

# Surgical Outcome of Endoscopic Cysto-Cisternostomy for Arachnoid Cyst.

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## ABSTRACT

**Background:** Arachnoid cysts are present in 1% of the populace and generally found in the temporal, frontal, pineal and posterior fossa, frontotemporal fossa. Clinical and radiologic introductions can vary incredibly. In spite of serious research, it is as yet easily proven wrong which patients will profit by medical procedure. Objective: This study intends to research the pre-treatment parameters impacting the result after neuro-endoscopic treatment of arachnoid cysts. **Methods:** A review investigation of 14 patients who experienced an endoscopic fenestration of arachnoid cysts between 2012 to 2017. **Results:** In symptomatic patients, 85.71 percent of cases have improved clinically. The best results in treating symptoms related to intracranial hypertension, acute neurological defects and macrocrania and seizure were found. **Conclusion:** The clinical outcome and complication rate vary by technique and symptomatology, although the outcome after the endoscopic cysto cisternostomy is satisfactory.

**Keywords:** Arachnoid cyst, Endoscopy, Cysto-Cisternostomy.

## INTRODUCTION

Arachnoid cysts (TAC) were first described as serious cysts inside the arachnoid membrane' in 1831.<sup>[1]</sup> They account for about 1 percent of all intracranial masses and an estimated prevalence of 1 percent.<sup>[2,3]</sup> Arachnoid cysts can be primary or secondary. Primary arachnoid cysts are congenital (present at birth), resulting from abnormal development of the brain and spinal cord during early pregnancy. Secondary arachnoid cysts are less common, and result from head injuries, meningitis, tumors, or as a complication of brain surgery. Signs and symptoms depend on the location and size of the cyst and may include headache, nausea and vomiting, seizures, hearing and visual disturbances, vertigo, and difficulties with balance and walking. Primary (congenital) arachnoid cysts are benign accumulation of clear fluid between the dura and the brain substance throughout the cerebrospinal axis in relation to the arachnoid membrane and do not communicate with the subarachnoid space.<sup>[4,5]</sup>

Due to computed tomography and magnetic resonance imaging numbers have increased with previous diagnosis in recent years.<sup>[6]</sup> The majority of these incidental findings are small asymptomatic cysts. Arachnoid cysts are generally equally

distributed between men and women and between the left and the right. However, medium cranial fossa and cerebellopontine angle arachnoid cysts are an exception with a left to right ratio of 2.5 and a male predominance for temporary arachnoid cysts. Costa Rica et al. Classified TAC in three categories according to volume and characteristics. There is no significant correlation between this classification and symptomatology.<sup>[7,8]</sup> A few decades ago, brain agenesis was thought to cause cyst appearance. It is now thought that primary or congenital arachnoid cysts are caused by the splitting of the arachnoid membrane and the progressive accumulation of spinal fluid (CSF).<sup>[9-13]</sup>

Other theories suggest a post- partum trauma causing an arachnoid membrane split, an embryonic mesenchymal condensation disorder or a deviant CSF flow. Secondary arachnoid cysts are caused by trauma, inflammation, surgery, infection or a metabolic disorder. In contrast to non- acquired cysts their membranes consist of fibrotic tissue and they can contain hemosiderin or inflammatory cells. Arachnoid cysts remain generally stable, but spontaneous involvement, disappearance and growth have been shown. Although considered benign lesions, secondary problems can occur in some cases either spontaneously or due to trauma, such as subdural hematoma, subdural hygroma or intracystic bleeding. Intra-cystic hemorrhages and subdural hematomas occur mainly in TAC and ipsilateral. The most common symptoms of TAC are

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headache and epilepsy. Chronic headaches in 23.4 to 70 percent of all symptomatic cysts are reported. Increased intracranial pressure may be the pathophysiological pathway involved.

