIDING FLAP RECONSTRUCTION OF CLEFT PALATE IN A VECHUR CALF

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Abstract: A two month old female Vechur calf was presented to University Veterinary Hospital, Mannuthy with history of milk oozing out through the nostrils during feeding. On examination of oral cavity the condition was diagnosed as secondary cleft palate which involved both hard and soft palate. Under general anaesthesia, after bilateral commissurotomy reconstruction of cleft was performed with a sliding bipedicle flap. Pharyngeostomy tube was used for post-operative feeding management with concurrent administration of antibiotics for 7 days, and analgesics for 3 days. Pharyngeostomy tube was removed on tenth post-operative day. The animal showed symptomatic recovery and complete closure of cleft by fourth post-operative week.

Keywords: Cleft palate, Sliding bipedicle flap, Pharyngeostomy.

Introduction

Cleft palate is a developmental disorder which occurs due to failure of closure in facial processes. The condition can be primary or secondary. Primary cleft palate is due to incomplete fusion of fronto-nasal prominence with the maxillary prominence, where secondary cleft palate is due to incomplete fusion or failure of fusion between the lateral palatine process (McGeady *et al.*, 2006). In cattle the condition is very rare (Leipold *et al.*, 1983; Noden and De Lahunta, 1985), but Charolais and Hereford cattle are having recessively inherited syndrome of arthrogryposis and palatoschisis. Postprandial bilateral nasal discharge, coughing and dysphagia are the usual clinical signs that can be observed at birth or after suckling has commenced (Smolec *et al.*, 2010). Oral examination using a flashlight may be enough for diagnosis of cleft palate but endoscopy enables complete evaluation (Kirkham and Vasey, 2002). Treatment of cleft palate includes surgical correction of defect with intensive management of feeding, aspiration pneumonia and

immunodeficiency (Kirkhamand Vasey, 2002; Smolec *et al.*, 2010). The present paper documents successful surgical management of cleft palate in a Vechur calf.

Case description

A two month old female Vechur calf was presented to Teaching Veterinary Clinical Complex, CVAS Mannuthy, Kerala, with a weak body condition and coughing and history of milk coming out from both nostrils during feeding. On auscultation of lung dry respiratory rales could be identified. A complete blood count revealed granulocytosis, lymphopenia and anaemia. Oral cavity examination revealed longitudinal cleft involving hard and soft palate and surgical treatment was decided.

Treatment and results

Animal was premedicated with butorphanol (Neon Laboratories, Paighar, Maharashtra, India) @ 0.2 mg/kg body weight IM and general anaesthesia was induced and maintained by Xylazine (Indian immunologicals limited, Hyderabad, India) @ 0.1 mg/kg body weight intramuscularly followed by 1.25% thiopentone sodium (Miracalus pharma private limited, Thane, Maharashtra, India) intravenously to effect. Endotracheal intubation was done and animal was positioned in lateral recumbency with elevated head. Bilateral commissurotomy (Fig. 1) was carried out by incising skin and mucous membrane on either side.



Fig. 1: Commissurotomy incision on right side

Two parallel incisions were made on mucosa on either side of the defect and in the entire length of the defect of hard palate to create two sliding flaps and the mucoperiosteal layer on both sides of the defect was reflected and elevated (Fig. 2).



Fig. 2: Bipedicle flaps created for reconstruction

The first nasal mucosa layer was closed in simple interrupted pattern using polyglactin 910 No.2 from start of defect at soft palate to end of defect at hard palate followed by apposing two mucoperiosteal flaps apposition in simple interrupted pattern using polyglactin 910 No.2 (Fig. 3).



