UNILATERAL CHOANAL ATRESIA IN A YOUNG FEMALE

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ABSTRACT: Congenital choanal atresia is a rare anomaly with an incidence of one in five to ten thousand live births. It can be a bilateral or unilateral atresia; the former is a medical emergency while the latter may remain unrecognized until later in life. Transpalatal or transnasal approaches are routinely followed for surgery with placement of stent or serial dilatations in the postoperative period.

Key Words: choanal, atresia, trans-palatal, stent

INTRODUCTION
Choanal atresia is an uncommon congenital anomaly. The reported incidence ranges between 1 in 5,000 and 1 in 10,000 live births. Bilateral choanal atresia is a medical emergency, and almost always presents in the newborn as respiratory distress and cyanosis which is relieved by crying. The reflexes to facilitate breathing through the open mouth in response to nasal obstruction develop only weeks to months after birth, although an infant will mouth breath if the mouth is opened, either during crying, or with the help of an artificial oral airway. Unilateral atresia, on the other hand, may go unrecognized until later in life, since associated respiratory distress is usually not encountered at birth. Feeding difficulties may occur, mainly during breast-feeding. More commonly it presents as unilateral nasal discharge and nasal obstruction. Since the first description of choanal atresia by Roederer in 1775, many surgical approaches have been described. Trans-nasal, trans-palatal and trans-septal approaches are the most commonly used procedures. Here we are reporting a case of unilateral choanal atresia that remained undetected for 16 years after birth, operated by the transpalatal approach.

CASE REPORT
A sixteen year-old female patient presented with unilateral nasal blockage and nasal discharge on right side since childhood. There was no history of headache, recurrent cold, and sore throat. On examination, she was having deviated nasal septum on the same side of obstruction with polypoid like mass posteriorly. Investigations in the form of x-ray paranasal sinus and CT paranasal sinuses were done. Both revealed haziness in the right maxillary sinus and in right nasal cavity with deviation of the septum on the same side.

Operation in the form of septoplasty was planned under local anesthesia. As soon as the septal correction was done, the mass, which was looking polypoid could be sucked out was in fact the thick mucus. Posteriorly the suction cannula was not going in the nasopharynx, when viewed telescopically it was an obstruction in the form of a membrane in the region of choana, which was quite thick. Further procedure was abandoned.

Once the nasal pack kept for septoplasty was removed, a thorough examination was done and the patient was found to have a wide nasal bridge on right side (Fig.1) but there was no other significant finding, further investigations were done to rule out other possible congenital anomalies.

X-ray nasopharynx soft tissue lateral view was done the membrane was now evident on the lateral nasopharyngeal view along with another anomaly in the form of the congenital fusion of the 3rd, 4th, 5th cervical vertebrae (Fig.II).

Surgical Procedure:
Considering the thickness of the membrane, patient was planned for recanalisation of the obstruction through the trans-palatal approach under general anesthesia. Operation was done with patient in the tonsillectomy position and Boyle-
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Fig. I1: X-ray nasopharynx lat. view showing bony choanal atresia & fusion of C4,5,6 vertebra.

Fig. III: X-ray nasopharynx lat. view showing piece of portex tube kept across opened bony choanal atresia in nasal cavity.

Davis mouth gag applied. Then a Owens type, U-shaped mucosal incision was made beginning just behind the maxillary tuberosity on one side and continued medial to the alveolar ridge up to the canine region and then angled back to the nasopalatine foramen. A likewise incision was made on the opposite side and the mucosal flap was elevated taking care not to damage the greater palatine arteries. Mucoperiosteal flap on the hard palate was elevated, at the free edge of the hard palate the mucus membrane on the nasal side was incised and the soft palate retracted downwards. The posterior part of the nasal septum, which is formed by the vomer and the posterior part of the hard palate was removed with the bone punch so as to reach the membrane. The mucoperiosteum on the membrane was elevated and the membrane was drilled with diamond burr at the junction of septum and hard palate so as to create an opening, viewed transnasally and then enlarged. Number 9.Portex endotracheal tube was cut in size, kept across the recanalised choana and stay sutures were made anteriorly with the nasal septum. Palatal incision was closed with 2 ‘0’ vicryl suture.

Antibiotic and analgesics were given in the postoperative period; patient was discharged on 3rd day. 4 weeks later the stent of portex tube was removed after having another x-ray nasopharynx lateral view (Fig.III). Nasal cavity was visualized with the telescope; it was a well-canalized choana. A short course of steroid with nasal decongestant was given.

DISCUSSION

Incidence of choanal atresia is approx. between 1 in 5000 to 1 in 10,000 live births. The female to male ratio is 2:1. About 90% of these atresias are bony, whereas the other 10% are membranous. Other congenital anomalies occur in association with choanal atresia in about 50% of the patients i.e. called as CHARGE association. It includes colobomata and other eye anomalies, heart anomalies, atresia of the choana, retardation of the growth, genital anomalies, ear defects and/or deafness. Unilateral is more common than bilateral (2:1). When unilateral, right-sided occurs twice as often as left-sided. An incomplete atresia is termed a choanal stenosis.

Embryological, four theories for the development of choanal atresia are suggested.
1. Persistence of a buccopharyngeal membrane from the foregut.
2. Persistence of the nasobuccal membrane of Hochstetter – most commonly accepted theory.
3. The abnormal persistence or location of mesodermal adhesions in the choanal region.
4. A misdirection of mesodermal flow secondary to local genetic factors better explains the popular theory of persistent nasobuccal membrane.

The essential aim of the treatment of choanal atresia is creation of patent nasal airway. Bilateral atresia always presents as a respiratory emergency. Before going for the planned surgery, it will suffice to put an oral airway and an indwelling nasogastric tube. Sometimes it is necessary to intubate the child or to tracheostomise him.

Four approaches for the surgical correction are suggested trans-nasal, trans-palatal, trans-septal and trans-antral, the first two are commonly in use today. The trans-nasal approach is good when the atresia is thin or membranous, simplest method is perforation of the lamina and dilatation. Some authors recommend the use of microscope for the visualization and drilling with diamond burr or use of CO₂ gas laser for perforation, during the procedure. If the atresia is thick, it is preferable to use trans-palatal approach. There are different views regarding the method to prevent re-stenosis of the