Abstract: Frontal sinus fractures account for only 5-15% of maxillofacial injuries. They are commonly associated with motor vehicle crashes, sporting events, and assaults. Isolated anterior table of frontal sinus injuries account for 33-39% of frontal sinus fractures. These injuries believe to carry a low risk of long term morbidity and primary result in aesthetic deformities. Historically, open reduction and rigid fixation of fracture using coronal incision was done in the past. Now due to recent development of instrumentation and endoscopic brow lifting allowed access to fracture reduction without the need of coronal incision.

Keyword: Frontal sinus, anterior table, endoscopic reduction, fracture

Introduction: Isolated anterior table fracture comprises only 33-39% of frontal sinus fracture. Anterior table of frontal sinus is composed of thick cortical bone of 4mm thickness. It is more resistant to fracture than any other facial bone. The most commonly associated symptoms are forehead swelling, forehead and nasal pain, paresthesia in the forehead. Endoscopic reduction of fracture when compared to open reduction is much easier, minimal scarring and carries less complications.

Case Report: 14 years old Male came to ENT OPD with complaints of Depression in left frontal region - 6 days

H/O presenting illness: Patient had an injury over the forehead while playing, followed which he developed pain & swelling in the left frontal region for 4 days. Pain and swelling gradually decreased but only a depression is seen in the left frontal region. No H/O nasal watery discharge No H/O Nasal obstruction/epistaxis/postnasal drip No H/O loss of smell No H/O visual disturbance No H/O suggestive of intracranial complications.

On local examination: A depression is seen at the left forehead just above left eyebrow 3x2 cm in size Depressed sulcus was appreciated on palpation

On Anterior Rhinoscopy: Septum deviated to left side Both sides-Inferior turbinate hypertrophy

CTPNS
Surgical procedure:  
**ENDOSCOPIC REDUCTION OF ANTERIOR TABLE OF FRONTAL SINUS**

Incision is made just along the inferior margin of left eyebrow. 
Trephination done in the floor of the frontal sinus Fracture site at the anterior table of frontal sinus visualised. Using O*Hopkins rod endoscope, fractured segment visualised. 
4mm spatula introduced into the trephination, fractured bone was elevated and was set in alignment. Frontal sinus packed with gelfoam & surgicel.

DISCUSSION

Frontal sinus is a pyramidal air filled cavity within the frontal bone. 
Its size and shape are highly variable. 
In fact it is usually asymmetrical. 
Ht -28 mm, breadth-24mm, depth-20mm, space of 6-7 ml. 
It has two walls: 
Anterior table: 
Forms part of forehead, brow, glabella. 
4 mm in thickness, more thicker than posterior table. More resistant to # than any other facial bones. 
Posterior table: 
Thickness -0.1-4.8 mm 
Less resistant to injury 
This table is in close proximity to anterior cranial fossa 
Frontal sinus # comprises 5-15% of all facial injuries. 
**Classification:**
1) depressed anterior table # -33-39% 
2) posterior table # -<6% 
3) through and through injury involving both tables -55-67% 
4) fractures involving frontonasal duct

Complications of # frontal sinus: 
Meningitis Encephalitis Brain abscess Cosmetic defect 
CSF leak 
Mucocele 
Mucopyocele 
Obstruction to nasofrontal duct 
Frontal osteomyelitis 
Frontal bone non-union 
Cavernous sinus thrombosis

**Goals of treatment:**
Removing the factors if any predisposing to infection 
Restoring normal sinus function 
To treat cosmetic defect

**Flow Chart of # Frontal Bone**

Surgical Procedure:

Reduction of fracture anterior table of frontal sinus by 
1) Osteoplastic bone flap procedure 
2) Endoscopic assisted fracture reduction.

Osteoplastic bone flap procedure
Incision down as far as peristomeum Dissection extends to supraorbital ridge&root of nose 
Scalp flap pulled caudally Borders of frontal sinus marked on peristomeum 
Osteotomy made Fracture reduced
Complications of Osteoplastic Bone Flap Procedure:
Large scar Possible alopecia Paresthesias Temporal branch of facial nerve injury

Advantages of endoscopic approach are:
Much easier Minimal scarring No other complications like paresthesia, alopecia etc Less hospital stay Direct visualisation

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