CASE REPORT

Acquired Nasal Posterior Choanal Atresia: Postradiotherapy

M B Marina, MD, B S Gendeh, MS ORL-HNS

Department of Otorhinolaryngology, Faculty of Medicine, University Kebangsaan Malaysia, Jalan Yaacub Latif, 56000, Cheras, Kuala Lumpur

Summary

Reported cases of acquired posterior choanal atresia are very few in the English literature. A case of acquired posterior choanal atresia post radiotherapy is reported which was treated by endonasal endoscopic repair using microdebrider with untoward effect.

Key Words: Acquired choanal atresia, Post radiotherapy

Introduction

Acquired choanal atresia is rare and it might develop following radiotherapy in nasopharyngeal carcinoma, surgical trauma, infection and complication of complementary medicine. The pathogenesis in acquired choanal atresia following radiotherapy is unclear. Severe mucositis might be the predisposing factor. The definitive treatment is surgery. Transnasal endoscopic repair using microdebrider is a safe and successful technique for this condition.

Case Report

An 18 year old Chinese girl presented with left nasal obstruction in March 2004 which was progressive and associated with non foul smelling nasal discharge of three months duration. There was no facial pain, sneezing or itchiness of the nose.

She was diagnosed as nasopharyngeal carcinoma stage T3N1M0 in October 1999 when she initially presented with right neck mass. Subsequently she underwent 6 courses of chemotherapy and 20 courses of radiotherapy completed in March 2000. She tolerated the treatment fairly well despite the expected emesis and mucositis. A repeat CT scan showed good response and no residual tumour. She was apparently well after the treatment until she complained of progressive nasal obstruction. She had no other medical illness.

Initial examination showed the anterior nasal opening was patent and there was thick mucous in the left nasal cavity. The inferior turbinates were not enlarged and the septum was fairly straight. A cold spatula test revealed absence of air flow from left nostril. There was no hyponasality and no evidence of cervical lymphadenopathy. The lungs were clear. There was evidence of bilateral dry perforation of both tympanic membranes.

Rigid nasal endoscopic examination revealed that the left choana was completely obstructed by fibrosis and the right choana was partially blocked superiorly by adhesion. There was copious secretion in both nostrils, left more than right.

Computed tomography of the sinus demonstrated a membrane like soft tissue density that obliterated the left choana with no evidence of osseous component

This article was accepted: 3 September 2005

Corresponding Author: Marina bt Mat Baki, Department of Otorhinolaryngology – Head & Neck Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacub Latif, 56000, Cheras, Kuala Lumpur

(Figure 1). It was consistent with the rigid endoscope findings which revealed an obliterated left choana with evidence of a pin hole opening inferiorly. There was evidence of left maxillary mucosal oedema and secretions at both maxillary ostium. There was no evidence of recurrent tumour in the nasopharynx and the parapharyngeal space looked normal. There was no evidence of skull base erosion or intracranial extension.

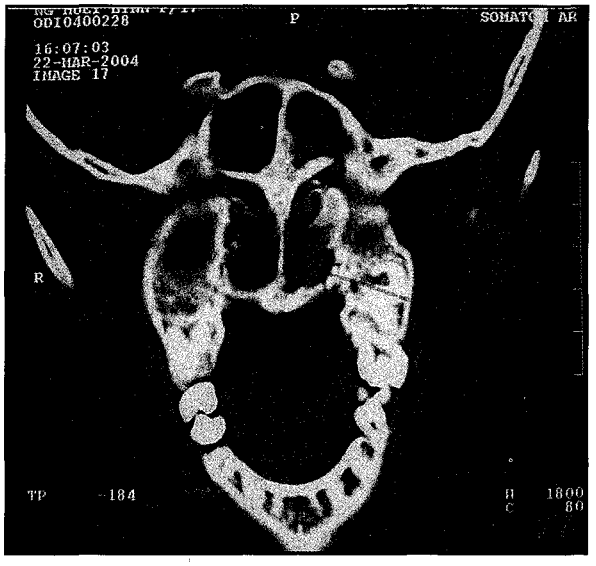

Fig. 1: CT scan axial view shows complete stenosis of left posterior choana with soft tissue density mass.

Endoscopic microdebridement of the scar tissue was performed completely on the left and partially on the right under general anaesthesia. No nasal stents was inserted. Postoperative recovery was uneventful. The nasal pack was removed after 48 hours post surgery. On follow up at seven months post surgery, there was no evidence of restenosis (Figure 2, Figure 3).

Discussion

Choanal atresia is classified into congenital and acquired, although most cases are congenital. Choanal atresia is often described in the literature as a congenital abnormality, in which combined incidence of 29% pure bony and 71% mixed bony membranous atresia was reported[1]. Choanal atresia, whether congenital or acquired, is rarely encountered in general clinical practice and its incidence is said to be one in 6,000 to 10,000 humans[3].

In acquired choanal atresia, the causes that have been reported were complications of chemical cauterization, nasopharyngeal carcinoma following radiotherapy[2], surgical trauma and complication of complementary and alternative medical treatment of allergic rhinitis[5]. Nasopharyngeal stenosis had been reported in children after tonsillectomy and adenoidectomy, but the stenosis had predominantly occurred in the velopharyngeal region. There was no osseous component detected on computed tomographic scan (CT scan) and histopathology review[2].