**MATERIALS AND METHODS**

A retrospective analysis was conducted of all patients who underwent an endoscopic temporal arachnoid cyst fenestration between, 2012 to 2017 at a private hospital, Dhaka. All patients were symptomatic prior to surgery. Multiple symptoms could be present in one person. All patients underwent preoperative MRI scans, irrespective of previous images. According to the Galassi classification, the temporal arachnoid cysts were divided into three categories: Type I, small biconvex-shaped cysts limited to the anterior middle cranial fossa; Type II, medium - sized cysts with an

extension along the Sylvian fissure; Type III, large cysts extending toward and compressing the ipsilateral hemisphere. An endoscopic procedure was the first treatment of choice for all patients with a temporary cerebral cistern arachnoid cyst. A first postoperative MRI scan was performed six to eight weeks after surgery.

**RESULTS**

In symptomatic patients, 85.71 percent of cases have improved clinically. The best results in treating symptoms related to intracranial hypertension, acute neurological defects and macrocrania were found. There was no mortality in this procedure. From this above table its easily measurable that arachnoid cyst frequently developed in male (71.4%) rather than female.

**Table 1: Gender Distribution**

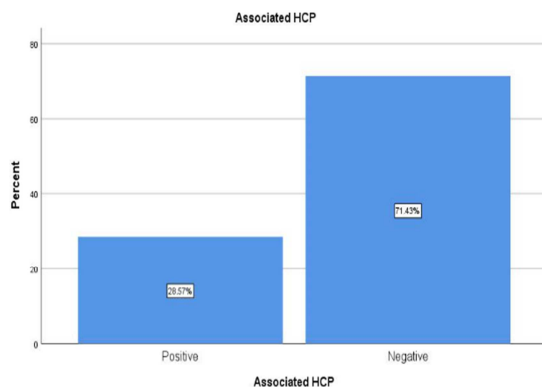
|       |        | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|--------|-----------|---------|---------------|--------------------|
| Valid | Male   | 10        | 71.4    | 71.4          | 71.4               |
|       | Female | 4         | 28.6    | 28.6          | 100.0              |
|       | Total  | 14        | 100.0   | 100.0         |                    |

**Table 2: Location of the Cyst**

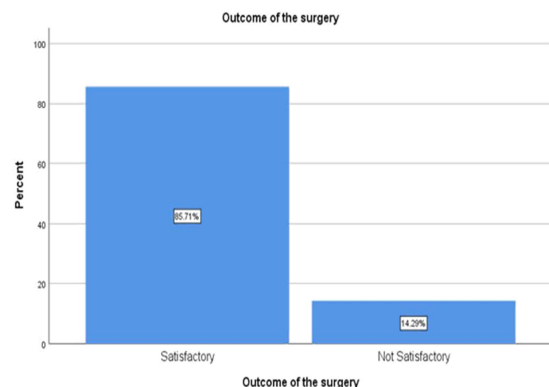
|       |                | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------------|-----------|---------|---------------|--------------------|
| Valid | Temporal       | 9         | 64.3    | 64.3          | 64.3               |
|       | Frontal        | 1         | 7.1     | 7.1           | 71.4               |
|       | Pineal         | 1         | 7.1     | 7.1           | 78.6               |
|       | Post Fossa     | 2         | 14.3    | 14.3          | 92.9               |
|       | Frontotemporal | 1         | 7.1     | 7.1           | 100.0              |
|       | Total          | 14        | 100.0   | 100.0         |                    |

**Table 3: Focal Neuro Deficiet**

|       |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Positive | 4         | 28.6    | 28.6          | 28.6               |
|       | Negative | 10        | 71.4    | 71.4          | 100.0              |
|       | Total    | 14        | 100.0   | 100.0         |                    |



**Figure 1: Associated HCP**



**Figure 2: Outcome of the surgery**

**Table 4: Headache**

|       |          | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|----------|-----------|---------|---------------|--------------------|
| Valid | Positive | 7         | 50.0    | 50.0          | 50.0               |
|       | Negative | 7         | 50.0    | 50.0          | 100.0              |
| Total |          | 14        | 100.0   | 100.0         |                    |

| d |          |    |       |       |
|---|----------|----|-------|-------|
|   | Negative | 7  | 50.0  | 50.0  |
|   | Total    | 14 | 100.0 | 100.0 |

At the temporal lobe of the brain most frequently display arachnoid cyst.

