

# TRAUMATIC FRONTO BASAL CEREBROSPINAL FLUID FISTULA; NEUROSURGICAL TREATMENT

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## ABSTRACT

CSF rhinorrhoea is one of the complications of head injury which should initially be managed conservatively and on failure surgical intervention is mandatory to prevent life threatening meningitis. **Material & Methods:** In the present study we analyzed 75 cases of CSF rhinorrhoea from Jan 1998 to Jan 2002 secondary to head injury. There were 61 males and 14 females with an average of 35 years. CT and MRI were the main diagnostic modalities used for the investigation of the site of fistula. Twenty two patients were operated. Surgical treatment consisted of intra cranial approach. **Results:** Spontaneous closure of the fistula was observed in 53 patients with conservative management. In 22 patients surgical intervention was required. Post operative closure of the CSF fistula was seen in 91% of cases with minimal morbidity. **Conclusion:** Intra cranial approach is effective, safe and intra cranial traumatic pathologies can be dealt along with the CSF fistula.

**KEY WORDS:** Traumatic CSF fistula, Intra cranial approach, Outcome

## INTRODUCTION

Trauma is the most common cause of CSF rhinorrhoea which once confirmed should be treated as the risk fo meningitis is high with reported rates varying between 5%<sup>1</sup> and 60%<sup>2</sup>. In order to confirm the diagnosis glucose oxidase test or beta 2 transferring level in the nasal secretion is used. The site of the fistula is ascertained by CT, MRI or CT cisternography. The closure of fistula can be achieved by three types of techniques, intra cranial, extra cranial or trans nasal endoscopic approach has the advantage of direct

visualization of a leak from above and allows treatment of coexisting intra cranial pathology. The success rates vary from 50 to 94%<sup>3</sup>.

This article illustrates that intra cranial approach for traumatic erebrospinal fistula is associated with high success rate and is a method of choice for closure of fistula with less morbidity and mortality.

## MATERIAL & METHODS

In the present study we analyzed 75 consecutive cases

of CSF fistula secondary to head injury at Allied Hospital from Jan 98 to Jan 2002 with mean age of 35 years and age range from 15 to 60 years. There were 61 males and 14 females Plain x rays, CT and MRI were the modalities used to diagnose. Surgery was performed on failure of conservative treatment.

Operative treatment consisted of intra cranial approach under a high powered microscope using micro surgical instruments with a standard coronal flap. In cases of fractures of frontal bone and frontal sinus, dural repair and then packing of frontal sinus was done with temporalis muscle and bone wax. In cases of leaks through cribriform plate or ethmoid bone closure of the fistula was made by placing a temporalis muscle its fascial graft and fibrin glue.

**RESULTS**

In 53 cases the CSF fistula resolved with conservative management. Of the 22 patients operated plain X rays skull showed fractures in the fronto-basal area in 13, CT defined the site of skull base defect in 20, MRI helped to define the site of defect in 2 patients(Table-I).

Investigation	No of patients	% age
Plain X rays	13	59.09
C T	20	90.90
MRI	2	9.09

Symptoms	No of patients	% age
Frontal bone and sinus	16	72.72
Cribriform plate	5	22.72
Fovea ethmoidalits	1	4.45

Complications	No of patients	% age
Anosmia	9	40.9
Cerebral oedema	3	13.63
Osteomyelitis	1	4.54
Intra cranial haematoma	1	4.54
Mortality	1	4.54

The sites of defect are shown in Table II. Post operative results of closure of fistula in 20 (91 %) cases was achieved on first attempt. The complications associated with procedure are shown in Table-III.

**DISCUSSION**

Traumatic CSF fistula occur in 2-3% of all patients with head injury, 60% occur within 48 hours of trauma, 95% within 3 months<sup>4</sup>. CSF rhinorrhoea stops in 70% of cases within 10 days. Incidence of meningitis with post traumatic CSF leak is 20-40% which increases as leak persists for more than 7 days and a mortality of 16-20% has been reported<sup>5-6</sup>.CT was found to be of sufficient sensitivity and specificity to use routinely. MRI was found to be of use in 10% of those cases where CT had not defined the site of the defect or leak<sup>7</sup>. In acute traumatic fistulas a spontaneous closure will occur in about 70% of patients with conservative treatment within 10 days otherwise surgery is advised <sup>3</sup>. With the advancement in endoscopic surgery by ENT surgeons the treatment of CSF fistulas by extra cranial techniques has been revolutionized but still there is a place for intra cranial technique in traumatic cases<sup>9</sup>.Re-operation is required in failed 10% of cases<sup>10</sup>.

**CONCLUSIONS**

In the successful management of patients with CSF rhinorrhoea secondary to trauma, use of intra cranial approach with meticulous dural repair, placement of temporalis muscle and fascial graft with use of fibrin glue gives excellent results. This approach is effective and safe.

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