Dr Ben Vermaak
M.B.Ch.B. • L.M.C.C. • M.Med(L. et O.) Stell | Ear, Nose & Throat Surgeon | Practice No. 0012009
12 Medihouse, Wellington Park, 39 Wellington Road, Durbanville 7550
Tel 021 975 0840/1 | Fax 021 979 1752 | admin@drbenvermaak.co.za

Eustachian tube balloon dilation

Information for patients — please read before your consent appointment

The problem

The eustachian tube is normally closed, opening briefly each time you swallow, yawn or chew. Each opening ventilates the middle ear so that the pressure behind the eardrum matches the pressure outside, drains normal secretions, and — because it is closed the rest of the time — protects the middle ear from nasal secretions and from your own voice.

Obstructive dysfunction is failure of the tube to open. The trapped air is absorbed, a vacuum forms, and the eardrum is drawn inward. Symptoms are fullness and pressure, muffled hearing, earache, popping and clicking, and difficulty equalising when flying or diving.

Patulous dysfunction is the opposite — the tube stays open when it should be shut. It causes hearing your own voice unnaturally loudly (autophony), hearing your own breathing, and fullness that eases when you lie down. **Balloon dilation is contraindicated in patulous disease and would make it worse.** Both conditions feel like a "blocked ear", which is why they are so often confused. If you hear your own voice booming in the ear, say so before we proceed.

Why it is worth treating: sustained negative pressure progresses over years to fluid behind the eardrum (otitis media with effusion), recurrent infection, thinning and retraction of the drum, erosion of the hearing bones with permanent conductive loss, perforation, adhesive otitis media, and cholesteatoma — a trapped pocket of skin that erodes bone and requires major ear surgery. Most patients never reach that point, but the process is progressive and difficult to reverse once established, which is why a retracting eardrum shifts the balance toward treating rather than waiting.

Assessment before the procedure

International consensus is explicit that history, otoscopy, tympanometry and audiometry are each inadequate in isolation. Assessment should include all of the following, and a formal diagnosis of obstructive dysfunction should be established before dilation is offered.

ASSESSMENT	WHAT IT CONTRIBUTES
Symptom score	The ETDQ-7 is a validated seven-item questionnaire. A mean item score of 14.5 or above (out of 49) indicates clinically significant dysfunction; the minimal clinically important difference is 3.7 points. Recording it now allows the result to be measured objectively rather than recalled.
Otoscopy	Retraction, effusion, thinning, or a developing retraction pocket. Also establishes whether the drum is already damaged, which affects urgency.
Nasal endoscopy	Considered essential. Confirms the tube orifice is accessible transnasally, and excludes adenoid hypertrophy, polyps, or a nasopharyngeal tumour presenting as unilateral ear fullness.
Tympanometry	A type B (flat) or type C (negative pressure) trace supports the diagnosis. Repeated afterwards to demonstrate objective change.
Audiometry	Documents any conductive loss and excludes a separate inner-ear cause.

Imaging is not routine, but a CT may be requested where anatomy is unusual or there is a question of a dehiscent carotid canal.

Alternatives

- **Treat the underlying inflammation first.** Allergic rhinitis, chronic rhinosinusitis and laryngopharyngeal reflux all cause mucosal swelling at the tube orifice. Intranasal corticosteroid, saline rinsing, antihistamines and reflux treatment should be given a proper trial; a proportion of patients need nothing further. Balloon dilation is offered when symptoms persist for three months or more despite this.
- **Autoinflation.** Devices such as the Otovent open the tube mechanically several times a day. Inexpensive, entirely safe and effective for some. Worth a fair trial.
- **Grommet (ventilation tube).** Bypasses the tube altogether — reliable and immediate, but treats the consequence rather than the cause. Grommets extrude at 6 to 18 months and symptoms usually return; they require water precautions and carry a small risk of persistent perforation. In a comparative cohort, dilated tubes had a significantly lower failure rate than grommet insertion, with 88% failure-free at six years against 53% for grommets. If your symptoms improved while a grommet was in place, that is good evidence dilation will help you.
- **No further treatment.** Reasonable with mild symptoms and a healthy-looking eardrum; less reasonable once retraction has begun.

The procedure

A catheter is passed transnasally under endoscopic vision into the orifice of the eustachian tube, as shown in the illustrations above. A balloon at its tip — 3.28 mm in diameter and 20 mm long — is advanced into the cartilaginous segment only; the depth marker on the device prevents it entering the bony portion near the carotid canal. It is inflated to 10 bar, held for about two minutes, then deflated and withdrawn. Dilation compresses the inflamed submucosa and disrupts the fibrotic tissue holding the lumen shut, allowing it to heal open. Nothing is cut and nothing is removed.

It takes ten to fifteen minutes for both sides, under a short general anaesthetic as a day case, and leaves no incisions. It is often combined in the same sitting with septoplasty, turbinate reduction, sinus surgery or adenoidectomy where these contribute, and sometimes with a grommet for immediate relief while the tube heals.