Before surgery only 4 patients had neuro deficit and rather than rest of the did not have any neuro deficit and all the patients improved significantly after surgery

Headache is common before surgery (50%) which was subsided after surgery



Figure 3: Arachnoid cyst in right temporal lobe

## DISCUSSION

In contrast to other location of arachnoid cysts, temporal occur more frequent in among the patients. Arachnoid cysts occurs 64.3% patients (9 out 14) at the temporal parts of the skull. After surgery 85.71% patients improve significantly. These studies were comparatively better than other recent studies. Though headache was frequent in patients (50% patients) but 71.4% patients did not have any neurological deficit.

## CONCLUSION

Three different surgical techniques for treating symptomatic patients have been developed: craniotomy and microsurgical cyst fenestration, endoscopic cyst fenestration and peritoneal cyst shunting. The clinical outcome and complication rate vary by technique and symptomatology, although the outcome after the endoscopic cysto cisternostomy is satisfactory.

## REFERENCES

1. Bright R. Serous cysts in the arachnoid. Diseases of the brain and nervous system part I. Eds: Rees et al, Longman Group, London, 1831:437-439

2. Eskandary H, Sabba M, Khajehpour F, Eskandari M. Incidental findings in brain computed tomography scans of 3000 head trauma patients. *Surg Neurol* 63:550-553, 2005.
3. Fewel ME, Levy ML, McComb JG. Surgical treatment of 95 children with 102 intracranial arachnoid cysts. *Pediatr Neurosurg* 25:165-173, 1996
4. Khan AN. Arachnoid Cyst Imaging. Medscape Reference. January 5, 2016; <https://emedicine.medscape.com/article/336489-overview>.
5. Zafeiriou DI & Batzios SP. Brain and Spinal MR Imaging Findings in Mucopolysaccharidoses: A Review. *American Journal of Neuroradiology*. January 2013; 34(1):5-13. <http://www.ajnr.org/content/34/1/5>.
6. Galassi E, Tognetti F, Gaist G, Fagioli L, Frank F, Frank G. CT scan and metrizamide CT cisternography in arachnoid cysts of the middle cranial fossa: classification and pathophysiological aspects. *Surg Neurol* 17:363-369, 1982
7. Robinson RG. Congenital cysts of the brain: arachnoid malformations. *Prog Neurol Surg* 1971;4:133-74.
8. Greenfield JP, Souweidane MM. Endoscopic management of intracranial cysts. *Neurosurg Focus* 19: E7, 2005
9. Cassandra L. Kniffin. Arachnoid Cysts, Intracranial. Online Mendelian Inheritance in Man (OMIM). December, 2007; <http://omim.org/entry/207790>.
10. Diakoumakis EE, Weinberg B, Mollin J. Prenatal sonographic diagnosis of a suprasellar arachnoid cyst. *J Ultrasound Med* 1986;5:529-30.
11. Kang JK, Lee KS, Lee IW, et al. Shunt-independent surgical treatment of middle cranial fossa arachnoid cysts in children. *Childs Nerv Syst* 16:111-116, 2000
12. Kusaka Y, Luedemann W, Oi S, Shwardfegar R, Samii M. Fetal arachnoid cyst of the quadrigeminal cistern in MRI and ultrasound. *Childs Nerv Syst* 2005;21:1065-6
13. Chen CP, Su YN, Weng SL, Tsai FJ, Chen CY, Liu YP, Chern SR, Chen WL, Wu PC, & Wang W.. Rapid aneuploidy diagnosis of trisomy 18 by array comparative genomic hybridization using uncultured amniocytes in a pregnancy with fetal arachnoid cyst detected in late second trimester. *Taiwan J Obstet Gynecol*. September 2012; 51(3):481-484. <http://www.ncbi.nlm.nih.gov/pubmed/23040946>.

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