

Short Communication

TOTAL EAR CANAL ABLATION AND LATERAL BULLA OSTEOTOMY (TECA/LBO) FOR THE MANAGEMENT OF EAR CANAL TUMOR IN AN AMERICAN BULL DOG

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ABSTRACT: The present report describes the management of tumorous growth in the ear canal of a dog with total ear canal ablation and lateral bulla osteotomy. Clinical examination revealed a severely stenotic ear canal along with palpable tumorous growth. The animal was premedicated with atropine, diazepam, and butorphanol. General anesthesia was induced with propofol and maintained using isoflurane with oxygen. Total ear canal ablation and lateral bulla osteotomy were performed according to the standard procedure. The closure of the surgical site was done in two layers using polyglactin 910. The skin was sutured by using polypropylene. Sutures were removed after 14 days. Post-operative antibiotics, analgesics, and nerve supplements were given. Complete recovery of the animal was seen without any post-surgical complications.

Keywords: Total ear canal ablation, Bulla osteotomy, Tumor, Ear pinna, Tympanic bulla.

Total ear canal ablation with lateral bulla osteotomy is the best approach for treating canine ear canal tumors. Total ear canal ablation (TECA) involves complete removal of the secretory epithelium and vertical and horizontal ear canals. Most frequently, dogs with an irreversible inflammatory ear canal condition have this salvage operation. Since otitis media in dogs is frequently accompanied by chronic otitis externa, a lateral bulla osteotomy (LBO) is typically performed in conjunction with TECA to investigate the tympanic cavity. Tympanic bulla exudates can be removed with lateral bulla osteotomy. Complete ear canal excision and partial tympanic bulla removal are necessary steps in the challenging and frequently lengthy salvage procedure known as total ear canal ablation with lateral bulla osteotomy, which helps expose and debride the tympanic bulla [1, 2, 3]. Auricular tumors, aural cholesteatoma, irreversible hyperplastic horizontal ear canal disease, significant

ear canal damage, end-stage ear inflammatory disease, and failure of traditional ear procedures, such as vertical ear canal ablation or lateral ear canal excision, are treated with TECA-LBO [4, 5, 6].

The study

The dog was presented with a tumor in the left ear canal at the institute polyclinic. The animal was a 4-year-old male American pit bull dog, that had a tumorous growth in the left ear canal for the past 3 to 4 months. Clinical examination revealed a severely stenotic ear canal along with palpable tumorous growth (Fig. 1a). Heart rate, respiration rate, and rectal temperature were within normal physiological range.

After a proper clinical examination, the prognosis of the case was conveyed to the owner. Due consent was taken from the owner and surgery was planned. The animal was premedicated with Atropine (0.045 mg/kg Body Weight (BW) Subcutaneous (S/C),

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Diazepam (0.5 mg/kg BW Intravenous (I/V), and Butorphanol (0.2 mg/kg BW I/V). General anesthesia was induced with Propofol (5 mg/kg BW I/V) and maintained using Isoflurane with oxygen.

The animal was positioned in lateral recumbency and the surgical site was aseptically prepared (Fig. 1b). A "T" shaped skin incision was made at the base of the ear canal (Fig. 1c) and was dissected (Fig. 1d) by taking all precaution to avoid any kind of insult to the facial nerve. The ear canal was transected at the external acoustic meatus (Fig. 1e and Fig. 1f). Secretory tissue was curetted out and a window in tympanic bulla was made using rongeurs (Fig. 1g). The bulla was flushed with sterile saline solution (Fig. 1h) and the closure of the surgical site was done in two layers using 2-0 polyglactin 910 (Fig. 1i) for subcutaneous and 2-0 polypropylene for skin (Fig. 1j).

Postoperatively Antibiotics (Ceftriaxone sodium @ 25 mg/kg BW I/V for 7 days), Anti-inflammatory (Meloxicam @ 0.4 mg/kg BW Intramuscular (I/M) for 5 days), Antacid (Pantoprazole 40mg tablet per oral on empty stomach), multivitamins syrup were given and regular antiseptic surgical wound dressing was done. Sutures were removed after 14 days of surgery.

Results and discussion

Formation of tumors in different organs of dogs is not uncommon and surgical intervention is commonly used for physical removal of the masses. The character and histologic cause of neoplastic and non-neoplastic disease-producing mass lesions that affect the ear canal in dogs are typically comparable to that of the normal structure [7]. Particularly when compared to the prevalence of otic disease as a whole, the frequency of auditory neoplasia is rather low. About 40% of canine ear neoplasms are benign tumors, which might include inflammatory polyps, basal cell tumors, histiocytomas, papillomas, and fibromas, as well as ceruminous gland and sebaceous gland adenomas. Adenocarcinomas of the ceruminous gland are overrepresented, and malignant neoplasms of the canine ear are more common than benign tumors. The highest opportunity for neoplastic illness cure is unquestionably achieved with aggressive surgical resection of auditory neoplasia [7].

