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CASE REPORT

Bilateral Membranous Choanal Atresia Without Associated Other Congenital Anomalies in a 16-Year-Old Female Patient: Case Report

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Abstract: Congenital abnormality of the nasal cavities called choanal atresia is characterized by a loss of patency at the posterior extremities of one or both nasal canals. It is the most frequent congenital nasal cavity abnormality. A third of cases with choanal atresia occur bilaterally, and due to respiratory difficulty in the newborn period, it is almost always diagnosed. Bilateral choanal atresia has rarely been identified in adults and is very uncommon. We describe the case of an adolescent girl who suffered from bilateral choanal atresia after presenting with persistent nasal congestion, snoring, and an inability to breathe through her nose. To restore the choanal patency, she underwent bilateral transnasal endoscopic choanoplasty.

Keywords: choanal atresia, congenital, stent, choanoplasty

Introduction

A blockage between the nasal cavity and the nasopharynx defines choanal atresia, a congenital abnormality of the nasal cavity. Persistence of the nasobuccal membrane causes it to happen.[1] Bilateral choanal atresia is a life-threatening illness, as opposed to the unilateral variant.[2] Although it is unusual, it can also be diagnosed in adults. In this case report, an adolescent patient had bilateral choanal atresia. Only 14 cases have been documented thus far in terms of our search. In this report, we describe a case of bilateral choanal atresia in a 16-year-old girl who had long-standing snoring and bilateral nasal obstruction. With the use of a nasal endoscopy and para nasal sinus computed tomography (PNS CT), the diagnosis was confirmed.

Case Presentation

A 16-year-old female patient came with a long-standing history of persistent nasal congestion, snoring, and the inability to breathe through her nose for as long as she could remember. She claimed that during the previous year, she had started experiencing frequent sinus infections. She had no prior history of respiratory or feeding problems when she was a baby. She had no history of radiation, a head injury, or nasal surgery. The patient had an endoscopic nasal examination, and it was discovered that her nasal mucosa was normal, whereas both of her posterior choanal plates were atretic (Figure 1). The patient had no other congenital anomalies, either. A computed tomography (CT) of the sinuses revealed full bilateral choanal atresia without any further notable anomalies (Figure 2).

Under general anesthesia, a transnasal endoscopic choanoplasty was done. A tiny puncture on the atretic plate was produced with a suction tip and found to be membranous atresia while a nasal endoscope was placed into the nasal cavity. After that, a patent aperture was made by dilatation of the atretic plate using an Endotracheal tube number 5 and 5.5. We avoid excessive mucosal damage to avoid adhesion and re stenosis, but flap was not raised (Figure 3). There was no stent or pack inserted. The patient was instructed to regularly use saline nasal rinses and discharged. The patient had rapid relief from her nasal obstruction and snoring. She was having followed up at one week, one, three and eight month after

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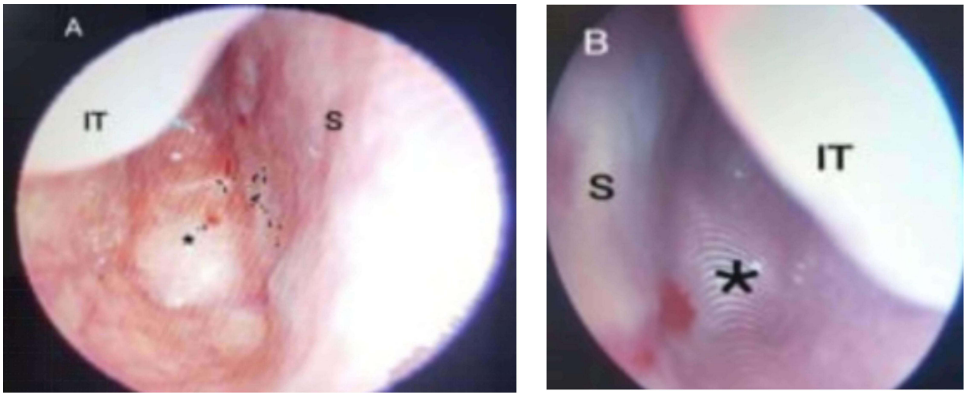

Figure 1 Posterior choanae via endoscope prior to surgery (**A**) Right nasal passage (**B**) Left nasal passage S: Septum; IT: Inferior turbinate; *Atretic choanae.

