Empty Nose Syndrome Post Radical Turbinate Surgery

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SUMMARY

Empty Nose Syndrome (ENS) is a rare and controversial sequelae from previous radical turbinate surgery. We report on a 50 year-old Chinese gentleman with long-standing nasal problems who has had radical turbinate surgery many years prior to presenting at the ENT clinic with mucoid nasal discharge and chronically blocked nose. His nasal cavities were ironically very patent and there were only minor remnants of his turbinates bilaterally. We treated him medically for several years with nasal steroids, antihistamines and leukotriene receptor antagonists and his nasal symptoms have reduced significantly.

KEY WORDS:
Empty Nose Syndrome, Radical Turbinate Surgery

INTRODUCTION

Empty Nose Syndrome (ENS) is a term first introduced by Kern and Moore which is used to describe a rare spectrum of various symptoms suffered by patients who had had previous radical turbinate surgery with a CT scan appearance of the paranasal sinuses after gross tissue loss; a so-called iatrogenic version of atrophic rhinitis[1]. The most notable symptoms associated with ENS is a paradoxical nasal stuffiness or obstruction when the nasal cavities on examination are actually widely patent. In most cases, the inferior turbinate (IT) has been resected radically even though middle turbinate (MT) resection has also been implicated[2].

CASE

A middle aged gentleman of high social standing presented at the ENT clinic in 1999 with a chronic nasal problem of 30 years duration. His symptoms were mainly nasal blockage, post nasal drip (PND) with occasional mucoid yellowish or greenish phlegm, and intermittent voice changes. His sense of smell was intact. He had radical turbinate surgery and septoplasty back in 1984 which gave him some relief for about 1 year. On examination, the nasal cavities were very patent as was all the ostia though the left middle ostium was relatively narrow. There was thick mucoid secretions as well as evidence of synechiae between the left superior turbinate and the septum. There was evidence of remnants of the middle turbinates and inferior turbinates. He was put on steroid nasal sprays as well as mucolytics and oral antibiotics and was followed up on a 3-monthly basis. During the next four years, his symptoms had been relieved fairly significantly though intermittently progress had been curtailed by infection and the nasal blockage and mucoid secretions never really settled. Notably, the patient had been put on tablet Singulair (Montelukast) in September 2001 and this coincided with some symptomatic relief.

However, given the presence of the symptoms despite optimal medical treatment, he underwent Endoscopic Sinus Surgery (ESS) in March 2005. Pre-operatively a CT scan of the paranasal sinuses was performed and this showed evidence of previous sinus and turbinate surgery. Intraoperatively, bilateral ethmoidectomy, opening of the Hellar Cell and relese of synechiae was performed. Biopsy of the left ethmoid bulla showed evidence of chronic sinusitis. Post-operatively, nasal steroids, Sterimar and Singulair were continued and at two months later there was significant improvement on the nasal secretions and nasal blockage. The mentioned symptoms worsened intermittently but, as far as the last follow-up at the end of 2006, overall the patient feels much better than before the operation.

DISCUSSION

ENS is caused when too much turbinate mucosa tissue is removed from a person's nasal cavity[1]. Turbinate reduction

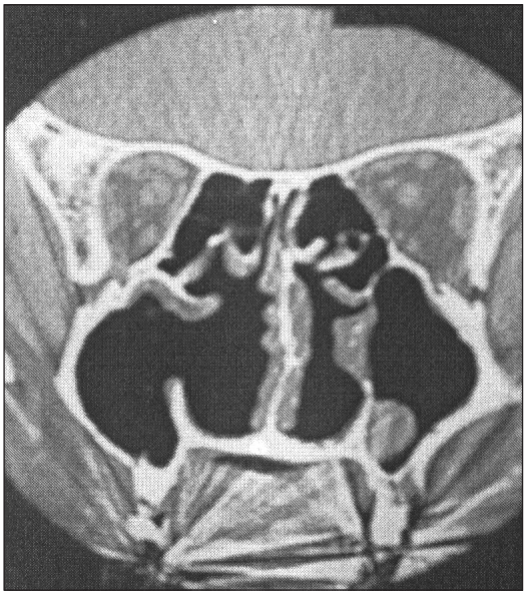

Fig. 1: Coronal CT scan demonstrating widely patent nasal cavities, virtually absent turbinates and wide right ostium which is consistent with ENS.

