

**Intraventriküler Basit Kistin Endoskopik Fenestrasyonu**  
**Endoscopic Fenestration of an Intraventricular Simple Cyst**

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**Özet**

Sıklıkla intraventriküler araknoid kistler olarak adlandırılan intraventriküler basit kistler, nadir ve genellikle asemptomatiklerdir. Kist semptomatik hale gelince cerrahi müdahale gerektirir. Bu kistler geleneksel açık cerrahi, şant prosedürleri, endoskopik cerrahiler veya bunların kombinasyonları ile tedavi edilebilirler. Biz kliniğinde dirençli baş ağrısı bulunan bir hastayı takdim ettik. Hastanın manyetik rezonans görüntüleri, ventriküler kavitede genişlemeye yol açan sol lateral ventrikül trigonunda kisti gösterdi. Hastaya endoskopik cerrahi girişimi uyguladık. Giriş için temporal burr hole kullandık. Bu şekilde ventriküler ve kistik anatomiye belirleyebilmek için yeterli endoskopik görüntü elde ettik. Kistin ventriküler kaviteye fenestrasyonunun olabildiğince geniş olmasını sağladık. Daha sonra endoskopu kist kavitesi içinde ilerleterek kontur-lateral kist duvarını tespit ettik. Kontur-lateral kist duvarını da fenestre ettik. Hastanın şikayeti işlem sonrası kayboldu. Intraventriküler basit kistlerin tedavisi için endoskopik cerrahi minimal invaziv oluşu ve daha az komplikasyon riski taşıyor oluşu avantajlarıyla çok etkili bir yöntemdir.

**Anahtar Kelimeler:** İntraventriküler, kist, tedavi, endoskopik fenestrasyon

## Abstract

Intraventricular simple cysts, frequently referred to as intraventricular arachnoid cysts, are rare and usually asymptomatic. Surgical intervention must be performed when a cyst becomes symptomatic. These cysts can be treated by traditional open surgeries, shunting procedures, endoscopic surgeries or combinations of these surgeries. We report a case presented with resistant headache. Her magnetic resonance imaging showed intraventricular cyst in the trigone of left lateral ventricle resulting in expansion of the ventricular cavity. We performed endoscopic procedure. We used temporal burr hole to introduce into ventricular cavity and got sufficient endoscopic view to identify normal anatomy of ventricle and cyst. We performed fenestration of the cyst into the ventricular cavity as widely as possible. Then the endoscope was introduced into the cyst cavity to find the contralateral cyst wall. Contralateral cyst wall inside the cyst cavity was also fenestrated. The patient recovered well. Endoscopic procedure is very effective with the advantage of minimal invasiveness and less complications for the treatment of intraventricular simple cysts.

**Key Words:** Intraventricular, cyst, treatment, endoscopic fenestration

## Introduction

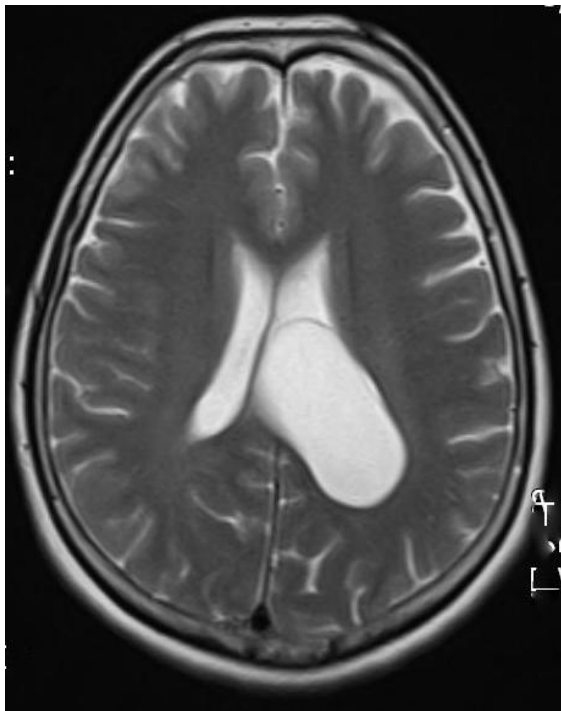
Intraventricular simple cysts are rare and usually asymptomatic. It is important to realise that the term intraventricular arachnoid cyst is used as a blanket term for a number of cysts which share identical imaging and operative features but are histologically distinct. Some are indeed a type of arachnoid

cyst whereas others are lined other tissue and are in fact ependymal cysts, neuroepithelial cysts or very large choroid plexus cysts (1,2). Intraventricular simple cysts have appearances similar to arachnoid cysts elsewhere except for their location. They follow cerebrospinal fluid (CSF) on all modalities and sequences and have a very thin or imperceptible wall. They are most frequently encountered in the trigone of the lateral ventricles (3). When a cyst becomes symptomatic, the patient may have clinical symptoms of raised intracranial pressure. Then a surgical intervention must be performed. Traditional open surgeries, shunting procedures, endoscopic surgeries and combinations of these surgeries are the surgical procedures of this condition (4,5). In this report we presented a patient with intraventricular simple cyst treated by endoscopic fenestration. The patient became symptom free in a short hospitalization period.