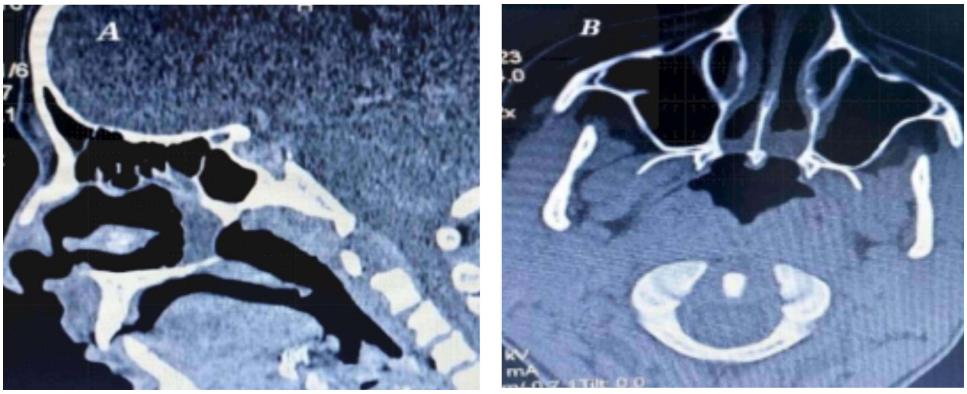

Figure 2 Bilateral choanal atresia is seen in computed tomography of the paranasal sinuses. (**A**) Sagittal section (**B**) Axial section.

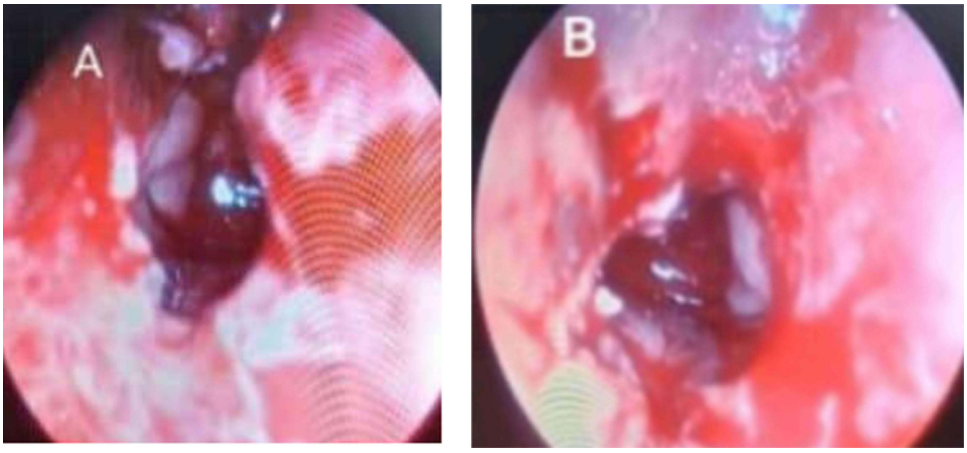

Figure 3 An endoscopic image of the choana during surgery (**A**) Right nasal passage (**B**) Left nasal passage.

surgery. She noted that her nasal breathing had significantly improved at every checkup. Both nasal passages were quite open upon physical examination (Figures 4 and 5).

Discussion

In the first month of life, newborns must breathe through their noses. Between four and six weeks of age, at the earliest, newborns learn to breathe through their mouths.[3] Because of this, bilateral choanal atresia during the infant stage

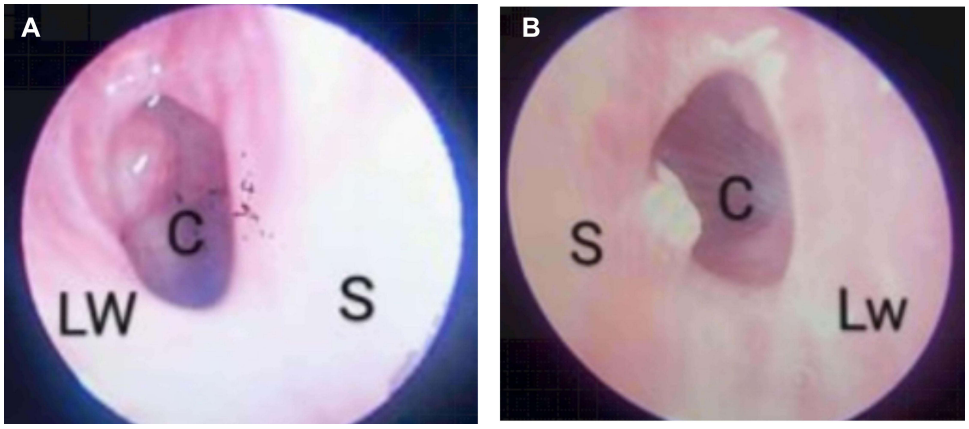

Figure 4 One-month postoperative endoscopic image of the choana (**A**) Right nasal passage (**B**) Left nasal passage S: Septum; LW: lateral wall; choanal.

