



## Should We Apply Gentamicin and Dexamethasone Combination as an Intratympanic Treatment or as a Surgical Procedure for Meniere's Disease?

Nurdoğan Ata 

Department of Otorhinolaryngology, KTO Karatay University Medical Faculty, Medicana Hospital, Konya, Turkey

Dear Editor,

I read with great interest the article entitled: "Effect of Dexamethasone Combination With Gentamicin in Chemical Labyrinthectomy on Hearing Preservation in Patients With Meniere's Disease" by Lee, et al.<sup>1)</sup> The authors demonstrated the chemical labyrinthectomy method and its results in their highly educational video-supported article.

Shea, et al.<sup>2)</sup> first described the combined use of aminoglycosides and steroids in the treatment of 299 patients with Meniere's Disease. In their study, 78.9% of patients had adequate vertigo control after one mixture of intratympanic injections, 94% after two, and 98% after three. However, for chemical labyrinthectomy, they used streptomycin instead of gentamicin, which is the most commonly used intratympanic treatment.

Öztürk and Ata<sup>3)</sup> used an intratympanic mixture of gentamicin and dexamethasone injection in the management of Meniere's Disease. The results of this study showed that an intratympanic injection of a mixture of gentamicin and dexamethasone in intractable Meniere's disease cases is effective for vertigo control (81%) and preventing sensorineural hearing loss (only 1 patient with 10 dB hearing loss).

Ardıç, et al.<sup>4)</sup> reported 80% vertigo control with gentamicin-soaked absorbable Gelfoam<sup>®</sup> (Pfizer, New York, NY, USA) on the oval window and dexamethasone-soaked gel foam on the round window in Meniere's disease. Comparative studies in the literature by both Lee, et al.<sup>1)</sup> and Bae, et al.<sup>5)</sup> showed in chemical labyrinthectomy, the application of gentamicin-

soaked absorbable Gelfoam<sup>®</sup> to the oval window and dexamethasone-soaked Gelfoam<sup>®</sup> to the round window under local anesthesia is an effective method to preserve high-frequency hearing and vertigo control. As Lee, et al.<sup>1)</sup> stated in the conclusion of the article, a mixture of gentamicin and dexamethasone can be applied directly to the middle ear.

The surgical technique has two advantages over intratympanic application.

These are:

1) The primary entry route of intratympanic drugs to the inner ear is through the round window membrane. In previous studies, the round window niche was found to be obstructed by the mucosal membrane at a rate of 12% to 17%.<sup>6)</sup> Intratympanic application may be insufficient in patients with obstructed window niches by the mucosal membrane. In such cases, after the middle ear pathologies are detected by surgery after this area is cleaned, a piece of drug-soaked absorbable Gelfoam<sup>®</sup> is placed in front of the oval and round windows.<sup>4,6)</sup>

2) Another advantage of the surgical technique is putting drug-soaked absorbable Gelfoam<sup>®</sup> on the middle ear windows allows the drug to stay in the middle ear longer.

Intratympanic application of a mixture of gentamicin and dexamethasone has some advantages instead of the application of drug-soaked absorbable Gelfoam<sup>®</sup> to oval and round windows. These are:

1) Intratympanic administration is an office procedure that can be well-tolerated by patients, that does not necessitate hospitalization. So the patient's feels less anxious. Application

**Received:** September 26, 2022 **Revised:** October 10, 2022 **Accepted:** October 11, 2022

**Address for correspondence:** Nurdoğan Ata, MD, Department of Otorhinolaryngology, KTO Karatay University Medical Faculty, Medicana Hospital, Musalla bağları mah., Gürz sk. No:1 42060, Selçuklu, Konya, Turkey

**Tel:** +90-332-22180-80, **Fax:** +90-332-3235-65-56, **E-mail:** op.dr.na@gmail.com

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

of drug-soaked absorbable Gelfoam® to oval and round Windows is a surgical procedure and it is more invasive.

2) Intratympanic injection can be easily repeated in vertigo control failure. Putting drug-soaked absorbable Gelfoam® on oval and round windows is to perform surgery again, even with local anesthesia.

3) The most common complications of intratympanic injection are temporary pain and temporary dizziness. Complications such as tympanic membrane perforation and bleeding, that may occur due to tympanomeatal flap elevation in the surgical group are rarely seen in intratympanic injection. While it is not necessary to use drugs after the procedure in intratympanic treatment, it may be necessary to use local or systemic antibiotics together with painkillers in the surgery group.

In conclusion, the intratympanic injection technique is an easy office procedure and is generally well tolerated by patients. Mucosal obstructions in the middle ear windows should be considered in patients who do not benefit from intratympanic therapy. Middle ear mucosal bands can be surgically cleaned and drug-soaked absorbable Gelfoam® can be applied in the same session.

### Acknowledgments

None

### ORCID

Nurdoğan Ata

<https://orcid.org/0000-0002-0763-0852>

### REFERENCES

- 1) Lee Y, Lee JM, Lee HJ, Na G, Kim SH, Bae SH. Effect of dexamethasone combination with gentamicin in chemical labyrinthectomy on hearing preservation in patients with Meniere's disease. *Korean J Otorhinolaryngol-Head Neck Surg* 2022;65(8): 472-5.
- 2) Shea PF, Richey PA, Wan JY, Stevens SR. Hearing results and quality of life after streptomycin/dexamethasone perfusion for Meniere's disease. *Laryngoscope* 2012;122(1):204-11.
- 3) Öztürk K, Ata N. Intratympanic mixture gentamicin and dexamethasone versus dexamethasone for unilateral Meniere's disease. *Am J Otolaryngol* 2019;40(5):711-4.
- 4) Ardıç FN, Tümkaya F, Aykal K, Çabuk B. Selective window application of gentamicin+ dexamethasone in Meniere's disease. *J Int Adv Otol* 2017;13(2):243-6.
- 5) Bae SH, Lee JM, Lee HJ, Na G, Kim SH. Effect of dexamethasone combination with gentamicin in chemical labyrinthectomy on hearing preservation and vertigo control in patients with unilateral Meniere's disease: A randomized controlled clinical trial. *J Clin Med* 2021;10(23):5581.
- 6) Silverstein H, Arruda J, Rosenberg SI, Deems D, Hester TO. Direct round window membrane application of gentamicin in the treatment of Meniere's disease. *Otolaryngol Head Neck Surg* 1999;120(5):649-55.