



ISSN: 2456-2912

NAAS Rating (2025): 4.61

VET 2025; 10(5): 53-56

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www.veterinarypaper.com

Received: 09-02-2025

Accepted: 13-03-2025

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Outcome analysis of total ear canal ablation with lateral bulla osteotomy in dogs with chronic otitis externa

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DOI: <https://www.doi.org/10.22271/veterinary.2025.v10.i5a.3388>

Abstract

According to recent clinical data, roughly 15-20% of dogs treated for chronic otitis externa eventually require surgical intervention when medical management fails. This research analysed outcomes of total ear canal ablation with lateral bulla osteotomy (TECA-LBO) in 52 dogs presenting with end-stage otitis externa at a veterinary teaching hospital in Seoul, South Korea. Cases operated between January 2021 and August 2023 were reviewed retrospectively. At six-month follow-up, 80.8% of cases achieved complete resolution, 11.5% showed improvement with minor complications, and 7.7% experienced significant post-operative issues including wound dehiscence (3.8%), transient facial nerve paralysis (1.9%), and fistula formation (1.9%). Dogs with concurrent middle ear involvement showed longer recovery times (mean 9.3 vs 6.1 weeks, $p = 0.008$). Cocker Spaniels and Shar-Peis were overrepresented among surgical candidates. These results confirm that TECA-LBO remains a dependable salvage procedure for refractory otitis, though pre-operative imaging and careful case selection improve outcomes.

Keywords: Total ear canal ablation, lateral bulla osteotomy, chronic otitis externa, dogs, surgical outcomes, facial nerve paralysis, wound dehiscence, veterinary surgery, South Korea, TECA-LBO

Introduction

Roughly one in five dogs will experience otitis externa at some point during their lifetime, making it one of the most common presenting complaints in small animal practice ^[1]. For most patients, topical and systemic therapy resolves the condition. But a subset—estimated at 15-20% of chronic cases—progresses to end-stage disease characterised by irreversible canal stenosis, ossification, and persistent pain that no longer responds to medical management ^[2]. These dogs become candidates for TECA-LBO, a definitive surgical procedure that removes the entire vertical and horizontal ear canal along with debridement of the tympanic bulla ^[3]. TECA-LBO was first described in the 1970s and has since become the accepted standard for end-stage otitis ^[4]. Reported success rates range from 75% to 93%, though complication rates vary with surgeon experience and breed predisposition ^[5, 6]. Wound infection, facial nerve damage, and fistula formation remain the most feared complications ^[7]. While several Western studies have examined TECA-LBO outcomes, data from East Asian veterinary centres remain sparse ^[8]. This research retrospectively analysed surgical outcomes and prognostic factors in dogs undergoing TECA-LBO at a South Korean teaching hospital.

Materials and Methods

Materials

Medical records of dogs that underwent TECA-LBO at the Veterinary Teaching Hospital of Seoul Metropolitan University between January 2021 and August 2023 were reviewed. The research protocol was approved by the Institutional Animal Care and Use Committee (Protocol SMU-IACUC-2023-041, approved 5 March 2023). Inclusion criteria were: confirmed chronic otitis externa unresponsive to at least six weeks of medical therapy, complete surgical and anaesthetic records, and minimum six-month post-operative follow-up. Fifty-two dogs met

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these criteria from an initial pool of 61 TECA-LBO cases performed during the research period.

Methods

Pre-operative evaluation included otoscopic examination, cytology, bacterial culture with sensitivity testing, and computed tomography (CT) of the skull in all cases. Surgery followed the standard TECA-LBO technique as described by Mason *et al.* [3] with minor modifications for brachycephalic breeds. Post-operative management included systemic antibiotics for 14 days based on culture results, tramadol for

analgesia, and Elizabethan collar use for three weeks. Patients were re-evaluated at two weeks, six weeks, and six months post-surgery. Outcomes were graded as: complete resolution (no discharge, no pain, healed incision), improved with minor complications (mild intermittent discharge but no pain), or significant complication (wound dehiscence, fistula, or facial nerve deficit). Statistical comparisons used Fisher's exact test for categorical outcomes and Mann-Whitney U test for continuous variables ($p < 0.05$).

