

A rare case of dermoid cyst associated with parotid gland in a male buffalo calf



ABHISHEK VERMA¹, VANDANA SANGWAN^{2*}, NEELAM BANSAL³, HARSIMRAN KAUR⁴, NIMA WANGDI⁵, SHASHI KANT MAHAJAN⁶

- ¹ PhD Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana - 141004, Punjab, India.
- ² Associate Professor, Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana - 141004, Punjab, India.
- ³ Professor, Department of Veterinary Anatomy, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana -141004, Punjab, India.
- ⁴ MVSc Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana - 141004, Punjab, India.
- ⁵ MVSc Scholar, Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana - 141004, Punjab, India.
- ⁶ Professor, Department of Veterinary Surgery and Radiology, College of Veterinary Science, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana - 141004, Punjab, India.

SUMMARY

The report describes a 1.5-month-old male buffalo calf weighing 45 kg presented with a history of soft swelling in the right temporal region since birth. The dorsoventral radiograph of the skull revealed no bony structure in the region of soft tissue swelling. However, the teeth of the right-side mandible were severely mal-aligned. The ultrasound scans of the swelling showed anechoic contents with no blood supply. The echocardiography and chest radiography ruled out any congenital heart defect. The surgical procedure includes draining of the cystic swelling and placement of Foley's catheter under sedation and local infiltration anaesthesia. The inner lining of the swelling had a lathery appearance with small hair on it, which was removed and sent for histopathology, which diagnosed the condition as a dermoid cyst associated with the parotid gland. Telephonic follow-up at 2 month reported a moderate reoccurrence of the swelling; however, the owner denied treatment.

The study reports a rare dermoid cyst associated with a parotid gland in a male buffalo calf and recommends removal/chemical destruction of the affected gland along with the drainage for a successful outcome.

KEY WORDS

Calf; cyst; dermoid; histopathology; parotid.

INTRODUCTION

Dermoid cysts are benign developmental tumor representing the simplest form of teratoma and are usually present since birth^{1,2}. Ocular dermoids are often reported in cattle³ and rarely in buffalo⁴ calves.

The horses are commonly reported with the ocular dermoid and between the withers and the rump⁵ followed by at the base of the ear (as dentigerous cysts), or in the false nostril⁶ (as Atheromas). Dermoid cyst associated with parotid gland is reported in a few cases in Humans⁷. However, a temporal dermoid cyst associated with the parotid gland has not been reported in a buffalo calf. The present case describes the diagnosis and surgical management of a rare case of dermoid cyst associated with the parotid gland in a male buffalo calf.

CASE HISTORY AND PRESENTATION

A 1.5-month-old male buffalo calf weighing 45 kg was presented with a history of soft swelling in the right temporal region since birth (Figure 1a). The same side mandible was thick and abnormal (Figure 1b). The swelling was drained in the field twice using needle aspiration and stab incision but reported recurrence. The calf was otherwise healthy and had regular feeding habits.

RADIOGRAPHY AND ULTRASONOGRAPHY

The dorso-ventral radiographs of the skull revealed no bony structure, involved within the teratological cyst. However, the teeth of right-side mandible were severely mal-aligned (Figure 2a). The ultrasonography of the swelling revealed anechoic con-

Corresponding Author:

Vandana Sangwan (drvandanasangwan@rediffmail.com).



Figure 1 - The buffalo calf at presentation with temporal swelling (a) and abnormally thick right mandible (b).

