

Isolated Fourth Ventricle: To Shunt or Stent?

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Introduction

Of various management options for isolated fourth ventricle (IFV), fourth ventricular shunts (FVPS) and aqueductal stents (AST) have been the most favored.

Though effective, 4th ventricular shunts are often difficult to place and are reported to have higher complication rates than conventional ventricular shunts.

Methods

22 patients surgically treated for IFV

Age range : 3 mos- 28 yrs

Preoperative MRI : Extent of aqueductal obstruction

Short segment aqueductal obstruction : Aqueductal stenting (Transventricular route)

Long segment aqueductal obstruction: Fourth ventricle shunt

a.

Trans cerebellar route

b.

Trans foramen Magendie Route

Results

Of the 22, 12 were symptomatic while 10 were asymptomatic (progressive dilation of IFV in 6, persistent dilation with distortion of the brain stem in 4). In 2 with normal ventricles, the ventricles had to be dilated by externalizing the shunt before placing the stent.

16 underwent AST while in 6 FVPS was done.

Aq stents (n =16):

Non anchored stent: 7 ,

Anchored Stent: 9

FVPS (n =6):

Trans foramen Magendie route: 5

Transcerebellar route: 1

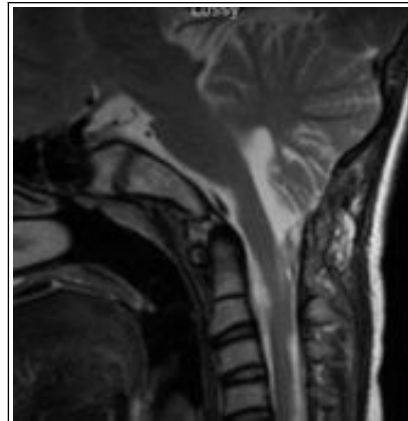
Mean follow up was 37 months

(AST: 30 mos, FVPS: 53 mos).

2 died during the follow up at 6 months and 12 months due to unrelated causes. At follow up, stent migration was observed in one. In the FVPS group, one had 2 shunt revisions while another developed reversible cranial nerve paresis.



FVPS, Preeop MRI



FVPS Postop MRI



AST Preeop MRI



AST Postop MRI

Outcome:

There was no difference in the overall outcome in the the two groups with the symptomatic patients improving in both groups. A greater percentage of reduction in the fourth ventricle was noticed in the patients with shunts as compared to the patients with stents.



Aqueductal stent and the VP Shunt

Conclusions:

Both FVPS and AST are effective in managing the IFV .

Aqueductal stenting is a simple, acceptably low risk endoscopic procedure. In appropriately selected patients, the procedure is effective and definitive for achieve resolution of IV ventricle dilatation. The extent of aqueductal obstruction and degree of ventriculomegaly are often the deciding factors in choosing the management options. The procedure should not be attempted in LSAS. The stent should be anchored to avoid the complication of migration

In patients with functioning shunt a gradual ventricle dilation can be performed prior to placement of the stent .

Fourth Ventricular shunt placement is an alternative effective approach based on anatomical considerations