What the evidence shows

FINDING	DETAIL
Symptoms improve versus medical therapy	In a multicentre randomised trial, mean ETDQ-7 change at six weeks was −2.9 with dilation against −0.6 with continued medical treatment ($p<0.0001$). Technical success was 100% and no complications occurred in either arm. The benefit was still present at twelve months.
Middle-ear measurements improve	Pooled analysis: abnormal type B tympanograms fell from 64% of ears to 16%, and the mean air–bone gap narrowed from 25.3 dB to 10.2 dB. Eardrum position and the ability to perform a Valsalva both improve, most within the first six weeks.
Most patients reach a meaningful improvement	In a large series, 91% of ears achieved the minimal clinically important difference and 75% returned to a normal ETDQ-7 score.

FINDING	DETAIL
But the certainty is limited	A 2025 Cochrane review of nine randomised trials (684 participants) rated the evidence low-certainty for symptom benefit up to three months (ETDQ-7 mean difference −1.66) and very uncertain beyond three months. The trials were small and performed by experienced investigators under strict protocols, which may understate the complication rate in everyday practice.
Hearing thresholds often do not change	Pure-tone audiometry frequently shows no significant shift. What improves is fullness, pressure, equalising and the state of the eardrum. If your main complaint is sensorineural hearing loss, this procedure will not address it.
It is not immediate, and not a cure for the cause	Most patients notice change at four to six weeks, continuing to three months. Underlying allergy, rhinitis or sinus disease still needs ongoing treatment or the problem returns. Roughly one in four gains little or nothing, and the benefit of repeating a failed dilation has not been established.

Risks

A systematic review of published complications found an overall rate of 1.66%, with major complications in 0.43%. Neither of the two large randomised trials, covering 356 patients between them, reported a serious device- or procedure-related adverse event.

COMPLICATION	RISK	DETAIL
Ear fullness, discomfort, blood-stained nasal discharge	Common	For a few days. Settles without treatment.
Little or no symptom benefit	About 1 in 4	The most likely disappointment rather than a complication.
Surgical emphysema — air in the tissues of the face or neck	About 4 in 1,000	The characteristic complication of this procedure. Air is forced through the freshly dilated tube into the soft tissues, causing puffiness and crackling under the skin; rare cases have tracked to the mediastinum. Almost always self-limiting over days to weeks. Reported cases followed a Valsalva soon after the procedure — which is why the two-week ban on nose blowing and ear popping matters, and why this risk is largely in your hands.
Patulous (over-open) tube	Up to 7% with a 6 mm balloon; less with the 3.28 mm catheter	Autophony and hearing your own breathing. Most settle spontaneously within weeks; a small minority persist and are difficult to treat. The narrower balloon is chosen partly to limit this risk.
Middle-ear infection, epistaxis, transient tinnitus, dizziness or altered taste	Uncommon	Usually self-limiting; infection treated with antibiotics.
Injury to the internal carotid artery	No case reported in the literature	Prevented by keeping the balloon within the cartilaginous segment using a depth-marked device and by never forcing a catheter that will not pass. Listed for completeness.
Anaesthetic complications	Rare	Discussed with you by the anaesthetist.

Not suitable for: patulous eustachian tube dysfunction; symptoms arising from something other than tubal obstruction; children, who require separate consideration on balloon sizing and evidence.

Recovery

For fourteen days: no nose blowing, no forced ear popping or Valsalva, no autoinflation device, nothing heavier than 5 kg, and sneeze with your mouth open. Full instructions are on the separate post-operative sheet.

Home the same day; expect a blocked nose and blood-stained discharge for two to three days. Desk work the next day, physical work in two to three, gym and flying at two weeks, and diving only once I have examined your ears and cleared you. Restart your steroid nasal spray the day after — controlling swelling at the tube orifice is part of the treatment, not an optional extra.

Do not judge the result in the first fortnight. Review is at six weeks and three months, with repeat tympanometry and ETDQ-7 scoring against your baseline.

Evidence behind this sheet

1. Tucci DL, et al. Clinical Consensus Statement: Balloon Dilation of the Eustachian Tube. Otolaryngol Head Neck Surg 2019;161:6–17.
2. Poe D, et al. RCT of balloon dilation for persistent eustachian tube dysfunction, 1-year follow-up. Otol Neurotol 2018;39:894–902.
3. Swords C, Smith ME, et al. Balloon dilatation of the eustachian tube for obstructive ETD in adults. Cochrane Database Syst Rev 2025;2:CD013429.
4. Balloon dilation of the eustachian tube for adults with chronic obstructive ETD: a meta-analysis. Laryngoscope 2025.
5. Hussain SZM, et al. Informed consent in balloon eustachian tuboplasty: systematic review of complications. J Laryngol Otol 2023.
6. Gołota K, et al. Balloon eustachian tuboplasty: systematic review of technique, safety and outcomes. Healthcare 2025;13:1832; McCoul ED, Anand VK, Eustachian tube balloon dilation surgery; Hubbell R, et al, Patulous symptoms after balloon dilation.

This sheet does not replace your consultation. Please bring your questions to your consent appointment.