Fig.3: Complete closure of cleft

The bilateral commissurotomy incision was sutured in two layers apposing mucous membrane using polyglactin910 No. 1-0 in simple continuous pattern followed by skin using nylon 1-0 in interrupted pattern. Pharyngeostomy was performed for post-operative feeding management using polyethylene tube on right side. Post-operatively animal was given with ceftiofur (Indian Genomix Pvt. Ltd. Begumpet, Hyderabad, India) @ 1.1 mg/kg body wt. S/C for 7 days, meloxicam (Intas pharmaceuticals limited, Ahmedabad, India) @ 0.2 mg/kg body

weight IM for 3 days and B-complex vitamin supplements intramuscularly. Post-operative feeding and medicines were giving through pharyngeostomy tube (Fig. 4). The pharyngeostomy tube was removed by tenth post-operative day and closed the incision. The animal showed symptomatic recovery and complete closure of cleft by fourth post-operative week. (Fig. 5)



Fig.4 Post-operative feeding management

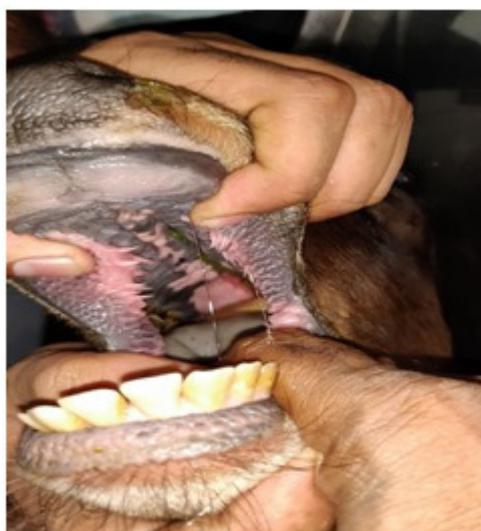


Fig.5: Healed cleft review on 4th post-operative week

Discussion

Failure of closure in facial processes such as the frontonasal, maxillary, and mandibular processes will be resulting in developmental disorder cleft palate. (Evans and Sack, 1973).

Intra-oral, bilateral buccotomy, pharyngotomy, mandibular symphysiotomy are the potential approaches to access the soft palate for the repair (Smolec *et al.*, 2010). Corticosteroids, tranquilizers, maternal malnutrition, maternal respiratory hypoxia, actinomycin, alkylating agents, caffeine, ionizing radiation, Poisonous plants and a variety of teratogens have been associated in cleft palate formation in different species (Szabo, 1989). Post-operative nutritional management is most important in this case, therefore feeding through nasogastric tube or pharyngeostomy is most recommended.

Conclusion

A case of secondary cleft palate in a female Vechur calf was successfully corrected by early surgical treatment using bipedicle flap reconstruction technique and post-operative feeding management by pharyngeostomy was followed for healing of the sutured cleft.

References

- [1] Evans H.E. and Sack, W.O. 1973. Prenatal development of domestic and laboratory mammals: Growth curves, external features and selected references. *Anatomia Histologia Embryologia* **2**: 11–45.
- [2] Kirkham L.E. and Vasey, J.R. 2002. Surgical cleft soft palate repair in a foal. *Australian Vet. J.* **80**: 143–146.
- [3] Leipold H.W., Huston, K. and Dennis, S.M. 1983. Bovine congenital defects. *Adv. Vet. Sci. Comp. Med.* **27**:197–271.
- [4] McGeady, T.A., Quinn, P.J., Fitzpatrick, E.S. and Ryan, M.T. 2006. *Veterinary Embryology*. Blackwell Publishing, pp. 272-284.
- [5] Noden D.M. and De Lahunta, A. 1985. Craniofacial muscles and connective tissues. In: Noden DM, De Lahunta A (eds.): *The Embryology of Domestic Animals – Developmental Mechanisms and Malformations*. Williams & Wilkins, Baltimore. 156–195.
- [6] Smolec, O., Vnuk, D., Kos, J., Brkljaca Bottegaro, N. and Pirkic, B. 2010. Repair of cleft palate in a calf using polypropylene e mesh and palatal mucosal flap: a case report. *Veterinarni Medicina*. **55**: 566–570
- [7] Szabo K.T. 1989: Palate. In: Szabo KT (ed.): *Congenital Malformations in Laboratory and Farm Animals*. Academic Press, San Diego. 195–200.