



## A Case Report: Balloon Dilation of the Eustachian Tube

M.K Rajasekar<sup>1</sup>, S. Shaheera Tarnoom<sup>2</sup>

<sup>1</sup>Professor and Head of the Department, Department of ENT, Sree Balaji Medical College and Hospital, Chromepet.

<sup>2</sup>Senior Resident, Department of ENT, Sree Balaji Medical College and Hospital, Chromepet

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### KEYWORDS

dysfunction,  
tympanogram,  
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### ABSTRACT:

Background: Eustachian tube dysfunction (ETD), can result from various causes such as Allergies- Inflammation from allergies can lead to Eustachian tube blockage, Upper respiratory infections which can cause swelling and mucus buildup in eustachian tube, Structural abnormalities in the nasopharynx or Eustachian tube itself, Chronic sinusitis which can lead to persistent Eustachian tube dysfunction, Barotrauma and rarely, tumours in the nasopharynx can obstruct the Eustachian tube.

Patients who are suffering from ET dysfunction typically present with complaints of hearing loss or sensation of pressure or plugged ear. These issues can lead to impaired quality of life. Over time ETD can result in cholesteatoma formation or conductive hearing loss. Effective therapeutic options for ET dysfunction are few. A novel surgical technique, Eustachian tube balloon dilation is being used to treat ETD

The aim of our study is to objectively measure the success of Eustachian tube balloon dilation for type 1 and 2 pars tensa retraction by comparing pre- operative and post-operative middle ear pressures using tympanometric testing

Methods: Pre- operative and post-operative tympanograms are analysed and categorized based on types (Type A, B and C). Success was defined by an improvement in tympanogram.

Results: Twenty-one years old female underwent balloon dilatation for eustachian tube dysfunction and pre op and post op tympanometry charts were compared and it showed improvement from type C to type A.

Conclusion: Eustachian tube balloon dilation is always a safe procedure which produces significant improvement in tympanogram values up to fifteen months post-operatively. Persistence of the effect is clarified with long-term follow-up.

### INTRODUCTION:

Eustachian tube balloon dilation (ETBD) or Eustachian tuboplasty, is a minimally invasive procedure designed to treat Eustachian tube dysfunction (ETD).

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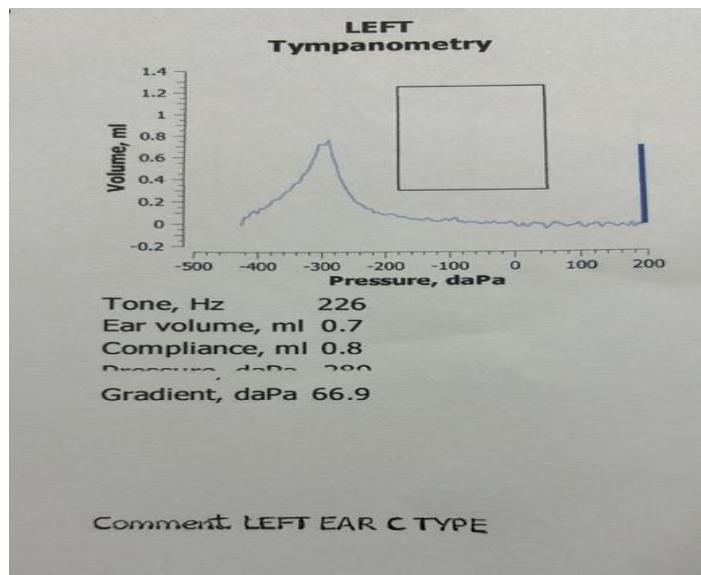
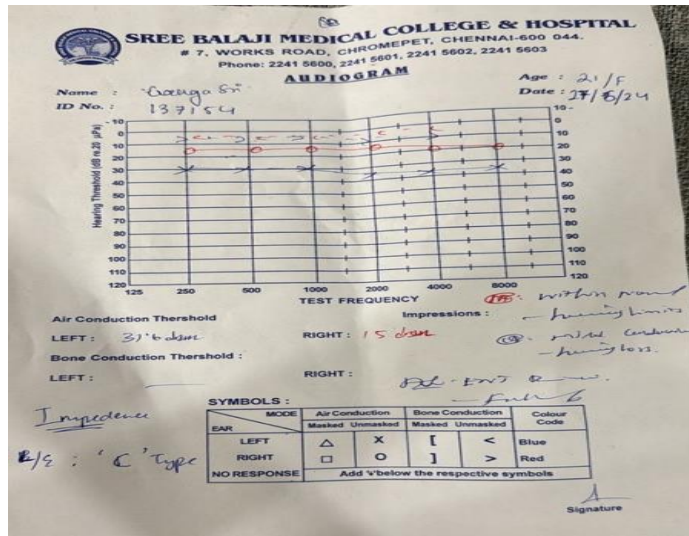
ETBD is indicated for patients with chronic ETD who do not respond to conservative treatments such as medications or auto inflation techniques. It is especially considered in cases where the dysfunction is due to structural abnormalities or chronic inflammation.