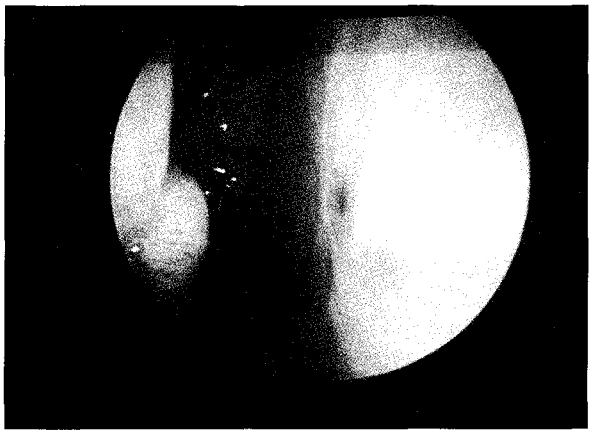

Fig. 2: Nasal endoscopic view showing a patent right posterior choana seven months post surgery.

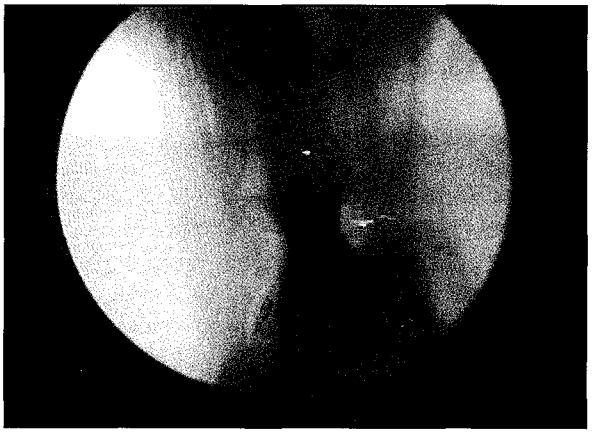

Fig. 3: Nasal endoscopic view showing a patent left posterior choana seven months post surgery.

In unpublished study data on screening for the chronic sinusitis in NPC patients post radiotherapy in Prince of Wales Hospital, Hong Kong, there were 6 patients identified with variable degrees of posterior choanal stenosis by routine nasal endoscopy in 56 randomly selected patients (prevalence : 10.7%)[2]. The sequential event leading to postradiotherapy choanal stenosis and atresia is uncertain. It may be due to severe mucositis that occur in the posterior choana after radiotherapy and followed by fibrosis[2]. The reason for low pick up rate of this problem is attributable to postnasal mirror examination of the nasopahrynx during follow up which may not be very reliable as compared to nasal endoscopic examination.

Peter K.M. *et al*[2] reported 6 patients with NPC who developed acquired posterior choanal atresia following radiotherapy. Four patients had bilateral choanal atresia and two patients had severe unilateral choanal stenosis. The occurrence of the posterior choanal stenosis or atresia is not related to dosage or technique of irradiation delivered to the patients[2].

The mode of treatment for either congenital or acquired choanal atresia is surgical intervention[3]. Operation methods include transpalatal, transnasal, transseptal and endoscopic techniques. The role of transnasal and transpalatal approach, as well as the use of postoperative stenting, is still a controversial feature of the surgical management of choanal atresia. Thierry *et al*[4] reported a safe and successful transnasal endoscopic repair using powered instrumentation (microdebrider) in 40 children aged 3 days to 15 years who had choanal atresia. Routine postoperative revision endoscopy seems to avoid prolonged nasal stenting. No postoperative complications, such as pain, infection, bleeding or nasal deformity were found. Twenty percent of patients had restenosis in less than 3 months postsurgery and underwent second procedure successfully.

Conclusion

In this patient, acquired posterior choanal atresia is diagnosed based on the CT and operative findings that showed non osseous components on the site of atresia or stenosis. This uncommon condition is due to fibrosis following radiotherapy which is rarely reported. The low pick up rates of posterior choanal atresia reported following radiotherapy is likely due to postnasal mirror examination of nasopharynx during follow up prior to the advent of nasal endoscopes. Endoscopic examination of nasopharynx is pertinent during follow up to rule out local recurrence and to detect any such complication. The problem can be successfully treated by endoscopic resection using powered instrumentation without nasal stent.

References

1. Brown OE, Pownell P, Manning SC. Choanal Atresia: A New Anatomic Classification and Clinical Management Applications. Laryngoscope 1996; 106(1): 91-101.
2. Peter KM, Michael CFT, Tsang SS, Andrew VH. Acquired Posterior Choanal Stenosis and Atresia: Management of This Unusual Complication After Radiotherapy for Nasopharyngeal Carcinoma. American Journal of Otolarngology 2001; 22(4): 225-29.
3. Miho H, Kato I, Iwatake H, Akao I, Takeyama I. A case report of acquired choanal atresia. Acta Otolaryngol(Stockh) 1996; Suppl 522: 111-15.
4. Thierry VDA, Martine F, Philippe N. 2002. Transnasal Endoscopic Treatment of Choanal Atresia Without Prolonged Stenting. Archives of Otolaryngology-Head and Neck Surgery 2002; 128(8): 936-40.
5. Tseng CC, Tsai TL, Chen KT, Lin CZ. Choanal Atresia: An Usual Serious Complication of Complementary and Alternative Medical Treatment. Archives of Otolaryngology-Head and Neck Surgery 2003; 129(4): 475-77.