



ORBITAL COMPLICATIONS OF FESS: OUR EXPERIENCE IN A PERIPHERAL MEDICAL COLLEGE & HOSPITAL

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KEYWORDS

BACKGROUND:

Functional endoscopic sinus surgery is very useful for the diagnosis and treatment of chronic sinus diseases. Paranasal sinus & orbit are closely related anatomically (the ethmoidal sinuses and sphenoid air sinuses lie medial to the medial wall of orbit while inferior orbital wall is related to maxillary air sinus). Therefore, the surgical procedures done in paranasal sinuses can cause injury to the orbit.

Common Orbital complications of FESS include -

- Orbital haematoma
- Subcutaneous emphysema
- Nasolacrimal duct injury
- Diplopia
- Blindness

The risk of injury depends on the anatomical variations, surgeon's experience, severity of the disease and previous surgical history. This study aims to evaluate the ocular complications after Functional endoscopic sinus surgery in patients with paranasal sinus diseases in a tertiary care hospital in Burdwan.

METHODS AND MATERIALS:

A retrospective study was done on 102 patients who underwent FESS for paranasal sinus diseases in the period between January 2014 to June 2017 at the Department of Otorhinolaryngology, Burdwan medical college & hospital. Patients developing ocular complications were referred to the Department of Ophthalmology of Burdwan medical college and hospital. Detailed ophthalmological and otorhinolaryngological examinations were performed. Orbital X-ray, CT scan and MRI was done, whenever needed. The ophthalmic complications were divided into 3 categories like Burduk MS et al study³-

Minor (grade 1): lamina papyracea injury and periorbital ecchymosis

Major (grade 2): lacrimal duct injury

Serious (grade 3): retro-orbital haematoma, optic nerve injury, orbital muscle injury

RESULTS:

102 patients underwent FESS surgery during the study period, among which 67(65.69%) were male and 35(34.31%) were female. Among the patients, 60 % underwent surgery involving ethmoid sinuses, 38 % patients underwent surgery involving frontal sinuses while 2 % underwent surgery for sphenoid. Orbital complication was seen in 12 (11.76%) patients.

Table 1: Rate of ophthalmic complications in FESS

Grading of complications		No of cases	Percentage
Minor	Injury to lamina papyracea, periorbital ecchymosis, emphysema	7	6.8 %
Major	Lacrimal duct injury	1	0.98 %

Severe	Retro-orbital haemorrhage	2	1.96 %
	Optic nerve injury	1	0.98 %
	Orbital muscle injury	1	0.98 %

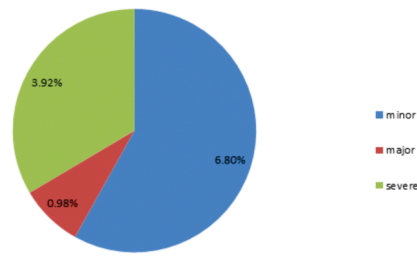


Figure 1: Percentage of orbital complications according to grade

Table 2: Comparison between our study and Burduk MS et al

Study	Minor complication	Major complication	Severe complication
Our study	6.80%	0.98%	3.92%
Burduk MS et al study	0.3%	0.06%	0.3%

Figure 2: Periorbital ecchymosis(left) and emphysema(right) following injury to lamina papyracea



DISCUSSION:

Functional endoscopic sinus surgery is one of the most common surgical procedure done by the otorhinolaryngologists. This procedure carries the risk of orbital complications, because of anatomical proximity of the sinuses to the orbit³. Though the incidence of ocular complications following FESS is low, it could be dangerous leading to permanent visual loss. In our study, we have tried to evaluate the frequency & types of ocular complications following FESS in a tertiary care hospital in Burdwan. The incidence of orbital complications following FESS ranges from 0.5 % to 5 %^{2,4}. However, our study showed the incidence to be 11.2%.

In our study, minor complications refer to the injury of lamina

papyracea resulting in periorbital ecchymosis & emphysema. 5 cases of minor complications occurred during ethmoidectomy and 2 such cases occurred following frontal sinus surgery after breaking lamina papyracea. All cases needed no intervention except proper postoperative treatment & control.

We had 1 case of lacrimal duct injury (major complication), which was associated with uncinectomy. Post operatively, the patient had to undergo external dacryocystorhinostomy with silicone tube implantation in the Department of Ophthalmology.

We had 2 cases of retro-orbital haemorrhage that occurred during ethmoidectomy. Both the cases underwent emergency lateral cantholysis and canthotomy, but 1 patient developed Central retinal venous occlusion with visual acuity of PL (perception of light) negative. Direct optic nerve injury is very rare⁷. In various studies, it was found to be around 0.12%, but in our study the rate is 0.98%. Here the cause of optic nerve injury was direct damage by surgical instrument. Medial rectus muscle injury was seen in 1 case where the patient refused to undergo any ophthalmic surgery.

Postoperative complication depends on detailed preoperative assessment, surgeon's experience, severity of disease, powered instruments, primary or repeat surgery, co-existing co-morbidity¹. Rene et al. have suggested that eyes should be kept uncovered & monitored during FESS surgery to see any movement resulting from orbital fat traction⁸. It is essential to do proper ophthalmological examination in early postoperative period.

CONCLUSION:

Incidence of orbital complications following endoscopic sinus surgery are rare, but can be potentially dangerous. The surgeon should be aware of the complications & take proper measures to prevent the same. The preventive measures include detailed preoperative evaluation (endoscopic and radiological), using newer surgical devices and proper surgical training. In addition, the surgeon must have knowledge of the detailed anatomy and the ability to interpret paranasal sinus CT scan.

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