## Case Presentation

A 43 year-old woman presented with resistant headache. Her magnetic resonance imaging (MRI) showed intraventricular simple cyst in the trigone of left lateral ventricle resulting in expansion of the ventricular cavity. The axial MRI showed thin cystic capsule (figure 1). She underwent surgery for the intraventricular cyst. The endoscopic procedure was performed in the case under general anesthesia using a 0° rigid endoscope and a 30° rigid endoscope (Nova 300; Carl-Storz, Germany). The endoscope was introduced into ventricular cavity through temporal burr hole. After identification of normal ventricular anatomy and the cyst (figure 2), we

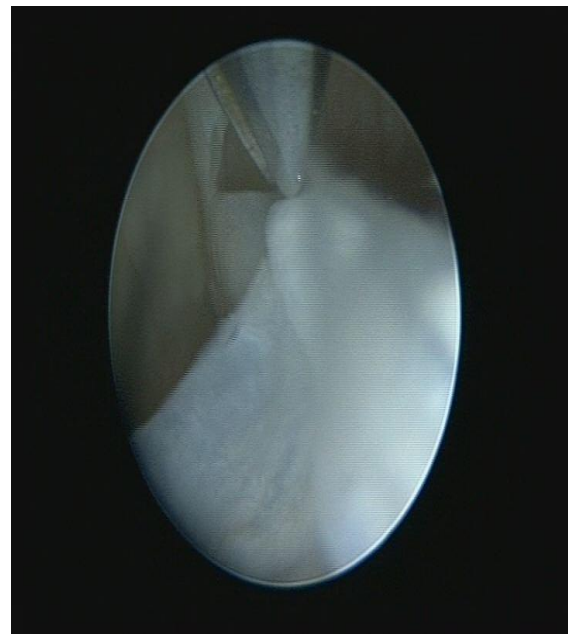
performed fenestration of the cyst into the ventricular cavity as widely as possible (figure 3, 4). The endoscope was introduced into the cyst cavity to inspect the contralateral cyst wall (figure 5). This was fenestrated to make the cyst communicate with the ventricular cavity in all directions (figure 6). The patient was examined by computerized tomography (CT) scan 1–7 days after the operation before discharge and 1 month after discharge (figure 7). Although decreased dilatation of temporal horn remained unchanged during follow-up in the case, a cerebrospinal fluid (CSF) diversionary procedure was not performed because the patient was symptom-free and there was no evidence of a radiological recurrence of cyst.



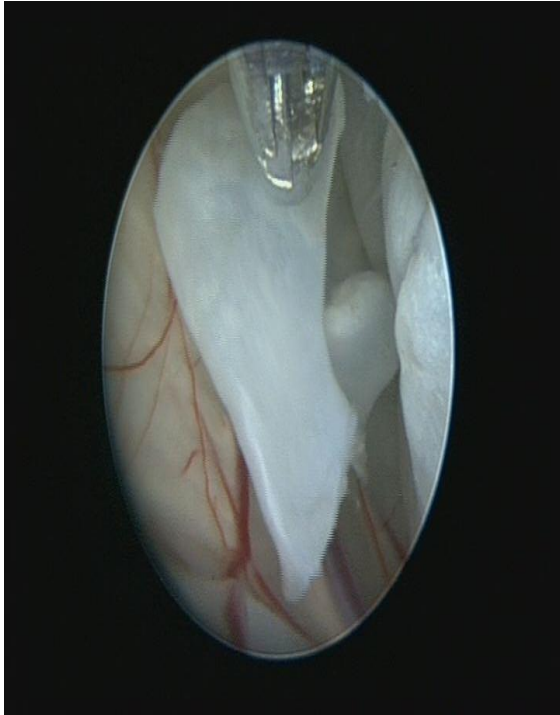
**Figure 1:** Magnetic resonance imaging (MRI) showed intraventricular simple cyst with its thin capsule in the trigone of left lateral ventricle resulting in expansion of the ventricular cavity.



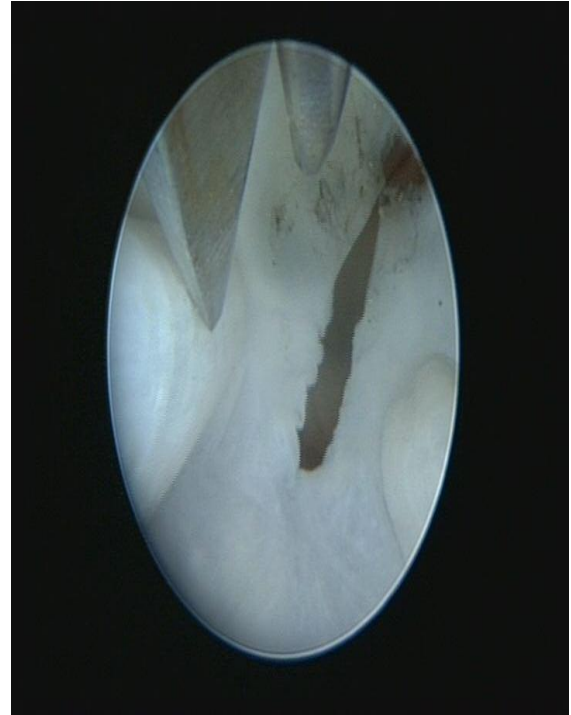
**Figure 2:** Endoscopic view showed cystic capsule inside the ventricular cavity.



