

Purpose: Eustachian tube dysfunction (ETD) is a prevalent condition characterized by negative middle ear pressure, impaired ventilation, and symptoms including otalgia, aural fullness, and hearing loss. Eustachian tube balloon dilation (ETBD) has emerged as a minimally invasive intervention to enhance eustachian tube patency and mitigate ETD symptoms. Obesity (BMI ≥ 30 kg/m²) is increasingly recognized as a potential exacerbating factor for ETD, possibly due to peritubal adipose deposition or heightened nasopharyngeal inflammation; however, the influence of obesity on ETBD outcomes, particularly through integrated subjective symptom relief and objective audiometric improvements, remains inadequately explored. This study seeks to assess the efficacy of ETBD in obese patients by evaluating changes in subjective symptoms (e.g., aural fullness, otalgia, ear pressure) and objective audiometric parameters (e.g., pure tone average, tympanometry) pre- and post-procedure.

Methods: A retrospective chart review was conducted on 71 adult patients (≥ 18 years) who underwent ETBD by otolaryngologists at Our Lady of the Lake Hospital (Baton Rouge, Louisiana) from 2017 to 2025. Of these, 53% of patients had a documented BMI ≥ 30 kg/m² (average BMI across all patients: 37 kg/m²). Data was extracted from electronic medical records using a secure, de-identified coding system to ensure patient confidentiality, with no protected health information retained in the analysis dataset. Descriptive statistical analyses will characterize symptom resolution rates and audiometric shifts, adhering to a waiver of consent and HIPAA authorization approved by the institutional review board.

Results: ETBD resulted in subjective symptom improvement in 61% of patients overall (58% non-obese vs. 63% obese). Objective audiometric data were available for 29 patients (4 non-obese, 25 obese). Mean pure tone average (PTA) improved from 36.0 dB pre-procedure to 30.5 dB post-procedure in non-obese patients (mean change -5.5 dB, $p=0.137$) and from 28.3 dB to 24.6 dB in obese patients (mean change -3.7 dB, $p=0.021$), with no significant difference between groups ($p=0.644$). Tympanometry demonstrated low rates of normal function both pre- and post-procedure (9.4% to 9.1% non-obese; 17.1% to 16.4% obese), indicating limited change in middle ear pressure.

Conclusion: ETBD yields comparable subjective symptom relief and audiometric improvements in obese and non-obese patients, with statistically significant PTA gains in the obese subgroup despite persistent tympanometric challenges. These findings affirm ETBD's efficacy across BMI strata, supporting its use in obese ETD patients while underscoring the value of multimodal management to address residual middle ear dysfunction and optimize long-term outcomes.