ABSTRACT

Balloon dilation of the Eustachian tube (BDET) for the treatment of Eustachian tube dysfunction (ETD) in adults has shown promising short-term results. However, the durability of these results is unknown. The aim of this study was to describe long-term results after BDET. Thirty-eight consecutive patients underwent 70 BDET procedures, with a median follow-up of 21 months. Mean scores on the disease-specific Eustachian Tube Dysfunction Questionnaire (ETDQ-7) remained significantly improved over baseline for up to 2 years postoperatively (p < 0.001).

INTRODUCTION

ETD is a common complaint seen in otolaryngology, typically presenting with symptoms of aural fullness and inability to rapidly equilibrate middle ear pressure. BDET is a relatively new approach for the surgical treatment of ETD that utilizes the Balloon Sinuplasty system (Acclarent, Inc., Menlo Park, CA). A prior study by the senior author that followed patients for 6 months after surgery showed normalization of tympanograms in 97.1% of operated ears and average decrease in the validated disease-specific ETDQ-7 symptom score from 4.5 to 2.8. The current study follows the ETDQ-7 score for up to 2 years after BDET with the purpose of determining whether the previously reported improvements have long-term durability.

MATERIALS AND METHODS

Adults ≥18 years with ETD symptoms in at least one ear that failed medical therapy were included in the study. Diagnosis was confirmed by the presence of a retracted or poorly mobile tympanic membrane and abnormal impedance audiometry. Patients with craniofacial abnormalities or active infection were excluded. The technique of BDET has been previously described. Briefly, partial inferior turbinectomy +/- septoplasty is performed to provide adequate exposure of the Eustachian tube (ET) orifice. The balloon is inserted transnasally into the ET lumen to the bony-cartilaginous isthmus under endoscopic guidance, inflated with water to 10 atm for 2 minutes, then deflated and removed. Concurrent endoscopic sinus surgery (ESS) is then performed as needed. ETDQ-7 score was recorded preoperatively, at 3 and 6 weeks, and at 3, 6, 12, and 24 months.

RESULTS

A total of 38 patients were enrolled, with 70 separate Eustachian tubes receiving treatment. For purposes of reporting outcomes, each ET receiving treatment is considered a separate case. The median duration of follow-up was 21 months with a standard deviation of 9.5 months. Surgical intervention included BDET and partial inferior turbinectomy in all cases. Concurrent ESS was performed in 42 cases. Patient-reported ETDQ-7 scores showed significant improvement from preoperative to postoperative values (Table 2). Mean overall ETDQ-7 scores were significantly decreased at 3, 6, 12, and 24 months. Mean scores on the disease-specific ETDQ-7 symptom score from 4.5 to 2.8. The current study follows the ETDQ-7 score for up to 2 years after BDET to medical management and to other forms of BDET.

DISCUSSION

These results show that the beneficial effects of BDET have long-term durability up to 2 years regardless of whether or not endoscopic sinus surgery is done concurrently. Cadaveric studies have shown that BDET increases the luminal volume of the Eustachian tube (ET) without significant injury to surrounding structures and has a favorable learning curve. Unlike prior studies of BDET, all patients in this study underwent partial inferior turbinectomy in order to improve access to the Eustachian tube orifice. Turbinectomy may contribute to the benefits experienced by these patients as reduction of the posterior turbinate may restore laminar airflow along the nasal floor and thus decrease irritation of the Eustachian tube mucosa. The degree that turbinectomy contributes to improvements seen after BDET should be the subject of future studies.

CONCLUSION

BDET is an effective surgical intervention for the treatment of ETD in adults. Lasting postoperative improvements were observed using the ETDQ-7, a validated disease-specific symptom score. Randomized clinical trials are warranted to compare BDET to medical management and to other forms of surgical management for ETD.

REFERENCES