Ball valve nasal obstruction following incomplete inferior turbinectomy


Abstract
An interesting case is presented of a 53-year-old male who was seen with a 10-year history of intermittent, unilateral nasal obstruction following a bilateral total inferior turbinectomy. A pedunculated mass was seen in the right posterior nasal space acting as a ball valve. This was removed and found to be residual turbinate tissue.

Key words: Turbinates; Surgical Procedures, Operative; Nasal Obstructions

Introduction
Inferior turbinectomy is a procedure that has been described to relieve chronic nasal obstruction due to hypertrophy of the inferior turbinates and has been widely practised. The procedure has several complications that are well documented in the current literature. One of the major complications is post-operative haemorrhage, but other reports include dryness and crusting, excessive secretions, foul-odour, adhesions, sepal perforation, epiphora and even neurological sequelae such as greater palatine nerve dehiscence and partial oculomotor and trigeminal nerve palsy.

We present an interesting complication of intermittent unilateral nasal obstruction resulting from unintentional incomplete resection of the inferior turbinates. This complication has not previously been described in the literature.

Case report
A 53-year-old male had undergone a septoplasty and bilateral inferior turbinectomy in another hospital 10 years previous to presenting to our department. Medical notes from his previous clinic appointments state that the procedure was performed due to poor nasal airway bilaterally and post-nasal drip.

No initial complications were noted during the immediate recovery period, and the patient reported an improved nasal airway bilaterally. Approximately one year post-operatively, the patient noted that he was beginning to suffer from an intermittently reduced nasal airway only on the right side. This was exacerbated when the patient was supine, and it progressed over several months to become complete right-sided nasal airway obstruction only when in the supine position. The problem remained stable, and did not progress to involve the left nasal airway. The patient did not seek any medical treatment for this problem until he was referred to our department.

When seen in our department initial examination with a headlight and nasal speculum revealed unremarkable nasal mucosa. Anatomical changes were consistent with a previous bilateral inferior turbinectomy. Further examination with a rigid 30° Hopkin’s endoscope revealed a large pedunculated mass arising from the posterior edge of the inferior turbinate remnant (Figure 1). The patient was asked to extend the neck, and it was observed that the pedunculated mass fell into the posterior choana and acting as a ball valve, completely obstructed the nasal airway unilaterally.

The lesion was removed under local anaesthetic and was sent for histological investigation. This revealed ‘respiratory type mucosa with congested vessels towards the centre of the stroma. No trabecular lamellar bone was represented but the features were considered to be consistent with turbinate tissue.’ (Figure 2).
This patient had immediate relief from his intermittent nasal obstruction following the removal of his nasal mass under local anaesthetic and is currently under follow-up care to ensure that his nasal airway remains clear.

Discussion
Conservative surgical methods such as submucosal out-fracture, first described by O’Flynn et al. in 1990, and partial inferior turbinectomy have been recommended as a treatment for chronic nasal obstruction due to hypertrophied turbinates. However, in this case a total inferior turbinectomy was planned. Unfortunately and inadvertently, complete resection was not performed, and this was not detected at follow-up which occurred two weeks post-operatively. No further follow-up occurred with the original ENT department.

While the superior and middle turbinates are part of the ethmoid bone, the inferior turbinate is a separate bone. This bone provides structure throughout the body of the inferior turbinate, but it does not extend into the fleshy posterior tip. The anatomy of the blood supply to the inferior turbinate is well described by Padgham and Vaughan-Jones in their series of cadaveric dissections. The main arteries supplying the inferior turbinate derive from the descending branch of the sphenopalatine artery which enters the superior aspect of the turbinate between 1.0 and 1.5 cm from the posterior tip. The artery divides with a smaller branch supplying the posterior tip, while the larger branch divides again to form two large vessels which run anteriorly to supply the rest of the turbinate. The smaller branch supplying the fleshy posterior tip of the inferior turbinate lies entirely within the soft tissue.

Given the above histological findings of the obstructive mass in this patient’s nose, it is possible that the previous turbinectomy, despite removing all of the bone, did not remove all of the soft tissue of the inferior turbinate. The fleshy posterior tip was left within the nose and had survived due to the blood supply from the small posterior branch that appears to have also remained intact. As the tissue connecting the posterior tip of the inferior turbinate to the lateral wall of the nose atrophied, the remaining vessel formed the pedunculated stalk for the turbinate remnant.

Conclusion
Despite concerns regarding the adverse effect on nasal physiology, turbinektomy is still performed as a treatment for chronic nasal obstruction. Given the higher number of complications that can result from this surgery, it is essential that patient selection is reserved for the most extreme cases of nasal obstruction that have failed to respond to other treatment modalities including conservative turbinectomy reduction surgery as described above. Patient follow-up should continue for a period long enough to ensure that any late-onset complications are detected and treated appropriately.

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