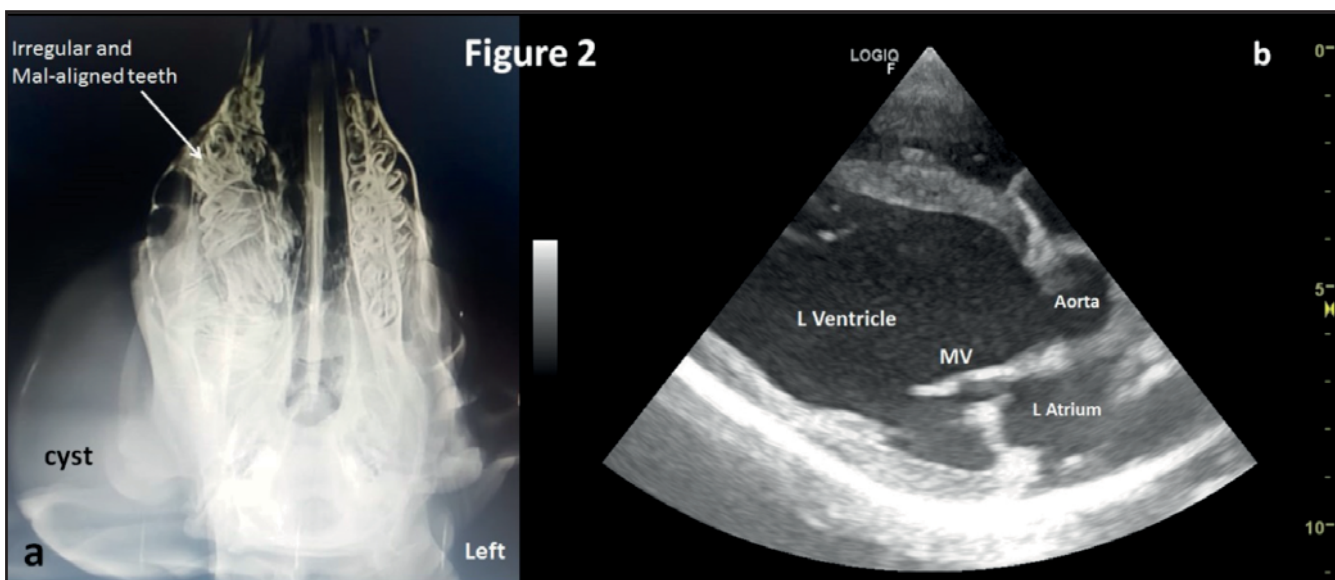


Figure 2 - The dorso-ventral radiograph of the buffalo calf shows severely mal-aligned teeth on the right mandible (a).The normal echocardiogram of the buffalo calf (b).

tents with no blood supply. Congenital cardiovascular affections were ruled out with the help of lateral chest radiograph and echocardiography (Figure 2b).

SURGICAL TREATMENT

The calf was cannulated in the ear vein for fluid therapy. Injection diazepam @ 0.2mg/kg and injection ketamine at the rate of 3mg/kg were given intravenously. Local anesthesia (2ml of 2% lignocaine HCl) was infiltrated at the incision line. A five centimeter longitudinal skin incision was made on the ventral region of the swelling. Approximately, 350ml of clear, yellowish color, watery cystic fluid was drained. No duct or bony structure was felt within the cyst. The inner lining of the cyst wall had a leathery appearance with small hair on it (Figure 3a). The lining was removed completely after dissection (Figure 3b). The skin sutures were applied using silk (No. 2) after removing the

excess skin. A Foley’s catheter of size 18F was placed in the cavity through a separate stab incision to further drainage of the fluid (Figure 3c).

POST-OPERATIVE CARE AND OUTCOME

Post-operative care included injection Cefotaxime (20mg/kg b.wt, twice daily for five days) and analgesic injection Meloxicam (0.02mg/kg b.wt, once daily for three days), intramuscular. Povidone iodine flushing of the cavity was advised through Foley’s catheter. The calf was healthy with no discharge after 10 days, post-operatively. The Foley’s catheter and skin sutures were removed on the 14th post-operative day (Figure 4a). No recurrence was reported until one month. But later, the fluid started accumulating, and at two months follow up, the swelling was nearly 8cm in diameter (Figure 4b).

