Total Ear Canal Ablation and Lateral Bulla Osteotomy for Chronic Otitis Externa and Media in Dogs: Postoperative Recovery and Long-Term Follow-up

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Abstract: The clinical results of 10 consecutive total ear canal ablation combined with lateral bulla osteotomy (TECA-LBO) in six dogs with chronic otitis externa and media were evaluated by the postoperative recovery and long-term follow-up. All dogs were selected for TECA-LBO on the basis of following five clinical symptoms. First, medical treatment couldn’t improve clinical signs at least for over 2 months. Second, tympanic membrane was completely disappeared. Third, radiopacity was increased in tympanic cavity. Forth, petrous temporal bone was sclerosed. Fifth, ear canal calcification was progressed. And all cases were satisfied all five clinical symptoms. At 14 days after operation, the preoperative symptoms of chronic otitis externa and media which were scratching ear, pain, and hardening ear canal were resolved, and postoperative swelling, erythema, head tilt, and exudate from Penrose drainage were not existed in all cases. Loss of eye blink was happened in 4 cases, but these were disappeared between 14 days after operation except one case on 3 months. All dogs were discharged form hospital at 14 days after operation. Between 3.5 and 6.5 months after discharging from hospital, para-aural abscessation was happened only in all Cocker spaniels. But this complication was solved by ventral bulla osteotomy (VBO). The dogs which didn’t show para-aural abscessation after TECA-LBO didn’t show scratching, pain, hardening of ear and hearing ability was improved, at 7.5 months after TECA-LBO. And the dogs which showed para-aural abscessation after TECA-LBO also didn’t show scratching, pain, hardening of ear and hearing ability was also improved, at 7.5 months after VBO. In conclusion, After TECA-LBO, all dogs were recovered well without complication within 2 weeks except Cocker spaniel. And loss of eye blink can be cured naturally within 2 weeks after surgery. And para-aural abscessation can be happened between 4 and 7 months after TECA-LBO, so surgeon must follow-up until 8 months.

Key words: total ear canal ablation and lateral bulla osteotomy (TECA-LBO), otitis media, dog

Introduction

Otitis media in dogs is frequently come into existence. In one survey of 100 patients with otitis externa, 16 percent with acute otitis externa had concurrent otitis media and 50 percent with chronic otitis externa had concurrent otitis media. The most common cause of otitis media is otitis externa. Thus, the dogs with chronic or recurrent otitis externa should always be suspected otitis media.

If otitis media couldnt be controlled so the infection reach the vestibular sensory organs, the signs of otitis interna (ataxia, head-tilt, and nystagmus) can be seen. Although the signs of otitis interna are not appeared, because of severe pain, ataxia, and possibility of otitis interna, otitis media must be treated.

Among numerous surgical techniques for treatment of otitis media, total ear canal ablation combined with lateral bulla osteotomy (TECA-LBO) is a surgical procedure most commonly performed for control of otitis media in dogs. Total ear canal ablation combined with ventral bulla osteotomy (TECA-VBO) has the advantage of providing improved exposure and more consistent ventral drainage of the tympanic bulla than the TECA-LBO but TECA-LBO is more frequently used technique than TECA-VBO because of the major disadvantages of TECA-VBO which are the technical difficulty of performing the procedure and repositioning of patients. TECA-LBO can remove complete vertical and horizontal portion of the auricular cartilages with associated epithelium as well as a portion of the ventrolateral wall of the osseous bulla to aid in complete removal of debris and epithelium in the tympanic cavity. So, whole resection of external ear canal, and the removal of debris and necrotic epithelium in the middle ear can control ear with inflammation.

But a high rate of complications has been reported with TECA-LBO. Complications of TECA-LBO attributed to two main factors: technical difficulty in performing the two procedures and bacterial contamination of the surgical site from contaminated tissues. Complications of TECA-LBO are various, and include acute infection, partial and complete facial nerve paralysis, damage to the vestibular and cochlear windows with resulting inner ear injury, Horner syndrome, intraoperative hemorrhage, hypoglossal nerve damage, damage to the hyoid apparatus, hearing loss, avascular necrosis of the pinna or caudal pinna margin, and persistent dermatitis of the pinna. Most complications are short lived and resolved with just medical treatment and costly.

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surgical procedures. Among the many complications, loss of eye blink, hearing loss, facial nerve paralysis, and recurrent infection of the middle ear or other structures deep to the subcutaneous tissue layer are most complications.3,21,24-27

The informations of postoperative recovery course, and long-term outcome of TECA-LBO was a little. The purpose of this study is to evaluate the postoperative recovery and long-term outcome of dogs undergoing TECA-LBO.

