TIPS FOR THE NOVICE NASAL ENDOSCOPIST

Hetal Marfatia¹, Renu Mahajan², Milind Kirtane³

ABSTRACT : *Functional endoscopic sinus surgery has been a major advance in management of chronic sinusitis and other sinonasal diseases. However before one embarks on this surgery, the surgical anatomy of this region and its variations should be clearly understood by the surgeon, and the surgical steps of every stage of operation should be mastered by adequate practice on cadavers. One has to proceed from simple endoscopic surgery to the advanced ones for better results.*

Key Words : Functional endoscopic sinus surgery, cadaver dissection.

INTRODUCTION

Functional endoscopic sinus surgery has been a major advancement in the management of chronic sinusitis and other sino-nasal diseases. Surgical approach to the inflammatory pathology of paranasal sinuses has changed remarkably since the time Messerklinger introduced the concept of functional endoscopic sinus surgery.³ However, before one embarks on endoscopic sinus surgery, the surgical anatomy of this region and its variations need to be clearly understood by the surgeon and the importance of mastering the relevant anatomy cannot be overemphasised. The danger to the patient from an incompetent surgeon -who does not know the anatomical details of the narrow recesses of the ethmoid labyrinth, sphenoid sinus, maxillary sinus and related important structures viz. orbit, optic nerve, dura, internal carotid artery etc. can be obviated only by frequent cadaveric-dissection by the fledgling endoscopist. It not only helps the new endoscopist traverse the perilous anatomy of ethmoid labyrinth safely, but also confidently.

"The advent of endoscopic sinus surgery has provided the otolaryngologist with a monocular telescope and a method which with a loss of perspective can cause blindness and death."- A loss of perspective is an outcome of an inadequate understanding of anatomy of the maze of air spaces amongst important structures. As Mosher (1929) wrote. "If the ethmoid labyrinth was placed in any other part of the body, it would be an insignificant and harmless collection of bony cells. Placed where nature has put it, it has a number of major relationships, so that disease and surgery of this labyrinth can often lead to tragedy. Theoretically, an ethmoidal operation is easy; in

practice, however it has proved to be one of the easiest operations with which to kill a patient."²

Unless absolutely familiar with the anatomy, and more importantly, the anatomical variations, one should not attempt any endoscopic procedure. Anatomy of paranasal sinuses and technique of endoscopic surgery obviously cannot be mastered by simply reading. Actual cadaveric dissection is imperative.

Often, in a cadaver, the delicate, paper-thin, bony septae of the ethmoid labyrinth are partly destroyed and soft tissue is hardened by existing methods of preservation. This could be overcome by storing the cadaver in the cold room or using a fresh cadaver, where the soft tissue texture is preserved. Cadaver dissection not only helps in orientation of the anatomy but also assists in the simultaneous handling of instruments and the endoscope. The forceps must be introduced parallel to the scope, and, while working in the area of lamina papyracea, one must use only the side of the forceps. Thus, the teething problems of instrumentation could be solved in the laboratory of cadaveric dissection itself.

Just having an endoscopy set, doing a few cadaver dissections and attending a few workshops does not make an endoscopist. Cadaveric dissection cannot accurately mimic live surgery as there is no pathology and no bleeding and hence expertise in endoscopic surgery can develop only after the surgeon has operated on patients. Mastering the art of endoscopic sinus surgery is a slow process. Apart from knowing anatomy and its variations through cadaveric dissections, one has to repeatedly observe live endoscopic sinus surgery. Nowadays, this is possible due

¹ Lecturer, ² Resident, ³ Hon. Associate Professor, Dept. of Otolaryngology, Seth G. S. Medical College & KEM Hospital. Parel, Bombay - 400 012

to the availability of teaching aids, more so because of the endoscopic camera. Last but not the least, the skill of experienced endoscopic surgeon who operates looking at the monitor that automatically serves the purpose of demonstration is also an essential requisite.

One has to start with diagnostic endoscopy to study anatomy and normal anatomical variations and then go on to surgery beginning with minor procedures viz. excision of concha bullosa, anterior ethmoidectomy, anterior ethmoidectomy with middle meatus antrostomy, posterior ethmoidectomy and sphenoethmoidectomy. And only then should one venture into advanced endoscopic procedure like dacryocystorhinostomy, optic nerve decompression, excision of pituitary adenoma (where simultaneous use of drill is necessary) or closure of CSF rhinorrhoea, etc. To start with, one must operate on virgin cases and keep revisions for more experienced colleagues. One also has to get familiar with reading the CT scans. The eyes must be trained to point out the dangerous anatomical variations, viz., naked optic nerve, dehiscent lamina papyracea etc. These must be borne in mind during surgical steps as they may not always be pointed out by the radiologist since they may not be manifestly involved. Defects and destructions due to pathology or previous surgery may be missed while reporting.

A word about cranial bone studies. Cadaveric dissection is significantly helped by an endoscopist having an intimate knowledge of a normal skull - a skull wherein the sinus anatomy of the various septa has been carefully retained. Holding the skull in various positions - full skull or in section - and then viewing the nasal cavities, provides a clarity of thought that facilitates not only cadaveric dissection but live endoscopy as well.

The complication rates of endoscopic sinus surgery are found to be higher than those with traditional external ethmoidal surgery,¹ although the anatomical relations remain the same. The incidence of complications varies from surgeon to surgeon and helps in differentiating the experienced one from the novice. Most complications occur because of losing anatomical orientation, failure to appreciate relationships of vital structures in relation to fovea, posterior ethmoid and sphenoid, working blindly in a blood filled field and not recognising an anatomical

breach while proceeding with tissue removal. With experience, a surgeon's complication rate would certainly be reduced. The best way to keep the complication rate down to minimum would be to do a thorough preoperative evaluation, use very careful surgical techniques and give painstaking attention to proper postoperative care. Inadequate practical knowledge of the anatomy of paranasal sinuses as also of the evolution of the pathophysiology of various diseases result in inadequate clearing of the diseases and greater number of complications. A wise surgeon is the one who recognises the complication and treats it there and then. Lastly, the wisdom lies in knowing when not to use endoscopes e.g. intracranial complication, osteomyelitis, infiltrative lesions, invasive fungal infections etc.

CONCLUSION

Endoscopic sinus surgery has a lot to offer as far as management of paranasal sinus diseases is concerned. Before attempting endoscopic sinus surgery:

1. One must have thorough knowledge of anatomy as well as pathophysiology.
2. Cadaver dissection training.
3. Observed or assisted endoscopic sinus surgery.
4. Should start with diagnostic endoscopy.
5. Begin with minor surgical procedure only then move onto advanced surgery.

It would be unfair to our patients to embark on endoscopic surgery without undergoing a self training course as mentioned above.

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Address for Correspondence :

H. K. Marfatia
22/85, Yeshwant Nagar, Goregaon (w),
Bombay.