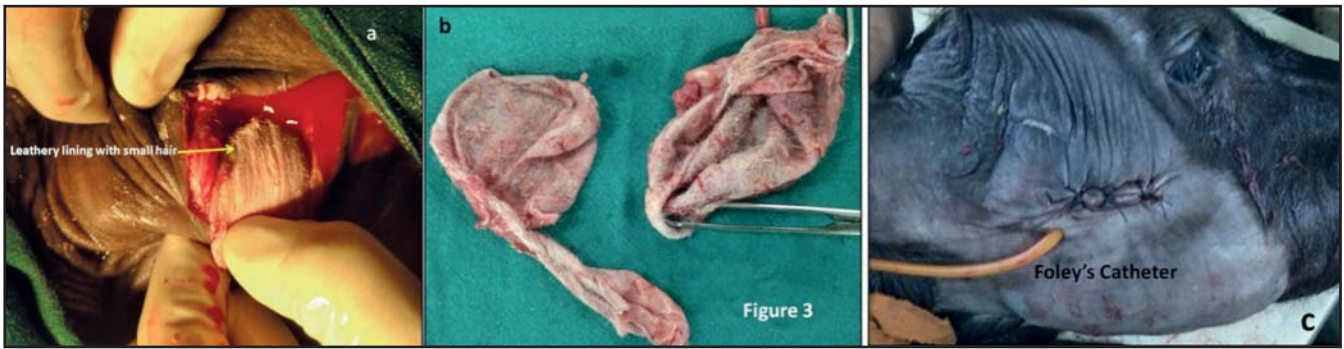


Figure 3 - The photograph shows hair on the inner lining of the cavity during surgery (a), the resected inner lining (b) and the immediate post-operative photograph with Foley's catheter in place for fluid drainage (c).

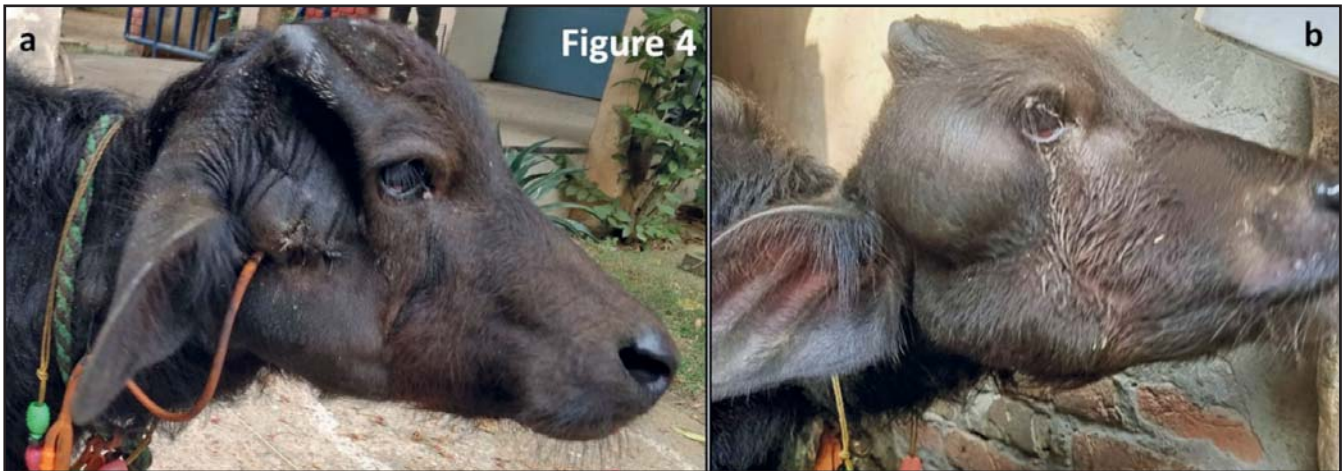


Figure 4 - The post-operative day 14 photograph shows complete resolution of the cyst (a). The 2 month post-operative photograph showing recurrence with a cricket ball size swelling (b).

