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# Arachnoid Cyst

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**Abstract: -**

**With the greater worldwide availability of neuroimaging, more arachnoid cysts are being found in all age groups. A subset of these lesions become symptomatic and requires neurosurgical management. The clinical presentations of arachnoid cyst vary from asymptomatic to extremely symptomatic.[1]**

**Arachnoid cysts are non-neoplastic, intracranial cerebrospinal fluid (CSF)-filled spaces lined with arachnoid membranes. Large arachnoid cysts are often symptomatic because they compress surrounding structures; therefore, they must be treated surgically. As several surgical management options exist, we explore the best approach according to each major type of arachnoid cyst: middle cranial fossa cyst, suprasellar cyst, intrahemispheric cyst, and quadrigeminal cyst. [2]**

**Arachnoid cysts are benign space-occupying brain lesions that contain cerebrospinal fluid. Most cases are congenital in origin, caused by failed fusion of the arachnoid membrane early in fetal development. Cases are often incidentally detected on neuroimaging; however, rarely patients present with neuropsychiatric manifestations when cysts expand and cause a midline shift, compression of nearby brain tissue or cerebrospinal fluid compartments or both. [3]**

**Keywords: Arachnoid cyst, neuroimaging, neurosurgery.**

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## 1. Introduction: -

**Arachnoid cysts** are relatively common benign and asymptomatic lesions occurring in association with the central nervous system, both within the intracranial compartment (most common) as well as within the spinal canal. They are often congenital, or present at birth (primary arachnoid cysts). Head injury or trauma can also result in a secondary arachnoid cyst. The cysts are fluid-filled sacs, not tumors.[4]

The likely cause is a split of the arachnoid membrane, one of the three layers of tissue that surround and protect the brain and spinal cord. They are usually located within the subarachnoid space and contain CSF. [5]

Most are developmental anomalies. A small number of arachnoid cysts are acquired, such as those occurring in association with neoplasms or those resulting from adhesions occurring in association with leptomeningitis, hemorrhage, or surgery. [6]

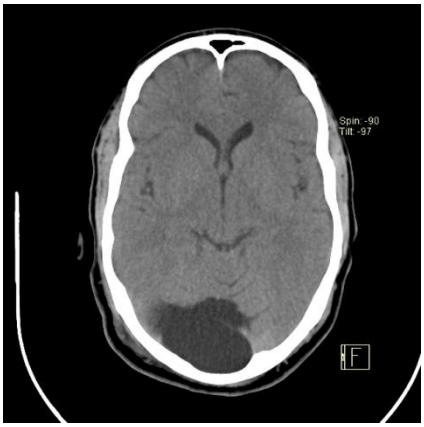


**Figure 1 – Retrocerebellar arachnoid cyst**

## 2. Discussion: -

The increasing use of intracranial imaging has led to more frequent diagnosis of arachnoid cysts. Arachnoid cysts can be classified as: -

1. Primary developmental cysts
2. Secondary cysts

Primary cysts arise from the splitting of the arachnoid membranes in utero, resulting in the development of anomalous collections of cerebrospinal fluid (CSF). Secondary cysts are less common, often appearing after trauma, surgery, infection, or intracranial hemorrhage. [7]

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The signs and symptoms of arachnoid cysts vary according to their size and location. Small cysts are usually symptomatic, requiring observation and follow up. However, larger cysts can have a mass effect on neurovascular structures, leading to neurological symptoms.[8] Headaches are the most common symptom. Other symptoms include dizziness, nausea, vomiting, worsening of mood, mental status changes, ataxia, seizures, and hearing loss. [9]

The exact cause of arachnoid cysts is not known. In some cases, arachnoid cysts occurring in the middle fossa are accompanied by underdevelopment (hypoplasia) or compression of the temporal lobe. Some complications of arachnoid cysts can occur when a cyst is damaged because of minor head trauma. Trauma can cause the fluid within a cyst to leak into other areas (e.g., subarachnoid space). Arachnoid cysts can also occur secondary to other disorders such as Marfan's syndrome, arachnoiditis, or agenesis of the corpus callosum.[10]

The majority of arachnoid cysts are small and asymptomatic. Approximately 5% of patients experience symptoms and when symptoms occur, they are usually the result of gradual enlargement resulting in mass effect. [11]

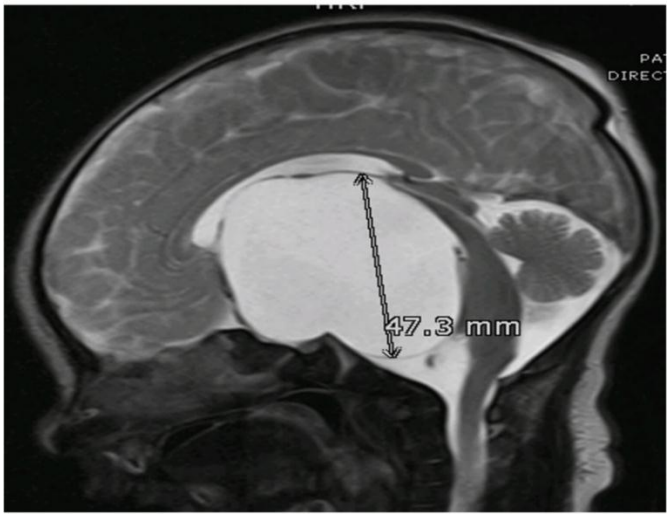


**Figure 2.** MRI T2WI, Sagittal Section (fig 2)

MRI T2WI, Sagittal Section (fig 2) A large extra-axial, well-defined CSF intensity cystic lesion is identified in the midline in the sellar and suprasellar region. It measures 48 x 62 x 47 mm in AP transverse and cranio-caudal dimension. This lesion is causing a compressive effect on the third ventricle and bilateral lateral ventricles. These findings are consistent with arachnoid cyst.

MRI T2WI: magnetic resonance imaging T2 weighted image; CSF: cerebrospinal fluid.[12]

Arachnoid cysts are benign, and the vast majority remain asymptomatic throughout life. If they are deemed to be causing symptoms, then surgery can be contemplated. This can either take the form of a craniotomy (fenestration or excision) or placement of a cystoperitoneal shunt.

A rare complication is spontaneous rupture in the subdural space.[13]

## 3. Conclusion: -

Arachnoid cysts are frequently discovered incidentally on neurocranial imaging. Most arachnoid cysts are asymptomatic. The natural history of arachnoid cysts in adult patients selected for non-surgical treatment is generally benign.[14]

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