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surgery is performed when a patient has persistent nasal obstruction which does not respond to medical therapies. The most common operation is an inferior turbinoplasty or partial trubinectomy. Inferior turbinoplasty preserves the mucosal lining but reduces the tissue bulk. A partial turbinectomy removes around two thirds of the turbinate's mucosa and bone anteriorly. A total turbinectomy is a complete resection of the entire turbinate.

There is no standard, however, of how much turbinate tissue can be removed before it causes damage to the physiology of the nose, thus resulting in ENS. Most of the ENS cases reported are associated with radical turbinate surgery.

The turbinates make up most of the inner nose's functional tissue. The nose has three major roles, all vital for keeping the lungs fully functional and healthy. Those roles are: supplying 50% of lung resistance, adjusting the inspired air to body temperature, filtering the inspired air and humidifying it before it reaches the delicate tissues of the lungs. Radical resection of the turbinates, alters their form, thus upsetting the laminar airflow and causing it to be more turbulent. When the turbinates are radically reduced, proper nasal resistance is diminished and this decreases the suction power of the lungs, forcing the patient to breathe in much harder to receive normal amounts of oxygen. This phenomena manifests itself as chronic shortness of breath, and is known as "paradoxical obstruction". The paradox being the fact that although the nose is wide open – the end result is obstruction[1].

There is often some overlap between ENS and secondary atrophic rhinitis (SAR) caused by turbinate surgery because certain symptoms and signs are similar for example paradoxical nasal congestion or obstruction, loss of mucosal surface and wide open nasal cavities. In fact, some otolaryngologists even doubt the existence of such syndrome. However, patients with ENS can be distinguished from SAR with the absence of the characteristic fetor, greenish crusting and progressive mucosal atrophy which are more unique to atrophic rhinitis (AR).

The distinction makes the management of ENS slightly different from AR. For instance, in AR, the use of antihistamines and decongestants are contraindicated[4] but, as with the reported case, we used antihistamines with some success. Interestingly, the use of leukotriene receptor antagonists (Singulair) did give our patient considerable relief. The use of the mentioned drug is well documented for allergic rhinitis and asthma but thus far there has been no publication to link ENS and Singulair. This is hardly surprising given the rarity of the syndrome itself and the general lack of literature focusing on ENS in general.

ENS patients can be divided into groups based on the tissue resested: the inferior turbinate (ENS-IT), middle turbinate (ENS-MT) or both. Each subtype has been suggested to have slightly different symptomatology.

Various literature have claimed that the ideal repair of a patient with ENS would be to fully reconstruct the missing tissue, either with identical material or synthetic grafts. If significant tissue remain, IT reconstruction is most favoured with some reported success. However, there have been reported cases of the nasal floor and septum being augmented to restrict the nasal airway in cases where significant IT tissue remain. Various materials have been used including autologous (bone, cartilage, and fat) and biomaterials (plastipore, Gore-Tex, etc)[2]. Houser reported the use of acellular dermis to stimulate the middle turbinate[2].

In the case reported, we did not reconstruct the nasal airway but instead performed a limited ESS and this, in combination with the medications, appeared to benefit the patient significantly.

ENS is a rare and controversial syndrome which is potentially debilitating. If not taken seriously, it may cause severe reduction in the quality of life of patients and can cause major psychological harm. ENS is commonly treated with nasal airway reconstruction but we have also found that medications such as steroid nasal sprays and leukotriene receptor antagonists to be potentially beneficial in reducing the symptoms of ENS.

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