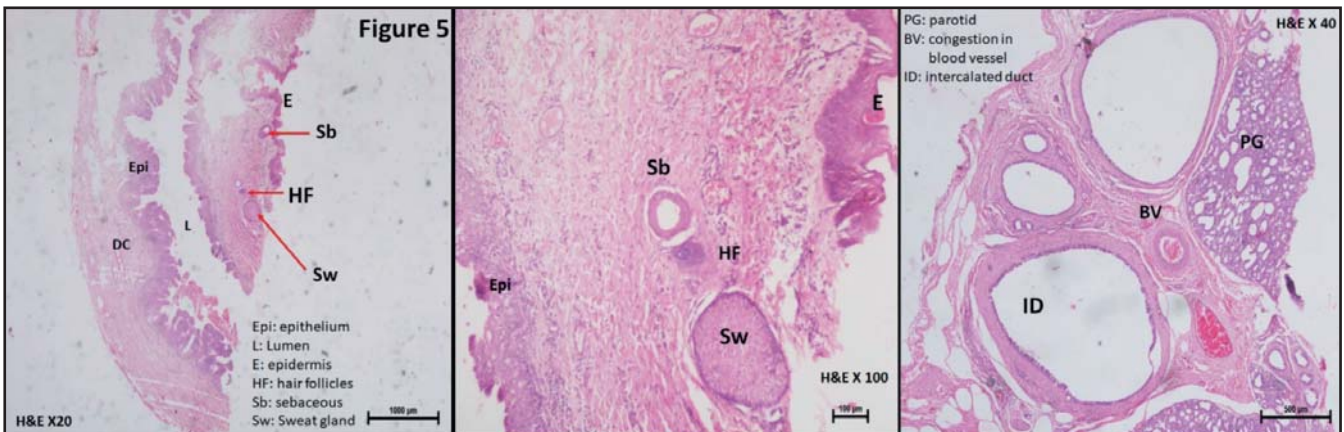


Figure 5 - The microphotographs of the histopathology slides showing various structures at different magnifications on H&E stain.

HISTOPATHOLOGY (Figure 5)

Histopathology of the inner lining revealed the presence of a dermal cyst with an enlarged lumen and lined stratified epithelium with hair follicle, sebaceous gland, and fluid-filled cavity. Degenerated Parotid gland showing hyperplasia of intercalated ducts and congestion of blood vessels was also seen. The condition was diagnosed as dermoid cyst with the involvement of the parotid gland.

DISCUSSION

Clinical findings and history indicated that the calf had congenital malformation related to the soft swelling in the right temporal region and the right mandibular teeth mal-alignment. The primary differential was a dentigerous cyst but radiography and surgical exploration did not reveal any dental tissue. The presence of hairs in the inner lining of the cyst with the histopathological findings confirmed the condition to be

a dermoid cyst with the involvement of the parotid gland. The dermoid cysts are early developmental lesions that occur because of the sequestration of embryonic epithelium in deeper layers along the foetal lines of closure⁸, while the dentigerous cysts are formed due to the premature closing of the first branchial cleft during embryologic development, subsequently leading to ectopic dental tissue⁹. The dermoid cysts may also be acquired secondary to a traumatic displacement of epithelial tissue⁶. The ocular dermoid in cattle show an occurrence rate of 0.002-0.4%¹⁰. As per the author's knowledge, this is the first report of a dermoid cyst involving the parotid gland in a buffalo calf. The cystic lesions account for 2-5 % of all parotid gland lesions in humans¹¹.

The surgical excision of a dermoid cyst is recommended as a treatment to avoid spillage of the content¹². Recurrence of a dermoid cyst is reported in cases with incomplete excision. Early removal of a dermoid cyst may allow complete excision without disruption of the cyst wall, and may reduce the risk of recurrence¹³. The recurrence of ovarian dermoid cysts in humans is commonly reported¹⁴.

Histologically, the dermoid cysts are lined by a keratinising stratified squamousepithelium with enlarged fluid filled lumen, hair follicle and sebaceous gland¹⁵. The involvement of a parotid gland (as was diagnosed on histopathology) in the present case may be the reason for recurrence, as no step was taken to destroy or remove the gland.

CONCLUSION

The study reports a rare dermoid cyst associated with a parotid gland in a male buffalo calf and recommends removal of the affected gland along with the drainage for a successful outcome.

CONFLICTS OF INTEREST

The authors have no conflicts of interest with anyone.

AUTHORS CONTRIBUTION

Author 1 wrote the manuscript and the work was part of his PhD research. Author 2 scrutinized the manuscript and guided the surgery, Author 3 did histopathology, Author 4 and 5 were surgeons and Author 6 was radiologist.

ACKNOWLEDGEMENTS

The authors acknowledge the Indian Council of Agricultural Research, New Delhi, India and Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, India.