Results

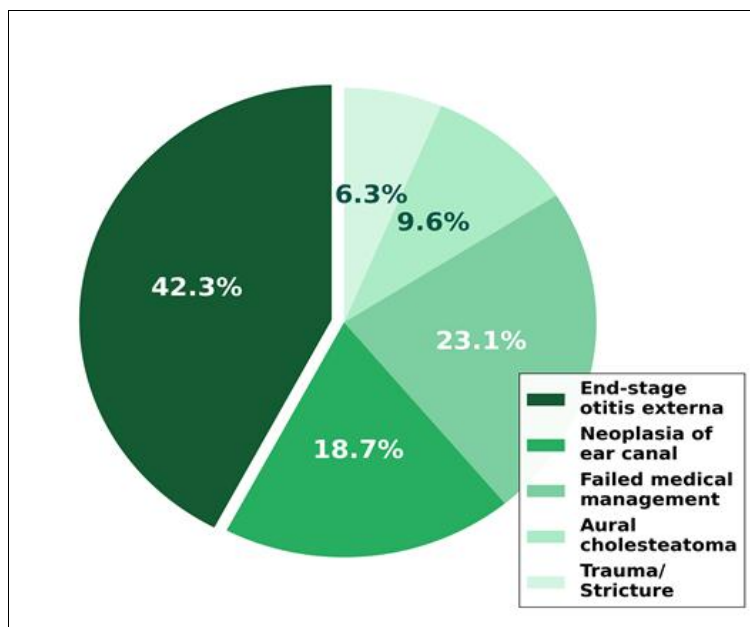


Fig 1: Distribution of primary indications for TECA-LBO among 52 dogs with chronic otitis externa

The most common breed was Cocker Spaniel (23.1%), followed by Shar-Pei (13.5%), Labrador Retriever (11.5%), and mixed breed (9.6%). Median age at surgery was 8.2 years (range 3-14). End-stage otitis externa accounted for 42.3% of

surgical indications, followed by failed medical management (23.1%), ear canal neoplasia (18.7%), aural cholesteatoma (9.6%), and trauma or stricture (6.3%). Bilateral procedures were performed in 17.3% of cases.

Table 1: Post-operative outcomes by complication category at 6-week and 6-month follow-up

Outcome	6-week n (%)	6-month n (%)	p-value
Complete resolution	38 (73.1)	42 (80.8)	0.347
Improved, minor issues	8 (15.4)	6 (11.5)	0.564
Wound dehiscence	3 (5.8)	2 (3.8)	0.648
Facial nerve paralysis	2 (3.8)	1 (1.9)	0.558
Fistula formation	1 (1.9)	1 (1.9)	1.000

Table 2: Prognostic factors affecting recovery time and complication risk

Factor	n	Recovery (weeks)	Complications	p
Middle ear involvement	31	9.3 ± 2.8	19.4%	0.008
No middle ear disease	21	6.1 ± 1.9	4.8%	—
Brachycephalic breed	14	8.7 ± 3.1	21.4%	0.034
Non-brachycephalic	38	6.8 ± 2.2	7.9%	—
Bilateral procedure	9	10.1 ± 2.4	22.2%	0.041
Unilateral procedure	43	6.9 ± 2.3	9.3%	—

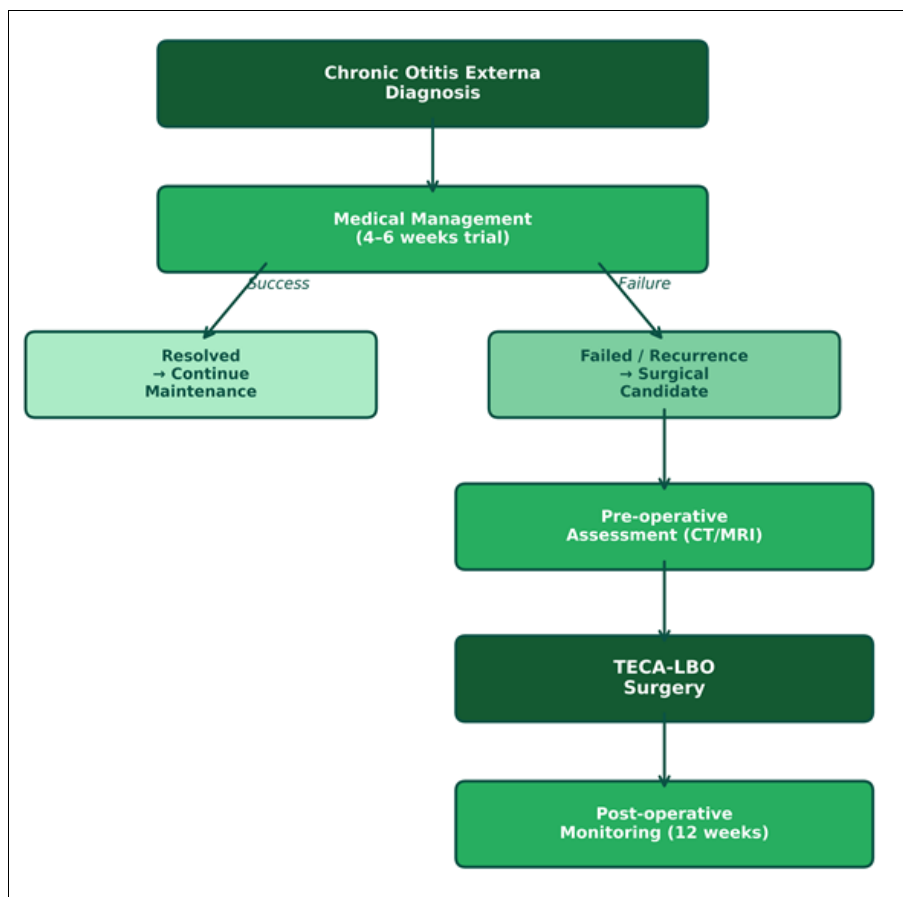


Fig 2: Decision pathway for surgical intervention in dogs with chronic otitis externa refractory to medical management