### A case report:

A 21-year-old female presented to OPD with left ear blocking sensation and recurrent URTI since one year.

### On examination:

- Anterior rhinoscopy- DNS-Rt with B/L ITH
- Otosopic examination -left tympanic membrane – type 1 pars tensa retraction seen
- Audiometric testing – PTA suggestive of Left Conductive Hearing Loss , tympanometry suggestive of Type C



- Diagnostic nasal endoscopy - B/L Inferior Turbinate Hypertrophy, DNS-Rt
- CT PNS – DNS -Rt , Bil. ITH



- Medical Management



Managing Eustachian tube dysfunction involves a combination of medical treatments, surgical options, and lifestyle changes tailored to the underlying cause and severity of the condition.

The following medical treatment was given for six weeks:

- I. Nasal Decongestants given to reduce nasal congestion and Eustachian tube swelling.
- II. Antihistamines given for allergy-related ETD.
- III. Nasal Steroid Sprays given to decrease inflammation in the nasal passages
- IV. Auto inflation Techniques: Methods like the Valsalva manoeuvre to equalize pressure was advised

- **Surgical Interventions**

Eustachian Tube Balloon Dilation: A procedure done to widen the cartilaginous portion of Eustachian tube to improve its patency and function.

**Procedure**

- I. **Anaesthesia:** The procedure is typically performed under general anaesthesia, although it can also be done under local anaesthesia with sedation.
- II. **Preparation:** The patient was positioned supine. The nasal cavity was decongested and anesthetized using topical agents.
- III. **Endoscopic Access:** A rigid 0-degree endoscope was introduced through the nasal passage to visualize the Eustachian tube orifice in the nasopharynx.
- IV. **Balloon Catheter Insertion:** A balloon catheter was carefully inserted through the nose and guided into the Eustachian tube. The catheter was positioned at the narrowest part of the Eustachian tube, often near the isthmus.



- V. **Dilation:** The balloon was gradually inflated with saline or air to a predetermined pressure (commonly 10-12 atmospheres) and held for about

1-2 minutes. This pressure dilates the Eustachian tube, potentially improving its patency and function.





- VI. Deflation and Removal: The balloon was then deflated and removed.
- VII. Endoscopic Check: The nasopharynx and Eustachian tube are re-examined to ensure there

is no bleeding or other complications. Otoendoscopy done simultaneously with ballooning of Eustachian tube to check the tympanic membrane status and mobility.



• **Postoperative Care**

1. **Observation:** The patient was monitored for a short period post-procedure to ensure there were no immediate complications.
2. **Medications:** Postoperative medications included antibiotics, nasal steroids, and pain relievers to manage inflammation and prevent infection.
3. **Follow-Up:** Audiometry and tympanometry repeated two weeks post procedure to evaluate improvements in hearing and Eustachian tube function.

• **Complications**

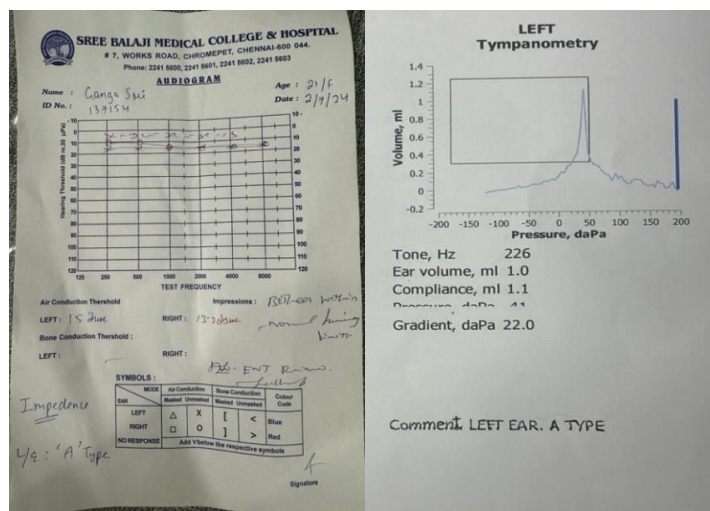
There were no complications noted in this case.

Although ETBD is generally safe, potential complications can include:

- Nasal or pharyngeal bleeding.
- Infection.
- Trauma to the Eustachian tube or surrounding tissues.
- Persistence or recurrence of ETD symptoms.

• **Outcomes**

This patient experienced significant improvement in symptoms such as ear fullness, pressure, and hearing loss. Using tympanogram values, our study relied on objective measurements and had follow-up up to fifteen months post operatively.





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- **Conclusion**

Balloon dilation of the Eustachian tube is a promising option for treating chronic ETD, offering a less invasive alternative to traditional surgical methods. Proper patient selection and postoperative care are crucial for achieving optimal outcomes.