Antrochoanal Polyp : Its Pathogenesis Origin and Management by Functional Endonasal Endoscopic Surgery

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Antrochoanal Polyp is an inflammatory disease of the maxillary sinus. It has several controversies^{1,2}. What is the site of origin and its pathogenesis in the antrum, is one of the most controversial aspect ; then comes the treatment for this condition^{2,3}. Conventionally it is treated by nasal polypectomy with avulsion technique in children and by Caldwell Luc operation in adults²⁻⁵. There are high recurrences following nasal polypectomy (40-50%) and several complications, besides a low recurrence rate (20-30%), including intractable neuralgic facial pain, hypoaesthesia in the cheek and gum and the oroantral fistula. In the recent times, successful results of endoscopic removal of the sinus part of the antrochoanal polyp have been reported³⁻¹⁰. Functional endoscopic sinus surgery (FESS) is now an accepted procedure for chronic sinusitis including antrochoanal polyp. This surgery is physiologic, safe and its results, predicable. It provides better results than the traditional Caldwell Luc operation³⁻⁶.

Pathogenesis and Origin of the Polyp

Bacterial infections occur in the sinus following rhinosinusitis. Besides anatomical factors like concha bullosa, deviated nasal septum and abnormal position of the uncinate process, infection in the anterior ethmoid sinuses is stated to be responsible for chronic maxillary sinusitis⁵⁻¹¹.

There are acinous mucous glands inside the maxillary antrum^{1,2,12}. Infection of the mucosa leads to blockage of the acinous glands. This causes formation a cyst which can develop within the sinus and then exits through the accessory or natural ostium, forming the antrochoanal polyp in the nose and nasopharynx. Antral part has been reported as polypoidal or cystic in nature by different authors^{1,3,4} with different

frequencies. Berg¹ reported that in all their 15 patients (100%) the antral portions were cystic whereas it was cystic in about 25% of patients according to Kamel³. Radiologic evaluation of many patients of chronic maxillary sinusitis or even normal persons, reveals cysts in the antrum or antra. This seems to be the origin of the antrochoanal polyps¹. The attachment of the pedicle inside the antrum vary^{1-3, 10-12}. The commonly mentioned sites of origin are, the anteroinferior and medial wall, the region of inner maxillary ostium and the posterior frontanelle. The other controversy is whether the polyp passes through the natural ostium or the accessory ostium. Majority suggests that it passes through the natural ostium but if the accessory ostium is present, it passes through this ostium. Reports^{1,3-5} vary in this aspect too.

Diagnosis

Clinical history of unilateral nasal airway obstruction and nasal discharge^{2,5} with occasional headache,⁷ and physical examination, showing the presence of a polypoidal mass in the nose on anterior and/ or posterior rhinoscopy^{1,3,5} suggest an antrochoanal polyp. Computed tomographic (CT Scan) scans^{5,7-9} show a soft tissue mass in the antrum extending to the nose and nasopharynx. CT Scan is essential to evaluate the extent of the disease including associated ethmoidal diseases, which significantly helps to plan the therapy especially the extent of the functional endoscopic sinus surgery (FESS) needed in a particular patient. We do this (CT Scan) in all our patients.

Our Experiences in AIIMS : During the last 10 years we have performed over 400 endoscopic nasal and sinus procedures including FESS.

We have managed 120 patients with antrochoanal polyps during the period 1989 through 1996 using

endoscopic technique. Of them, 63 were children in the ages ranging from 4 to 15 years. 34 of them were males and 29, females. Of the 57 adults in the ages ranging from 16 to 45 years, 30 were males and 27, females. All patients were subjected to X-ray paranasal sinuses (PNS) and or CT Scans PNS. They underwent functional endoscopic sinus surgery (FESS) under general (children) and local (adults) anaesthesia. They were post operatively followed up for 6 months to 3 years and the surgical results, assessed pertaining to relief from symptoms and to frequency of recurrences.

Origin of the Polyp : 40% of the polyps originated from the anterior inferior aspect of the antrum. It had a cystic component (60%) in the antrum although the nasal and nasopharyngeal portion was polypoidal in nature. The antral portion collapsed on being punctured after the pedicle was cut at the level of its exit from the antrum before the antral portion was removed with the help of forceps and/ or scoop. Other 45% of the patients had its attachment in the posteromedial wall of the antrum adjoining the posterior frontanelle. In 15%, it could not be precisely evaluated as there was massive antral polyposis. About 70% of the patients had adequate healthy mucosa in the major portion of the antrum. It was preserved to facilitate mucociliary function.

In our patients, exit of the polyp was seen more through the natural ostium (75%) than through the accessory ostium (25%). Morphology of the polyps in the nose/nasopharynx varies from uni or bilobed to trilobed ones. Considered with the antral portion all were of dumb-bell shape.

Recurrences after FESS : We observed about 8% of recurrences more frequently in children than in adults. It was due to extensive oedematous polypoidal disease in the antrum that was commonly seen in children and to our tendency to preserve more mucosa inside the antrum. In adults, most of the disease mucosa was removed with the help of scoop and or forceps, On revision surgery, we used to remove the disease mucosa from the antrum maximally to avoid further recurrences. The patency of the ostium after surgery was as high as 90%. Except for minimal adhesion of the anterior aspect of the middle concha with the lateral nasal wall, there was hardly any significant complications.

Fig. 1 Coronal CT Scans of 39 years old female with right AC polyp, show right nasal, maxillary and ethmoid sinus opacification. Right OMC shows opacification. Right FESS was done after delivering a trilobed polyp via the oral and nasal routes. Antral portion was cystic and it was attached to the anteroinferior wall of the antrum.

Ethmoidal Diseases : In about 70% our materials, we observed pathological changes in the infundibular and ethmoidal bulla region ranging from loculated collection of fluid to some polypoidal changes.

Comments

Antrochoanal polyps pose a challenge to the Otorhinolaryngologist. Many of its controversies pertaining to its pathogenesis and origin are solved and its nature and behaviour known and the facts, established. Besides, various causative factors like infection in the anterior ethmoids, anatomically abnormal middle concha and septum, bacterial infection of the sinus plays the key role, causing blockage to the acinous glands inside the antrum which is supposed to produce the cyst. This is one of the theories of formation of antrochoanal polyp. CT scan is an important tool for diagnosis (Fig. 1).

Regarding the treatment there is no doubt that it needs to be removed completely. To do this, the endoscopic technique can help achieve this goal and also preserve the healthy mucosa and its physiologic function of

mucocilliary mechanism. Further clinical experiences on FESS and research work on the mucocilliary

mechanism of antral mucosa will bring about new facts of this condition.

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Congratulation

Re : Punjabi University Oration

Dr. SBS Mann was invited to deliver "4th J. N. Guzder Oration at Govt. Medical College, Patiala on 23rd Oct., 1998, on "Discharging ear with special emphasis on wet ear cavity". It was well attended by the local faculty from various departments, postgraduates and undergraduates.