Pathologic findings in 114 cases of functional endoscopic sinus surgery (FESS)

M. Naeimi, M.D.
Assistant Professor ENT Department Ghaem Hospital Medical School Mashhad, Iran

SUMMARY

Functional endoscopic sinus surgery is a relatively new technique for the management of sinusitis refractory to noninvasive therapy. The degree of success in this surgery depends on the use of newly developed instruments and experience of the surgeon.

This is a report of 114 cases that began three years ago. Patients' clinical and pathological data, preoperative complaints, computed tomographic and pathologic findings, types of surgery, complications and outcome of patients are included. FESS was performed whenever symptoms persisted despite aggressive medical therapy and radiologic evidence of significant sinus abnormality, and pathologic findings and the degree of relationship between pathologic and computed tomographic findings were finally reviewed.

Functional endoscopic sinus surgery was popularized by Messerklinger and Stammberger who have written a number of papers on the underlying pathophysiological aspects and techniques of FESS (2, 8, 16). Patients who fail in medical management are treated with FESS.

Pathologic findings in 114 of our patients undergoing endoscopic sinus surgery who have been followed more than three years are reported here. Included in this report are 11 cases of malignancies, two of whom had not been diagnosed otherwise.

Introduction

Functional endoscopic Sinus Surgery was popularized by Messerklinger and Stammberger, and there are a number of papers written on underlying pathophysiological aspects, diagnosis,
and technique of FESS.

Chronic Sinusitis is a diagnosis commonly made by general practitioners and otolaryngologists. Most patients, are managed medically with long term antibiotics, topical decongestants or oral decongestants, analgesic, nasal irrigation.

Patient who failed in medical management are treated with FESS. Herein I report our pathologic findings in 114 cases undergoing endoscopic Sinus Surgery who have been followed for at least 3 years.

Materials and Methods

One-hundered-fourteen patients underwent endoscopic sinus surgery at Ghaem Medical Center and private practice from May 1998 to March 2001. A uniform history was documented for each patients, including the location of facial pain and pressure (maxillary, frontal, occipital, preorbital or temporal). Whether nasal drainage was posterior or anterior, the presence of allergic symptoms such as itchy eyes, itchy nose, asthma, the presence of nasal obstruction, anosmia, drug sensitivity, previous surgical treatment and special disease were recorded. Each patient was examined with nasal speculum and head mirror. Posterior rhinoscopic examination was performed with tongue depressor and nasopharyngeal mirror.

Sings were also documented including rhinorrhea, nasal obstruction, anterior and posterior nasal discharge, headache, facial pain, sore throat, fever; anosmia, hoarseness, facial fullness, sinus local sensitivity, mucosal erythma, mucosal crust, turbinate hypertrophy and lymphadenopathy. All patients underwent CT examination, and our findings were documented including sinus opacityy, air fluid level, mucosal thickening, choncha bulosa, septal deviation, osteomeatal compartment, ethmoid bulla enlargement, unusual uncinate process, nasal polyposis, sinus mass, bone erosion, etc.

The decision to operate was based on symptomatic failure of medical therapy or CT scan findings. Patients (114) underwent functional ESS by the Messerklinger type procedure exclusively. Surgery was performed under general anesthesia. All patients had abnormal nasal examination. Common signs consisted of erythma and nasal mucosa edema. The common procedure was opening of the bulla followed by infandibulotomy, clearance of the anterior ethmoidal cells, and opening the basal lamella in all of the ethmoidal involvement cases. Further clearance of the frontonasal recess, posterior ethmoidal cells, and middle meatal atrostomy and bilateral surgery was performed as indicated, and all of the specimens were sent to the pathologist from osteomeatal and ethmoid sinuses from right and left sides separately.

Discussion

Many articles in literature describe the effectiveness of FESS in the management of sinus diseased in-patients who failed medical management. The pathophysiological principles with functional endoscopic sinus surgery have been well described by Messerklinger 1978 and Kennedy et al 1985, and Stamberger 1985. A large series of articles have been published describing the technique. Levine 1990 and Posawets reported on clinical data.

