

Pathological Changes in the Infundibulum: A cause for Functional Disorders of the Sinuses

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The introduction of Functional Endoscopic Sinus Surgery (FESS) has brought about a change in the management of chronic inflammatory sinus diseases. Nasal endoscopy has increased awareness of the fact that the middle meatus plays a significant role in most sinus diseases. Most inflammations of the ethmoid, maxillary and frontal sinuses arise from this point when swelling and hypertrophy of the mucosa of the ethmoid infundibulum interfere with their natural drainage and ventilation.

This was a study of 30 patients who presented with recurrent sinusitis and failed to improve on conservative treatment. Our aim was to examine by endoscopy the lateral nasal wall in general and the Semilunar hiatus and the infundibulum in particular and at the same time strip off any diseased mucosa found so as to improve the normal drainage and ventilation of the sinuses. In all of them Functional Endoscopic Sinus Surgery (FESS) revealed mucosal changes in the ethmoid infundibulum as an aetiological factor for the recurrent or chronic sinusitis, which had not been detected by the conventional diagnostic techniques. With FESS technique, diseases and lesions of the lateral nasal wall which otherwise might not have been recognized can be identified and consequently treated.

Introduction

The contemporary stage in the development of otorhinolaryngology is characterized by the introduction of different new diagnostic methods. In the last decade, as a routine, a cold light flexible fiberoptic and rigid Hopkins rod systems have been used for endoscopic examination of the pathology of the nose and paranasal sinuses. This precise technique gives the possibility of accurate visualization of the abnormalities in this area, many of which remain undetected using anterior rhinoscopy¹.

Figure 1



The lateral nasal, wall with its complicated anatomy plays an important role in the etiology of the inflammatory conditions of the sinus. Fig 1. The main features of the lateral nasal wall are the three turbinates:- the inferior, middle and superior and the three meatuses named after

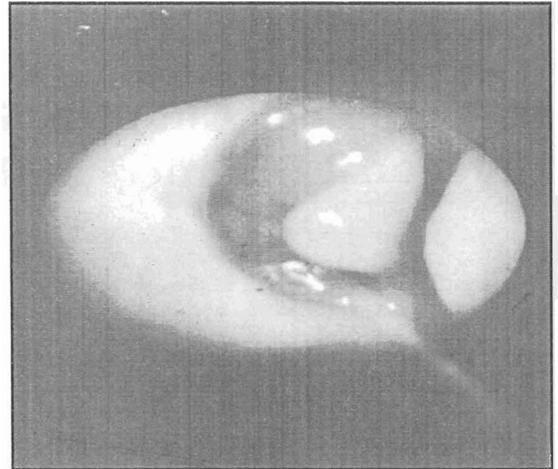
them. The most complex and by far the most important one is the middle meatus. Endoscopic surgery of the sinus is primarily surgery of the middle meatus and the ethmoid bone². At the most anterosuperior part of the middle meatus, is a curved ridge, the agger nasi, which represents the most anterior ethmoidal cells. The upper part of the meatus is occupied by a bulge, the ethmoidal bulla, containing several ethmoidal cells. The semilunar hiatus lies below and in front of the bulla and leads forward into the infundibulum.

C.T Buiters (1976) is of the view that a real maxillary ostium does not exist in some of the patients but the antrum together with some anterior ethmoidal cells form a maxillo-ethmoido-nasal channel through which it opens in the nose. Accessory ostia of the maxillary sinus is present in 30% to 40% of all sinuses. The close anatomical position of the drainage ostia has led to the term "Ostiomeatal complexes"³.

W. Draf (1982, 1983) is of the view that there are different causes of sinus inflammation. These require special attention to the cavernous plexuses in the submucosal lining. The same was described by Zangeret as early as 1940. Various etiological factors:- viral, bacterial, allergic, vasomotor and others may lead to transient ischemia of the mucosa, followed by swelling, hyperemia and profuse seromucinous secretion, which later on can become mucopurulent. Swelling and hypertrophy of the mucosa of the ethmoid infundibulum interfere with the physiological drainage and aeration of the frontal, ethmoidal and maxillary sinuses^{4,5,6}.

Retention of the secretions in the sinuses is followed by changes in their acidity which in turn leads to changes in the metabolism of the mucosa. The epithelium tends to lose its cilia and the goblet cells increase in number. Hypertrophy of the mucosa or nasal polyposis may occur.

Figure 2



Patients and Methods

Our aim was to examine by endoscopy the lateral wall in general and the infundibulum and the semilunar hiatus in particular, in patients with recurrent sinus problems and at the same time strip off any diseased mucosa found, thus improve the normal drainage and ventilation of the sinuses. Between December 1998 and February 1999 we performed Endoscopic Sinus Surgery (ESS) on 30 patients, of whom 14 were females and 16 were males. Their ages ranged between 14 and 65 years. All of them were referral cases from peripheral hospitals, where they had been treated conservatively with only temporary improvement.

Their complaints included mucopurulent nasal discharge which was becoming profuse during spring and autumn, accompanied with headache and discomfort. Standard X-ray films of the sinuses of all patients showed cloudiness of the ethmoidal and maxillary and/or frontal sinuses.

We performed all FESS with Hopkins endoscope 30 and 120 under local anaesthesia with cocaine or anaesthesin nasal spray. All the patients were discharged in good general condition on the first day after surgery.

Results

In 18 (60%) of our patients we found very thick mucosa in the infundibular area which we stripped off carefully and sent for biopsy. Histology results showed engorgement of the cavernous spaces (sinusoids) in the submucosa with round cell infiltration around them. In the remaining 12(40%) patients we found mucosa with polypoidal changes in the semilunar hiatus. Under endoscopic view we removed it with the help of Blackeslay nasal forceps and also sent it for histology.

We followed up all the patients for a further period of one and a half year. All of them were symptom-free.

Discussion

In patients with recurrent or chronic sinusitis endoscopy provides the only definitive diagnosis. FESS requires excellent knowledge of the anatomy of the lateral nasal wall and good technical experience. Precise removal of all pathologically changed mucosa from the semilunar hiatus and the infundibulum through FESS leads to improvement of the normal physiology of the sinuses. Endoscopic sinus surgery is less traumatic than the conventional

sinus operations and has a shorter recovery period.

Conclusions

In the recent years, nasal endoscopy has become an integral part of diagnosing chronic inflammatory diseases of the nose and paranasal sinuses, based on the understanding of the pathophysiology of sinusitis. With FESS technique, diseases and lesions of the lateral nasal wall can be identified and consequently treated, which otherwise might have gone unrecognized.

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