Original Research Paper

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SPONTANEOUS CEREBROSPINAL FLUID RHINORRHOEA – A CASE REPORT AND ANAESTHETIC CHALLENGES

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ABSTRACT CSF rhinorrhoea is the leak of CSF through the nasal cavity due to communication between the meninges and the nasal cavity. Mostly the cause is traumatic in origin, with the most common anatomical sites being ethmoid, frontal, and sphenoid sinuses, and the cribriform plate region, the incidence is 88% . Meningitis and pneumocephalus were the most frequently associated clinical complications (1) Non-traumatic 'spontaneous' CSF fistulae are uncommon and is a rare entity (3) Aetiologically, the causes of CSF rhinorrhoea can be classified as traumatic, iatrogenic, congenital, neoplastic, and idiopathic. The main symptom is the constant and uncontrollable unilateral watery rhinorrhoea (2) We present a case of spontaneous CSF rhinorrhoea , the surgical and anesthetic challenges.

KEYWORDS : CSF Rhinorrhoea-Spontaneous-surgical Correction-nasal Endoscopy, High BMI, General Anaesthesia.

INTRODUCTION

Traumatic CSF rhinorrhoea is the commonest presentation.

Spontaneous CSF rhinorrhoea is a rare presentation. Usually due to the congenital malformation of the dura at base of the skull, tumours and erosive diseases.

The risk factors are middle age group, female gender, and obesity. It can be sudden and rapid violence of the pre-existing malformation. Fluctuations in the intracranial pressure is also one of the causes for CSF leak.

CSF leak should be corrected at the earliest time, otherwise leads to meningitis or arachnoiditis.

Endoscopic repair is an evolution instead of craniotomy and repair. Confirmative diagnosis is also made easier by advanced technology in radio imaging studies.

Case Analysis

A 35-year-old lady was admitted with complaints of discharge of clear liquid from the right nasal cavity in a local hospital.

She was treated symptomatically with antibiotics and bed rest.

Later, the patient continues to have the nasal discharge, she was referred to Sree Balaji Medical College and Hospital for further evaluation and management.

Preanaesthetic assessment

Done by our team, BMI is 38.5, Neck circumference is 36 cm,

She is a known hypertensive and on T.Metaprolol 50 mgm BD, under good control.

Haematological investigations, Coagulation profile, Renal profile and Diabetic profile were normal

ECG and Xray chest were normal.

USG airway assessment was done, and no airway pathology

Examination of the nasal cavity by the surgeon reveals, there is a discharge of thin, clear, watery fluid.

The reservoir sign was good

The Halo sign was favorable

Radiological investigation

CT cisternography reveals (fig 1)

- Defect in the right cribriform plate with the leak of contrast
- Bilateral maxillary and ethmoidal sinusitis
- Retention cyst in the right maxillary sinus
- Deviated nasal septum to the left side

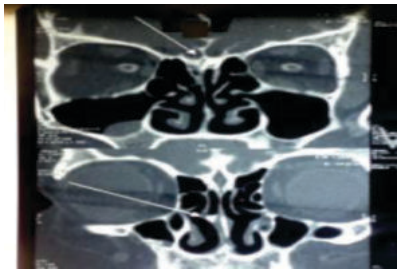
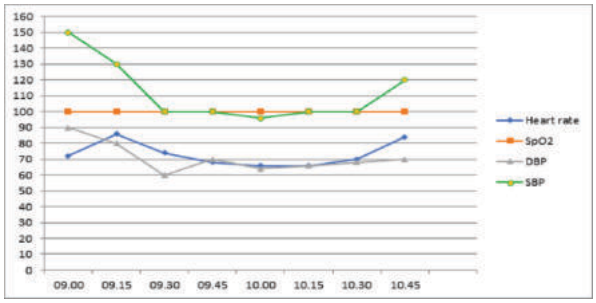


Fig -1

Anaesthetic technique

- Routine anaesthetic checklist was done.
- Emergency crash cart including FOB was kept ready since the BMI was high.
- Basic monitors – ECG, SPO2, NIBP, ETCO2, Temperature connected
- Intravenous Inj.Glycopyrrolate 0.2mg + Inj.Fentanyl 100mcg was given.
- Patient was preoxygenated.
- Injection Ranitidine 50 mg, Inj. Metaclopromide 5mg IV as Aspiration prophylaxis.
- Induced with Inj.Propofol 2.5 mg/kg, Inj.Suxamethonium 100mg for intubation.
- Done smoothly, same time took care to prevent dribbling of CSF from nasal cavity.
- Injection Dexmedetomidine infusion started at a rate of 0.5 microgram/kg to maintain the BP at a mild hypotensive level, around 100/60mmHg



Vitals monitoring

Time	Blood pressure (mmHg)	Heart rate (bpm)	SpO2 (%)
09.00am	150/90 (110)	72	100
09.15am	130/80 (96)	86	98
09.30am	100/60 (74)	74	99
09.45am	100/60 (74)	68	100
10.00am	96/64 (74)	66	99
10.15am	100/66 (77)	66	99
10.30am	100/62 (74)	70	100
10.45am	120/70(86)	84	98

Surgical technique

Nasal endoscopy was done by using rigid Hopkins endoscopy and the leak was identified (fig 2) A small meningocele was seen (fig 3). Sphenoidotomy was done, and the leak area and the meningocele were cauterized.

