

Original Article (BRAIN)

Results of Endoscopic Septostomy in Isolated Lateral Ventricular Hydrocephalus

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ABSTRACT

Objective: To determine the success of endoscopic septostomy in the management of isolated lateral ventricular hydrocephalus.

Material and Methods: A retrospective analysis of data was done and records of all patients who underwent endoscopic septostomy for isolated lateral ventricular hydrocephalus due to any cause for the last 4 years, December 2017 to December 2021 at Punjab Institute of Neurosciences, Lahore. Radiological and clinical outcomes and complications were recorded. A total of 60 cases were reviewed.

Results: Out of 60 patients, 95% were in the age group of 3 – 25 years and 5% were in the age group of 26 – 71 years. There was 54% male whereas 46% were female. Septostomy was successful in relieving hydrocephalus in 75% of cases.

Conclusion: Endoscopic septostomy is an effective procedure for the management of isolated lateral ventricles.

Keywords: Septostomy, Hydrocephalus, Isolated Lateral Ventricles.

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INTRODUCTION

Victor Lespeinasse was the first one to use

endoscopy for the treatment of hydrocephalus, way back in 1910.¹ The techniques were further refined by Walter Dandy and William Mixer through the subsequent years.^{1,2} Since then, neuroendoscopy has improved leaps and bounds and has become one of the integral parts of modern neurosurgery. It has particularly advanced in the management of obstructive hydrocephalus.^{2,3,4} Obstructive hydrocephalus is the physical obstruction in the CSF pathway hindering its flow and causing ventriculomegaly which can be life-threatening. Isolated lateral ventricular hydrocephalus is a type of

hydrocephalus in which there is obstruction of the foramen of Monro that causes the lateral ventricle to enlarge as it becomes isolated from the ventricular system.^{5,6} Multiple terms have been described and used in literature to describe this form of hydrocephalus. There are multiple known causes of isolated lateral ventricular hydrocephalus such as meningitis, ventriculitis, tumors, intraventricular hemorrhage, etc.^{7,8,9,10} Management consists of either endoscopically creating a septostomy between the two lateral ventricles and establishing the CSF flow or placing a VP shunt which can be a lifelong commitment.¹¹ There have been very few studies explaining the outcome and results of endoscopic septostomy in the management of isolated lateral ventricles. Some of which report good results. Here we discuss our review of results of endoscopic third ventriculostomy in the management of isolated lateral ventricular hydrocephalus.

MATERIALS AND METHODS

Study Design

A retrospective study was conducted and reviewed cases of endoscopic septostomy for isolated lateral ventricular hydrocephalus. Preoperative and postoperative CT Scan brain plain were compared to assess relief of hydrocephalus, indicating success.

Study Setting

Done in Punjab Institute of Neurosciences, Lahore during the last five years from December 2017 to December 2021.

Data Collection

Hospital records were reviewed and patients meeting inclusion and exclusion criteria were selected.

Inclusion Criteria

All cases undergoing septostomy for isolated lateral ventricles with unilateral obstruction of the foramen of Monro.

Exclusion Criteria

Patients with bilateral foramen of Monro obstructions and a history of repeated intraventricular procedures were excluded.

RESULTS

60 patients according to inclusion and exclusion criteria were selected from records to determine the success of endoscopic septostomy in isolated lateral ventricular hydrocephalus.

Age Distribution

Age distribution data showed that out of 60 patients, 95% were in the age group of 3 – 25 years and 5 % were in the age group of 26 – 71 years (**Table 1**).

Table 1: Distribution of Age.

Age Group	Frequency	Percent
3 – 25 years	57	95
26 – 71 years	3	5
Total	60	100.0

Gender Distribution

Gender distribution of the patients was done, and it showed that out of 60 patients, 54% were male whereas 46% were female (**Table 2**).

Table 2: Distribution of Gender.

Gender	Frequency	Percent
Male	37	61.7
Female	23	38.3
Total	60	100.0

Success of Septostomy

The frequency of success of endoscopic septostomy was 75% as demonstrated by radiological data and clinical improvement in the patients (**Table 3**).

Table 3: Distribution of success (N = 60).