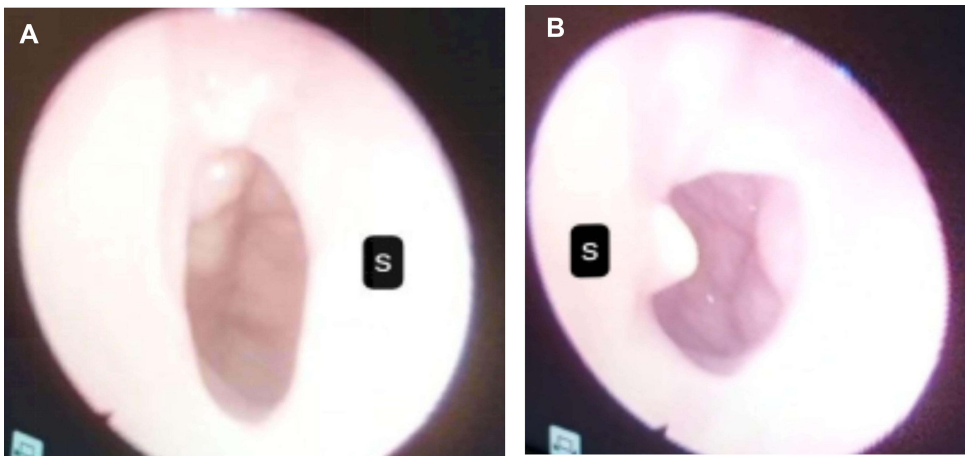

Figure 5 Eight-month postoperative endoscopic image of the choana (**A**) Right nasal passage (**B**) Left nasal passage S: Septum.

completely constricts the nasal passages, which can lead to hypoxia and death, seen in 1 in 5000–8000 newborns. There have been two main categories. A mixed bony and membranous type is the most common type accounting for 70% of the cases.[4] The remaining 30% of cases are attributed to bony atresia.[4] Another kind of atresia that is debated in the literature we reviewed is pure membranous atresia. In 50% of cases, it is related to other congenital abnormalities like CHARGE, Treacher Collins, Crouzon, and Pfeiffer syndromes. However, the exact cellular and biologic mechanisms underlying the pathophysiology and etiology of CA are yet unknown.[4]

Our patient had just a membranous atresia which has never been reported before. High level of suspicion is required for the diagnosis. Choanal atresia presented with stridor, cyclic cyanosis, and bilateral nasal obstruction.[5] Late nasal discharge and unilateral nasal obstruction are two symptoms of unilateral atresia.[5] However, only a few examples of bilateral choanal atresia in adults have been reported. The extent and type of atresias (bone, membrane, and mixed) are determined by ancillary tests such as CT of the paranasal sinuses and a nasal endoscopy. Additionally, it helps with the differential diagnosis of various illnesses and associated congenital anomalies.[5]

Over the past few decades, choanal atresia repair has seen a substantial evolution. Endoscopic repair methods requiring less invasive surgery have replaced open transpalatal treatments. The intended use of a stent is debatable. Its superiority is supported by a few studies.[2] With a high degree of success, a novel steroid-eluting sinus stent technique has been used to reduce scarring after choanal atresia was successfully repaired endoscopically.[6] After choanoplasty, In the past mitomycin C used to stop re stenosis.[7] Transnasal endoscopic choanoplasty was the operation we underwent. Neither mitomycin nor stents were utilized.

Conclusion

Bilateral choanal atresia is a rare condition that can be diagnosed in adults. A high index of suspicion is required to diagnose this condition, especially in patients with a history of chronic nasal congestion and recurrent sinus infections. Endoscopic surgery is the treatment of choice, and it can provide immediate relief of symptoms with minimal morbidity.

Consent Information

The patient's guardians granted their written permission for the publication of their clinical information and clinical photos. Institutional approval was not required to publish this case report.

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Disclosure

The authors declare no competing interests in this work.

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