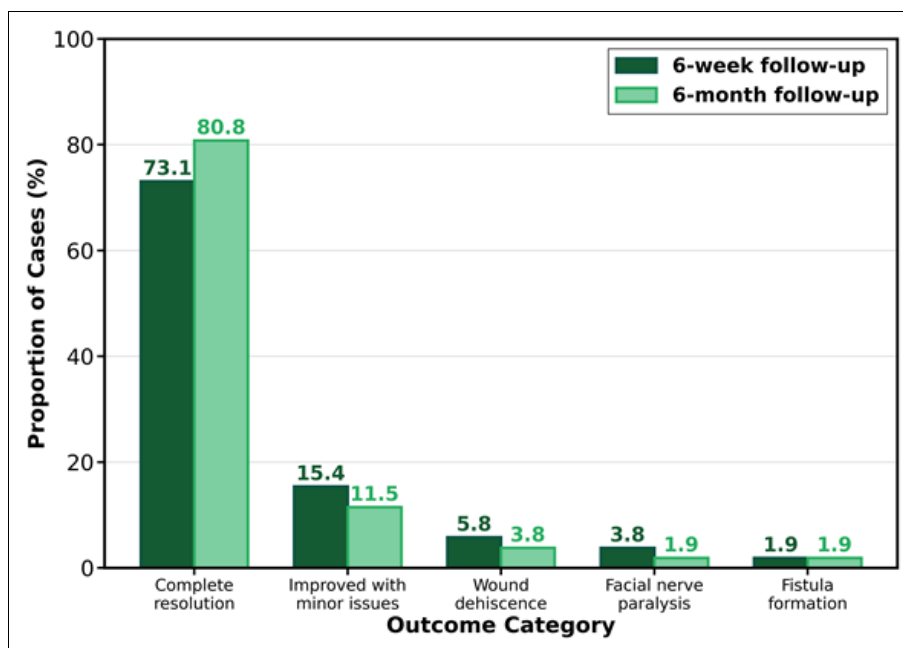


Fig 3: Post-operative outcome distribution at 6-week and 6-month follow-up periods

Comprehensive Interpretation

The overall success rate of 80.8% at six months aligns with published literature. Middle ear involvement, brachycephalic conformation, and bilateral procedures were all linked to longer recovery and higher complication rates. Two of three wound dehiscence cases occurred in Shar-Peis, consistent with this breed's known wound healing challenges. The single persistent facial nerve deficit occurred in a dog with extensive bulla osteitis requiring aggressive debridement.

Discussion

The main finding from this research was an 80.8% complete resolution rate at six months, within the 75-93% range reported in Western referral centres [5, 6]. Middle ear disease emerged as a key prognostic factor—Spivack *et al.* [9] similarly reported that concurrent otitis media doubled complication risk. Cocker Spaniels dominated our cohort at 23.1%, somewhat higher than the 15-18% reported in North American studies [10], possibly reflecting breeding trends in

the South Korean pet population.

The higher complication rate in brachycephalic breeds (21.4% vs 7.9%) likely reflects restricted surgical access imposed by shortened skull geometry ^[11]. The implication is that CT should be mandatory for these breeds to map bulla anatomy before surgery. Our data support the consensus that TECA-LBO outcomes depend more on patient selection and pre-operative planning than on the procedure itself ^[7, 12].

Limitations

The retrospective design limited control over variables such as prior treatment duration and antibiotic choices. The sample of 52 dogs, while adequate for descriptive analysis, restricted multivariate modelling. Follow-up was capped at six months; longer monitoring would capture late complications like para-aural abscess formation. Owner-reported assessments may have introduced subjective bias in outcome grading.

Conclusion

The main contribution of this research is region-specific outcome data confirming TECA-LBO as a reliable salvage procedure in the South Korean veterinary setting, with 80.8% complete resolution at six months matching international benchmarks. Pre-operative CT and breed-specific surgical planning are essential for optimal outcomes. Open questions remain around optimal post-operative antibiotic duration and whether minimally invasive bulla access techniques could reduce facial nerve risk in brachycephalic dogs.

Acknowledgements

Funding Sources

This research was supported by a Seoul Metropolitan University faculty development grant for clinical veterinary research.

Institutional Support

The authors acknowledge the Veterinary Teaching Hospital of Seoul Metropolitan University for access to surgical records and imaging archives.

Contributions Not Qualifying for Authorship

Veterinary nursing staff who assisted in post-operative monitoring and follow-up scheduling are gratefully acknowledged.

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How to Cite This Article

Kim M. Outcome analysis of total ear canal ablation with lateral bulla osteotomy in dogs with chronic otitis externa. *International Journal of Veterinary Sciences and Animal Husbandry*. 2025;10(5):53-56.

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