Success	Frequency	Percent
Yes	45	75
No	15	25
Total	60	100.0

Case Review

A 45 years old lady presented with headaches and visual deterioration for 6 months. CT brain showed asymmetrical dilatation of the right lateral ventricle. A septostomy was done and clinical improvement along with radiological improvement was noted postoperatively. Images are added for reference.

DISCUSSION

Several causes of isolated lateral ventricular hydrocephalus have been described in the literature which include hemorrhage, infections, tumors, and atresia of the foramen of Monro.^{7,8,9,10}

Isolated ventricles have also been described after VP shunts due to over shunting and occlusion of the foramen of Monro.¹² Management consists of either endoscopic septostomy, foraminoplasty, or bilateral VP shunt placement. Bilateral shunt placement is more invasive and may be complicated by infections and repeat shunt blockages. Endoscopic septostomy restores the CSF flow without the placement of external hardware. In our study, septostomy was performed via the standard technique, 1 cm anterior to the coronal suture, and 5 – 6 cm from the midline on the side of enlargement.

In our series majority of the patients (95%) were between 3 to 25 years of age. 54% were males and 46% were females. In our series 45 out of 60 septostomies were successful in relieving



Figure 1(a): Preoperative scan. (image used with attendant's permission)

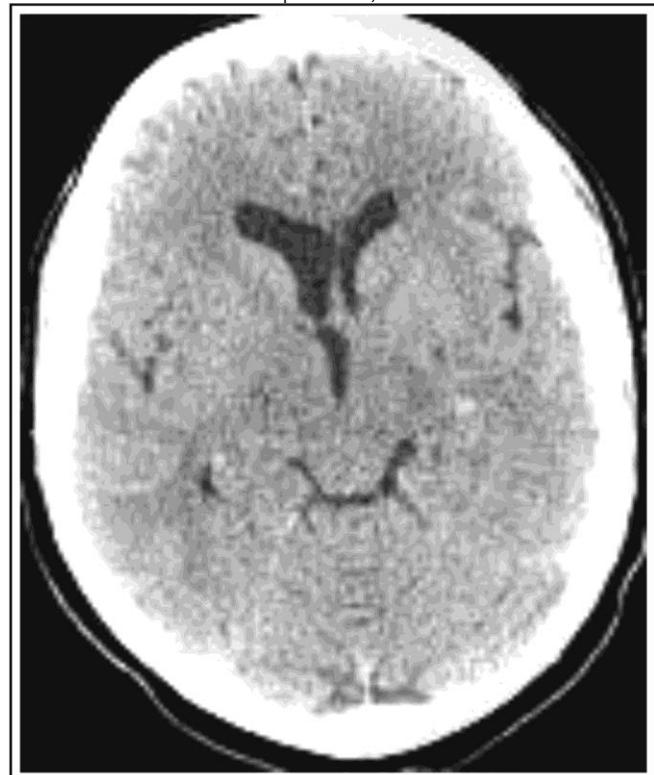


Figure 1(b): Post operative scan. (image used with attendant's permission)

the hydrocephalus while 15 patients required further repeat septostomies and or additional shunt placement due to unsuccessful procedure. Our success rate was 75%. One study reported an initial success rate of 53% which improved after repeat septostomies to 81%.¹³ Another study reported good results in upto 90% of cases.⁶

CONCLUSION

We conclude that following standard techniques and protocols, neuroendoscopic septostomy is a very effective and less invasive technique in the management of isolated lateral ventricular hydrocephalus and should be routinely employed in its management.

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Additional Information

Disclosures: Authors report no conflict of interest.

Ethical Review Board Approval: This was a retrospective study, however it also conformed to the ethical requirements.

Human Subjects: Consent was obtained by all patients/participants in this study for scans.

Conflicts of Interest:

In compliance with the ICMJE uniform disclosure form, all authors declare the following:

Financial Relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work.

Other Relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

AUTHORS CONTRIBUTION

Sr#	Author's Full Name	Contribution to Paper
1.	Muhammad Hassan Raza	Study design, methodology, paper writing.
2.	Iqbal Ahmad	Referencing, and data collection.
3.	Adnan Khaliq	Analysis and interpretation of results.
4.	Zain Saleh	Literature review, and analysis.