**Figure 3:** Endoscopic view showed fenestration of the cyst into the ventricular cavity.



**Figure 4:** Endoscopic view showed partial excision of the cyst wall.



**Figure 6:** Endoscopic view showed fenestration of the contralateral cyst wall.



**Figure 5:** Endoscopic view showed contralateral cyst wall inside the cystic cavity.



**Figure 7:** Computerized tomography showed no recurrence of cyst formation 1 month after the operation.

## Discussion

Symptomatic intraventricular simple cysts are very rare. The natural history of these cerebrospinal fluid-containing cysts is not clearly defined yet. While most of these cysts are small and show no progression, a minority may enlarge and even exert expansive and/or obstructive effects (6). In our case the cyst had an expansive effect located in the trigone of left lateral ventricle.

When a cyst becomes symptomatic, the patient may present with headache, signs and symptoms of obstructive hydrocephalus, focal neurologic findings or seizures (7). Our patient had a resistant headache due to raised intracranial pressure. MRI is the best method for the diagnosis of these intraventricular simple cysts. MRI can show the relationship between the cyst and the ventricular structures (3). In our case, the cyst wall could be visualized on MRI.

There is a need for surgical intervention in symptomatic patients. The treatment choices for intraventricular simple cysts are conventional open surgery, cystoperitoneal shunting, endoscopic surgery and combination of these surgeries (4,5). All types of treatment have their advantages and limitations. Due to the small number of cases reported in the literature and the lack of randomized prospective trials, there is continuing controversy regarding the best surgical treatment. Shunt procedures have disadvantages of malfunction. Especially shunt catheter may be obstructed by cyst wall when the cyst collapsed. Conventional open surgery can achieve total or at least partial removal of the intraventricular cysts in most of the reported cases and has well-

proven long-term good results with a relative safety. However, the potential morbidity associated with a craniotomy and retraction of cerebral tissue cannot be eliminated. Many reports in the literature recommend endoscopic fenestration of intraventricular cyst as a priority (8-10). Other surgical methods can be performed when the endoscopic surgery failed. We also performed endoscopic fenestration and the patient recovered well in short hospitalization period. According to our surgery, temporal burr hole is the best entry zone for the cysts of trigone to identify normal anatomy. To avoid recurrence, fenestration of the cyst into the ventricular cavity must be as widely as possible. We performed partial cyst wall excision. And it is important to fenestrate contralateral cyst wall to make cyst communicated ventricular cavity in all directions. So we recommend this method as a priority because it is very effective with the advantage of minimal invasiveness and less complications.

Written informed consent was obtained from the patient who participated in this study.

## References

1. Nakase H, Hisanaga M, Hashimoto S, Imanishi M, Utsumi S. Intraventricular arachnoid cyst. Report of two cases. *J Neurosurg.* 1988;68(3):482–6.
2. Okamura K, Watanabe M, Inoue N, Kanoh M, Ohno T, Mitsui Y, Wakabayashi K. Intraventricular arachnoid cyst--on the origin of intraventricular arachnoid cysts. *No To Shinkei.* 1996;48(11):1015-21.
3. MacArthur DC, Robertson IJ, Punt JA. Third ventricular cysts and

- membranes unsuspected on conventional CT and MRI. *Br J Neurosurg.* 2000;14(5):455-7.
4. Koga H, Mukawa J, Miyagi K, Kinjo T, Okuyama K. Symptomatic intraventricular arachnoid cyst in an elderly man. *Acta Neurochir (Wien).* 1995;137(1-2):113-7.
  5. Pawar SJ, Sharma RR, Mahapatra AK. Giant ependymal cyst of the temporal horn – an unusual presentation: case report with review of the literature. *Pediatric Neurosurg.* 2001;34(6):306-10.
  6. Friede RL, Yasargil MG. Supratentorial intracerebral epithelial (ependymal) cysts: review, case reports, and fine structures. *J Neurol Neurosurg Psychiatry.* 1977; 40(2):127-37.
  7. Trummer M, Tillich M, Kleinert R. Ependymal cyst occluding the foramen Magendie. *Acta Neurochir (Wien).* 2000;142(5):601-2.
  8. Martinez-Large JF, Poza M, Sola J, Puche A. Congenital arachnoid cyst of the lateral ventricles in children. *Childs Nerv Syst.* 1992;8(4): 203-6.
  9. Pelletier J, Milandre L, Péragnet JC, Cronqvist S. Intraventricular choroid plexus “arachnoid” cyst: MR findings. *Neuroradiology.* 1990;32(6):523-5.
  10. Powers SK. Fenestration of intraventricular cysts using a flexible, steerable endoscope and the argon laser. *Neurosurgery.* 1986;18(5):637-41.