The animal was a 4-year-old male American pit bulldog having a history of tumorous growth in the left ear canal from the past few months. On clinical examination severely stenotic ear canal along with the palpable tumorous growth was observed in the ear canal. Heart rate, respiration rate, and rectal temperature

were normal. The age of dogs with benign tumors ranged from 4 to 18 years (mean, 9.4 years; median, 9.3 years), compared with 4 to 18 years (mean, 9.9 years; median, 10.0 years) for dogs with malignant tumors. The latter were found most commonly at the base of the ear as well as on the pinna. Additionally, Boxers were found to be predisposed to developing ear tumors [8].

Both neoplastic and non-neoplastic disorders can affect the pinna and ear canal and frequently cause mass-forming lesions. Neoplasia develops from structural and histologic components found in every area of the ear. Although three dogs have been documented to have bilateral ear canal neoplasia, aural neoplasia is often unilateral [9].

The best treatment option is total ear canal ablation with lateral bulla osteotomy for the aural tumors in dogs. General anesthesia combination along with inhalant anesthesia for maintenance was found effective in restricting animal movements for 100% successful surgical procedure. Multimodal anesthesia, including inhalant gas anesthetics, injectable opioid analgesics, and regional anesthesia, is ideal for TECA-LBO [10, 11, 12].

The tumor was resected along with the total ear canal followed by performing lateral bulla osteotomy. In both humans and animals, surgery is the main treatment for benign ear canal tumors [13]. When combined with TECA, the lateral approach to the tympanic bulla for surgical exploration is advised because it doesn't need the animal to be repositioned [14]. However, in comparison to a ventral approach, this method exposes the tympanic bulla less, necessitating investigation via soft tissues near the facial nerve and big blood vessels [14, 15]. This increases the possibility of stretching the facial nerve and causing direct trauma to it, which could lead to neuropraxia or facial nerve transection (neurotmesis) [15, 16]. Postoperatively the dog recovered completely with no complications on the surgical site and with no damage to the facial nerve.

The histopathological evaluation of the tumor resected revealed ceruminous adenoid cystic carcinoma. Section with a broad area of penetration, consisting of small to medium-sized nests with different sizes and forms (Fig. 2a). The tumor consisted of hyperchromatic ovoid nuclei and rich eosinophilic cytoplasm formed of basaloid cells grouped in irregularly shaped tubular or cribriform nests of different sizes. (Fig. 2b).

Excellent or enhanced ratings were given to the TECA/LBO outcomes in dogs. However, issues

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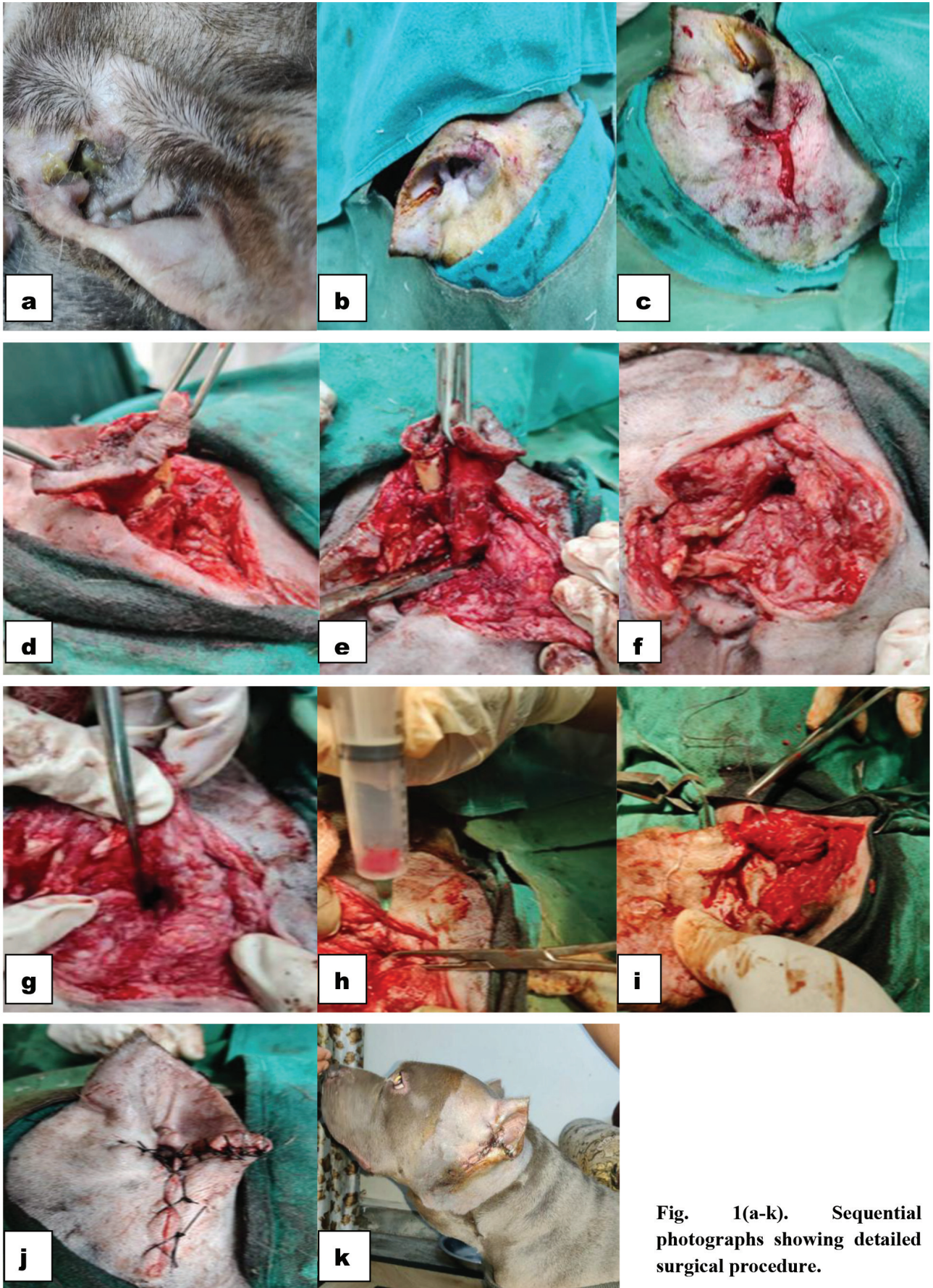


