CHAPTER 2

LITERATURE REVIEW

In 1985 Messerklinger demonstrated that mucociliary transport continued in the direction of natural ostium even when artificial ostia were created. He further noted that when obstruction in this region was relieved, the secondarily inflamed mucosa recovered and regained its normal mucociliary transport.[9] For the maxillary sinus, the mucous flow originated in the lateral flow with the flow directed centripetally toward the ostium. The mucous was then transported through the infundibulum to the hiatus semilunaris. From there it was passed into the middle meatus and ultimately to the nasopharynx.[10]

Obstruction at the level of ostiomeatal complex or at the opening to any paranasal sinus by polypoid disease would almost critically lead to blockage of mucous clearance from the dependent sinus.[3] The pathologic changes of sinus mucosa in chronic sinus were epithelial desquamation with squamous cell hyperplasia, an increase in globlet cell population, thickening of the basement membrane, edema, infiltration of inflamed cell and hypertrophy of submucous gland. The cilia of the maxillary sinus was sometimes reduced.[11] However, from the studies of Moriyama, et al.[12] and Guo et al.[5] showed that the maxillary sinus mucosa in patients with chronic sinusitis was capable of regenerating itself; and the damaged ciliated epithelium could return toward normalcy with improvement of ventilation and drainage of the maxillary sinus following FESS.

Kennedy, by employing the principles of minimal invasiveness and maximal mucosal preservation, introduced the technique of Functional Endoscopic Sinus Surgery (FESS) to the United States, which has been widely accepted and applied to inflammatory disease of the paranasal sinus. The natural ostium was identified and enlarged (6 mm).[9,10] In 1992, he reported the results of his technique; 97.5% of patients had subjective improvement but endoscopic evaluation of the same individuals demonstrated objective evidence of residual disease in 45% of the patients. Abnormal mucosa was seen postoperatively in 76.5% of patients with nasal polyposis versus 22.7% of those without polyposis.[6]

Setliff, proposed that the etiology of sinus disease might not occur at the sinus ostium but at the narrow mucous membrane-line transitional space into which anterior sinus drained(infundibulum).[7,13] Under the model, the uncinate process, not maxillary sinus ostium, became the critical anatomic factor in surgery for maxillary sinus disease. The ostium was left undisturbed regardless of its size or pathologic condition.

On the contrary, Levine reported the results of functional endoscopic sinus surgery in 250 patients with a success rate of 89.7% for relief of sinonasal polyposis and 80.2% for relief of chronic sinusitis.[8] His drainage procedure after removing the obstructive disease was the large middle meatal antrostomy technique (1.5 x 2 cm). Jankowski et al, compared functional results after nasalization (radical procedure with large antrostomy) and ethmoidectomy (less procedure, with or without antrostomy) for diffuse nasal polyposis and suggested that when dealing with nasal polyposis the more radical the surgery was the better functional results.[14]