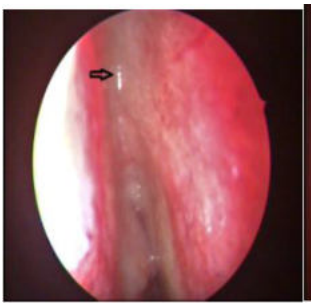


Fig – 2

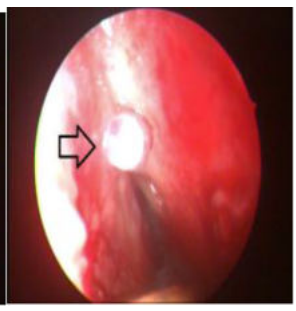


Fig - 3

Leak was closed in five layers (fig 4)

1. fat harvested from right thigh
2. surgical suture
3. tisseel, a fibrin glue
4. fascia lata graft
5. tisseel glue

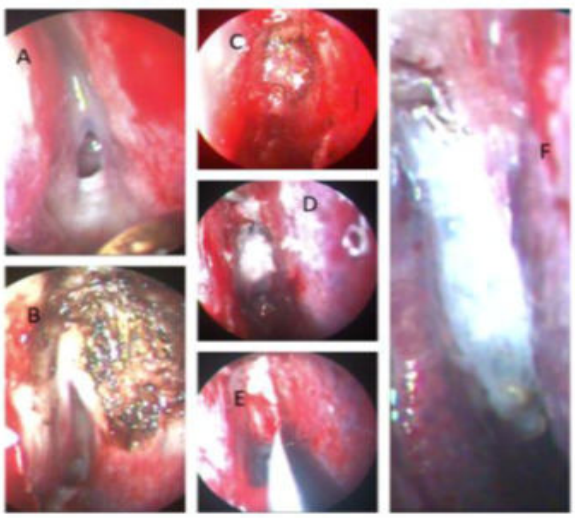


Figure 4: A: Sphenoidotomy, B: Cauterisation, C: Fat +Surgicel, D: Tisseel: E: Fascia lata, F: Tisseel.

Observed for any further leak, closed with merocele packing of right nasal nostril.

Dexmedetomidine infusion was tapered.

After adequate respiratory attempts, patient was reversed with IV Neostigmine 2.5 mgm + Glycopyrrolate 0.4 mgm

Extubated after gentle suctioning.

DISCUSSION

The first successful intracranial repair of the CSF leak was reported by Dandy in 1926. Increased morbidity of the intracranial approach resulted in introduction of the extracranial repair by Dohlman in 1948. Hirsch performed transnasal surgery in 1952. Endoscopic treatment of this condition was reported by Wigand in 1981(4)

Spontaneous CSF rhinorrhoea occurs due to a defect in the dura, arachnoid, and base of the skull. This leads to the formation of a fistula between the nasal cavity and subarachnoid space.

Good preoperative diagnosis by upgraded neurological investigations is more important.

Endoscopic repair coupled with control of intracranial tension could be effective in achieving high success rates. Graft material could be the cartilage, bone, mucoperichondrium, septal mucosa, turbinate, fascia, abdominal fat, conchal cartilage, free tissue, pedicle tissue, and composite grafts (5)

Controlled hypotension during surgery allows better surgical field visibility with decreased blood loss, surgery duration, and lower incidence of complications. A lot of medications can be used for controlled hypotensive anesthesia. The ideal drug for controlled hypotension should be easily administered with dose-dependent effects, fast onset and short-term effect without toxic metabolites and minimal adverse effects (6)

Pharmacological agents used for controlled hypotension include those agents that can be used successfully alone and those that are used adjunctively to limit dosage requirements and, therefore, the adverse effects of the other agents (7)

Our drug of choice was Dexmedetomidine. Dexmedetomidine, an imidazole compound, is the pharmacologically active dextroisomer of medetomidine that displays specific and selective α_2-adrenoceptor agonism. The mechanism of action is unique and differs from those of currently used sedative agents, including clonidine. Activation of the receptors in the brain and spinal cord inhibits neuronal firing, causing dose dependant hypotension, bradycardia, sedation, and analgesia (8) Dexmedetomidine exerted anesthetic-sparing effects, increased hemodynamic stability, and reduced unwarranted responses to endotracheal intubation.(8)

A goal-directed anaesthesia technique with a moderate induced hypotension using Dexmeditomidine infusion supports a good surgical plane because of its sedative, anxiolytic, analgesic, and sympatholytic properties, and stable hemodynamic profile.

CT cisternography, and MRI sinuses are advanced radiological studies.

CSF leak can be repaired by using cartilage, bone, nasal septum, fat and other autologous tissues.

Abbreviations –

CSF – cerebrospinal fluid

CT – Computed tomography

MRI – Magnetic Resonance Imaging

USG – ultrasonogram

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