Fig. 1(a-k). Sequential photographs showing detailed surgical procedure.

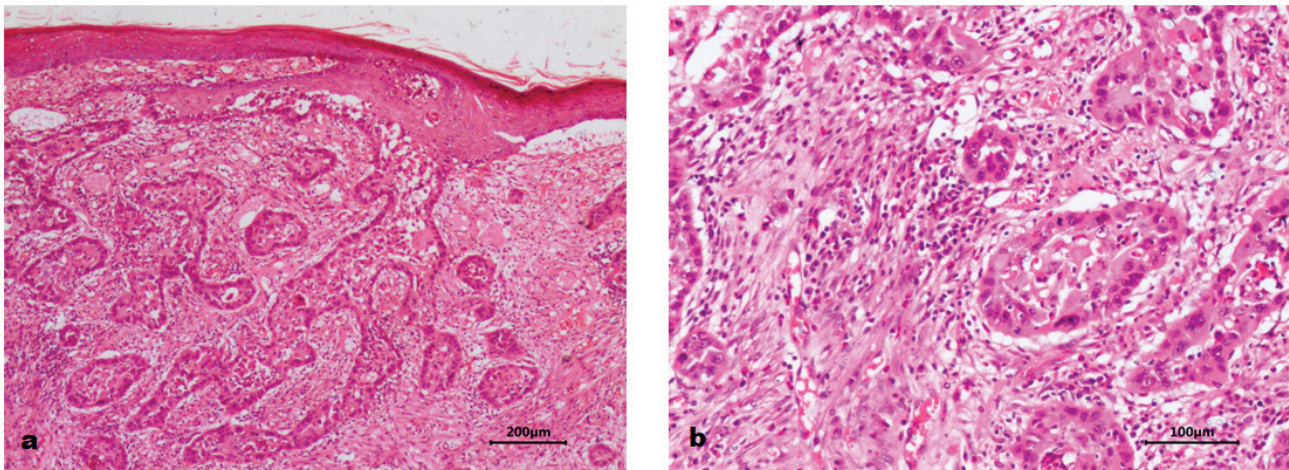


Fig. 2(a & b). Histopathological evaluation.

throughout the time from suture removal to follow-up included head tilt, facial nerve paralysis, and para-aural fistulation [17]. Surgical trauma, as a result of TECA surgery, accounted for 19.7% of all the cases [18].

For idiopathic facial paralysis, treatment for facial nerve paralysis mostly consists of nutritional assistance and artificial tears to moisten the cornea. Even in cases where tear production is normal, long-term (perhaps lifetime) treatment with artificial tears is advised to maintain lubrication of the cornea. By doing this, the chance of exposure to keratitis and corneal ulcers brought on by a lack of blinking is decreased. Cases with otitis media may need to undergo bulla osteotomy, deep ear flushing, or long-term antibiotics (6-8 weeks) [19].

Antibiotics (Ceftriaxone sodium) and anti-inflammatory (Meloxicam) drugs were administered IV postoperatively to reduce infection and pain. Postoperative complications and facial paralysis were not noticed in this case (Fig. 1k), potentially as a result of the excellent surgical technique employed and the appropriate care given by the animal owners.

Conclusion

TECA/LBO surgical technique gave excellent results for the management of canine ear canal tumors. The dog recovered uneventfully without any post-surgical complications. Facial nerve injury was not observed in the case. Although there is a substantial chance of concomitant otitis media, total ear canal ablation alone is not recommended. Access to the tympanic bulla is made possible by lateral bulla osteotomy, which promotes the creation of granulation tissue in the bulla and removes exudates, hence reducing the formation of abscesses.

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