To provide data on histopathology, pathological and immunohistochemical characteristics of acute sinusitis in human inflamed sinus mucosal tissue were removed.
During FESS from 11 patients with acute sinusitis. All specimens underwent routine histological processing. Representative sections from each region were stained with hematoxylin and eosin, periodic acid schiff and toluidine blue. The inflammatory reaction of lamina propria exceeded that of the epithelial layer. It is assumed that cluster B-Lymphocytes around blood vessels may point to the fact that these cells were recruited from the blood during acute sinusitis (2).

Melewski in 1990 (11) said that acute sinusitis usually requires conservative treatment with antibiotics and decongesting nose drops. However a certain number of cases do not respond to this treatment, while functional endoscopic endonasal sinus surgery (FESS) has been proven to be a valuable tool in treatment of all kinds of chronic sinus disease. It was adopted for acute complicated sinusitis. At the end of discussion he concluded that FESS should be considered early in the treatment of acute sinusitis and its complications if conservative therapy fails. Maran (13), from Edindurg UK, believes that endoscopic nasal surgery has become the single major advance in the specialty of otolaryngology since the introduction of operating microscope and middle ear surgery. The value of improved assessment of nasal and sinus pathology using the endoscopic diagnostically cannot be overstated (13). Once pathology is better evaluated, therapy will be more appropriately tailored to the needs of the case. It is now possible to carry out such nasal surgeries as polypectomy, antrostomy and turbinoplasty more accurately and more safely and provide better postoperative care.

The use of endoscope has afforded a useful sub-cranial route for the repair of small cerebrospinal fluid leaks, while it is likely that other procedures as such dacrocystorhinostomy will eventually be mostly performed using the nasal endoscope. Some orbital decompressions will also be suitable for medical orbitotomy via the endoscope. Additionally assessment of the extent of extrusion of orbital contents after blow-out injury has been invaluable, as is evaluation of the posterior wall of the frontal sinus after frontal bone trauma. Functional endoscopic sinus surgery undoubtedly has a place in the surgery of frontoethmoidal mucoceles. While few oncologists would be sanguine about its use in the surgery of nasal tumors, it is still of great value in evaluation and biopsy (2, 5, 9, 12, 13). Although FESS was confined to the osteomeatal complex in the presence of early sinus disease, its indication continues.

Results

The median age of patients was 28 years (range 9 to 71); 68 were male, and 56 were female. Anatomical variation identified by CT scan included:

- Significant sinus opacity in 57 patients;
- Nasal polyposis in 17 patients;
- Sinus masses in 11 patients;
- Sinus bone erosion in 15 patients;
- Air fluid level in 2 patients;
- Mucosal thickening in 10 patients;
- Septal deviation in 49 patients.

Clinical symptoms of 114 patients are reported in Table 1. Obviously, nasal obstruction and posterior nasal discharge and headache and fatigue were the most common symptoms. As reported 55 patients had postnasal drainage, and 17 patients had facial pain. Table 2 presents detailed surgical procedure.

Of the 114 patients seen and operated on, 22 had sinonasal polyposis, 63 had chronic sinusitis,
and four had chronic rhinitis. 2 patients had mucormycosis and an important finding was that 11 patients had malignant tumors. A surprising point in this study was that 2 patients had malignancies (SCC), which were found incidentally with no significant findings in their imagings or pathologies. One patient had antrochoanal polyps, and one patient had granulomatous sinusitis. Five patients had inflammatory polyposis, and 5 patients had acute ethmoidities and orbital cellulitis.

Conclusion

We shared our experience with 114 cases of endoscopic surgeries and analyzed the different pathologies which were treated endoscopically. Our case selection and surgical findings are reported in detail. The surgical specimens through detailed pathological studies defines the following points of view:

- FESS will offer help to many clinical rhinologic trends in the area of diagnosis and treatment.
- FESS has offered better illumination and exposure to see the details of anatomical changes.
- FESS will diagnose malignancies sooner than any other methods of diagnosis (2 to 11 malignancies in 114 cases performed).

REFERENCES