Materials and Methods

Experimental animals

Six dogs with chronic otitis externa and media were presented between March 2001 and February 2002. Dog were admitted to Veterinary Medical Teaching Hospital of College of Veterinary Medicine of KonKuk University and performed total ear canal ablation and bulla osteotomy. All dogs were determined to have chronic otitis externa and media, and were selected for TECA-LBO on the basis of following five clinical symptoms. First, medical treatment couldnt improve clinical signs at least for over 2 months. Second, tympanic membrane was completely disappeared. Third, radiopacity was increased in tympanic cavity. Forth, petrous temporal bone was sclerosed. Fifth, ear canal calcification was progressed. All cases were satisfied with all five clinical symptoms.

History taking

Breed, age, sex, main complaints, concomitant other diseases, affected ear, duration of clinical signs, previous treatment and deafness were recorded. Data are reported as mean±SD.

Physical examination

Head tilting, facial nerve paralysis (including loss of eye blink), consistence of ear canal, hyperplasia of ear canal, hearing, scarring ear, and ear pain were examined. Hearing ability was performed by whether responding or not after shouting loudly beside affected ear.

The frequency of scratching was divided to 3 degree. Mild was scratching ear sometimes. Moderate was scratching ear often-times. And severe was scratching ear so many times. The degree of pain was evaluated by 3 grades. Grade 0 was that didn't show any pain. Grade 1 was that showed the pain when palpated. Grade 2 was that showed pain in ordinary times. For evaluating the degree of hardening of ear canal, degree was divided into 3 classes. Class 1 was slightly ossification of auricular cartilage. Class 2 was moderate ossification but opening of ear canal. Class 3 was full calcified and no opening of ear canal.

Otoscopic examination

Ear canal was evaluated about patency or stenosis, color changes, ulcerations, exudates, foreign bodies, parasites, tumors, and excessive hair or waxy accumulation by the otoscope under anesthesia. And tympanic membrane was evaluated about anatomical structural, especially about manubrium of malleus, pars flaccida, and pars tensa.11,12. If tympanic membrane was ruptured completely, and manubrium of malleus, and pars flaccida were not seen, tympanic membrane was considered it would not be healed.11,14

Radiographic examination

Plain radiograph was performed using lateral oblique, ventrodorsal, dorsoventral, and open mouth view. For contrast radiograph, iohexol (Omnipaque®, Nycomed Imaging, 300 mgI/ml, 2.5 ml/ear) was injected via each ear cannal (cannalography), and radiographic evaluation was then performed by the use of lateral oblique, ventrodorsal, dorsoventral view for confirming whether tympanic bulla was perforated.23

Surgical procedures and postoperative management

Total ear canal ablation, Lateral bulla osteotomy and Ventral bulla osteotomy were performed as the method which was referred to Fossom.28

Postoperative management. For postoperative analgesics, butorphanol (Butorphan®, MYUNGMOON PHARM., 0.2 mg/kg, IM, one time.), lidocaine spray (Xylocaine® 10% Spray, AstraZeneca Korea, one time.) and tranquilizer, acepromazine (SEDAJECT injection, Samwoo Chemical IND.CO., LTD, 0.025 mg/kg, IV, one time.) was administered.23

Bandage was placed over the ears. If necessary an Elizabethan collar was used to prevent bandage removal and ear mutilation. Because bandages and excessive swelling could impair respiration, patient was monitored postoperatively. Antibiotics were administered for 2 to 3 weeks. Penrose drains were removed in 3 to 7 days.21,24,25,27 Sutures were removed in 10 to 14 days.

Postoperative examination and long-term follow-up

All dogs were hospitalized for 14 days after operation. In this time, postoperative care and assessment were performed. Postoperative assessment was performed with following items. (1) Swelling (2) Erythema (3) Penrose drainage (4) Loss of eye blink (5) Head tilt. And vital signs-body temperature, heart rate, respiratory rate, activity, and appetite were also checked during 14 days.

At 14 days after operation, the first evaluation was performed. All dogs was evaluated about the symptom of chronic otitis externa and media which were scratching ear, pain, hardening of ear, the postoperative assessment items, vital signs, and hearing ability. In this evaluation, if any problem was not showed, then a dog could discharged from hospital.

For the long-term follow-up, the second evaluation was performed. Until 8 months, if any complications had not