References

1. Abou-Rayyah Y, Rose G. E., Konrad H., Chawla S. J. and Moseley I. F. (2002). Clinical, radiological and pathological examination of periocular dermoid cysts: evidence of inflammation from an early age. *Eye*, 16: 507-512.
2. Perry J. D. and Tuthill R. (2003). Simultaneous ipsilateral temporal fossa and orbital dermoid cysts. *Am J Ophthalmol*, 135: 413-415. [10.1016/s0002-9394\(02\)01961-x](https://doi.org/10.1016/s0002-9394(02)01961-x).
3. Alam M.M. and Rahman M.M. (2012). A three years retrospective study on the nature and cause of ocular dermoids in cross-bred calves. *Open Vet J*, 2: 10-14.
4. Sarrafzadeh-Rezaei F, Farshid A.A., Saifzadeh S. (2007). Congenital ocular dermoid cyst in a river buffalo (*Bubalus bubalis*) calf. *J Vet Med A Physiol Pathol Clin Med*, 54(1): 51-54. [10.1111/j.1439-0442.2007.00875.x](https://doi.org/10.1111/j.1439-0442.2007.00875.x).
5. Mullowney P.C. (1985). Dermatologic diseases of horses. Part IV. Environmental, congenital, and neoplasia diseases. *Compend Cont Edu Prac Vet*, 7: S22-S33.
6. Hillyer L.L., Jackson A.P., Quinn G.C. and Day M.J. (2003). Epidermal (infundibular) and dermoid cysts in the dorsal midline of a three-year-old thoroughbred-cross gelding. *Vet Dermatol*, 14 (4), 205-209. [10.1046/j.1365-3164.2003.00345.x](https://doi.org/10.1046/j.1365-3164.2003.00345.x).
7. Dwivedi G., Gupta V., Patnaik U., Kumar M., Sood A. and Upadhyay M. (2019). Dermoid Cyst of the Parotid Gland: A Rare Entity. *Ind J Otolaryngol Head Neck Surg*, 71(1): 809-812. [10.1007/s12070-018-1560-8](https://doi.org/10.1007/s12070-018-1560-8).
8. Colombo F, Holbach L.M. and Naumann G.O.H. (2000). Conjunctival cyst and conjunctival dermoid of the orbit. *Orbit*, 19: 13-19.
9. Uzai F.A., Plattner B.L., Hostetter J.M. (2015). Chapter 1 - Alimentary system. In: Grant Maxie M, eds. Jubb, & Kennedy, Palmar eds. *Pathology of Domestic Animals*: Elsevier, 6 (2).
10. Brudenall D.K., Ward D.A., Kerr L.A. and Newman S.J. (2008). Bilateral corneconjunctival dermoids and nasal choristomas in a calf. *Vet Ophthalmol*, 11(3): 202-206.
11. Choi E.C., Jin J.B., Kim J.Y., Hong W.P. and Park Y.K. (1988). Dermoid cyst of the parotid. *Yonsei J Med*, 29:199-203. [10.3349/ymj.1988.29.2.199](https://doi.org/10.3349/ymj.1988.29.2.199).
12. Ferrari M. M., Mezzopanea R., Bulfonia A., Grijuelaa B., Carminatib R., Ferrazzic E. and Pardia G. (2003). Surgical treatment of ovarian dermoid cysts: a comparison between laparoscopic and vaginal removal. *Euro J Obstet Gynecol Reproduct Biol*, 109: 88-91. [10.1016/s0301-2115\(02\)00510-9](https://doi.org/10.1016/s0301-2115(02)00510-9).
13. Orozco-Covarrubias L., Lara-Carpio R., Saez-De-Ocariz M., Duran-McKinster C., Palacios-Lopez C. and Ruiz-Maldonado R. (2013). Dermoid cysts: a report of 75 pediatric patients. *Pediatr Dermatol*, 30(6), 706-11. [10.1111/pde.12080](https://doi.org/10.1111/pde.12080).
14. Rogers E. M., Allen L. and Kives S. (2014). The Recurrence Rate of Ovarian Dermoid Cysts in Pediatric and Adolescent Girls. *J Pediatr Adolesc Gynecol*, 27(4): 222-226. [10.1016/j.jpog.2013.11.006](https://doi.org/10.1016/j.jpog.2013.11.006).
15. Makos C., Noussios G., Peios M., Gougousis S. and Chouridis P. (2011). Dermoid Cysts at the Floor of the Mouth: Two Case Reports. *Case Reports Med*, 1-7. [10.1155/2011/362170](https://doi.org/10.1155/2011/362170).