



(CASE REPORT)



FRONTO-TEMPORO-ORBITOZYGOMATIC APPROACH: A CASE REPORT

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ABSTRACT

Hydatid disease is very common in Morocco and around the Mediterranean. Cerebral involvement is rare, representing only about 2% of all hydatid disease cases in the body, and primarily affects children and adolescents. The clinical signs are those of an intracranial process; CT scans are often sufficient for diagnosis, and surgery remains the treatment of choice. Antiparasitic medication with albendazole is recommended to prevent recurrence. The prognosis is uncertain due to the risk of local recurrence. This post presents the case of a 16-year-old patient with cerebral hydatid disease, treated surgically via a fronto-orbito-zygomatic approach, with clinical remission and good radiological control.

Keywords: Hydatid Cyst, Echinococcus granulosus, Orbital Cyst, Fronto-orbito-zygomatic approach.

1 INTRODUCTION

Cerebral hydatid disease is an infectious pathology caused by the parasite *Echinococcus granulosus*. While it most frequently affects the liver and lungs, it represents a public health issue, particularly in endemic regions such as Morocco. Although generally considered benign—due to its rarity and localized growth—the condition carries a high potential for dissemination, which can lead to significant rates of recurrence and morbidity. Surgery is the primary treatment; this report describes the case of a 16-year-old patient with cerebral hydatid disease, who underwent surgical intervention via a fronto-orbito-zygomatic approach, resulting in clinical remission and favorable radiological outcomes.

1.1 Objective

The aim of this article is to present the experience of the neurosurgery department at the Rabat Specialized Hospital regarding the surgical technique of the frontotemporal-orbito-zygomatic approach. It illustrates the different operative steps through a case treated at our institution: a 16-year-old boy with cerebral hydatidosis, a history of intraorbital hydatid cyst, who presented with progressive deterioration of vision in his right eye, accompanied by exophthalmos and headaches. He had undergone surgery 13 years prior for a right intraorbital cyst and was treated with albendazole for an unspecified period with good clinical and radiological progress. A recent follow-up MRI revealed the presence of

an intra-axial cystic mass extending from the right temporal lobe to the eyeball via the superior orbital fissure, consistent with a hydatid cyst. Despite a rupture, the cyst was completely removed in the patient by approaching it via a fronto-orbito-zygomatic approach.

1.2 Clinical Presentation

A 16-year-old patient presented with exophthalmos. He had undergone surgery at the age of three for an intraorbital hydatid cyst and was prescribed albendazole for an indefinite period after the operation. He recently presented with progressive vision loss in his right eye, accompanied by exophthalmos and headaches. Physical examination revealed evident exophthalmos in the right eye, with no bruit on auscultation. His visual acuity was 4/10 in the right eye and 10/10 in the left. Fundus examination revealed grade 2 papilledema in the right eye, while the left eye was normal. All laboratory tests were normal, with thyroid hormone levels within the normal range.

The patient underwent brain and orbital MRI. This imaging revealed a well-defined, lobed cystic lesion in the right temporal lobe, extending through the orbital fissure and containing multiple small cysts.

An extended frontotemporal-orbitozygomatic approach was used to access the temporal and intraorbital lesion.

The postoperative course was uneventful, and the patient was discharged on the fifth postoperative day with a prescription for albendazole for six months. The patient was seen for an outpatient follow-up one month later; his exophthalmos had completely resolved.

1.3 Description of the surgical approach

We approached the patient via the frontotemporal-orbito-zygomatic route, opening the lateral orbital wall and the temporal fossa. After opening the dura mater, the temporal lobe appeared flat and relaxed.

We performed a 50 mm corticectomy of the temporal lobe, corresponding to three-quarters of the cyst's largest diameter. We progressively removed the gliotic parenchyma overlying the cyst using bipolar forceps.

The cyst was delivered using the Dowling hydrodissection technique from the temporal lesion.

We followed the cyst wall to reach the intraorbital portion.

As we progressed, the space became increasingly narrow, and it was difficult to control the distal portion of the cyst. The cyst wall, which had become irregular, ruptured at the end of the procedure, allowing the contents to spill out.

We immediately rinsed the surgical site with 3% hydrogen peroxide, then with isotonic saline, and proceeded with excision of the cyst wall.

Histological examination revealed a hydatid cyst.



Figure1: Fronto-temporo-orbito-zygomatic approach (FTOZ), following opening of the lateral orbital wall and the temporal fossa.

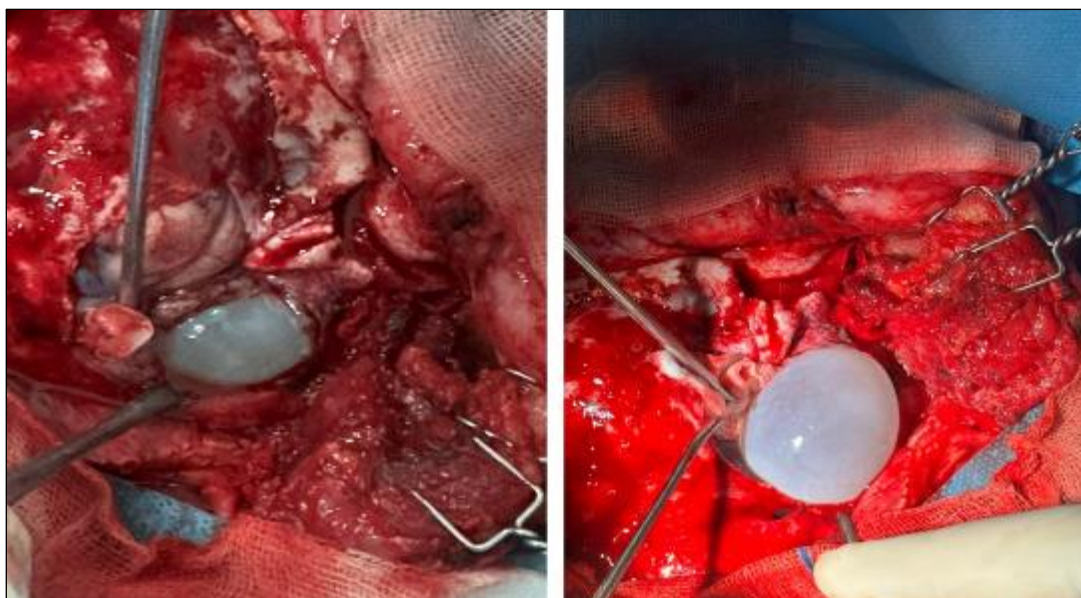


Figure 2: Delivery of the cyst using Dowling's hydrodissection technique, starting from the temporal lesion.

2 DISCUSSION

The management of cerebral hydatid cysts relies on surgical excision. The goal is to remove the intact cyst without leaking its contents. Numerous techniques have been described, as the Dowling technique is mainly used for localizing cysts in the central nervous system. The traditional approach is the Dowling technique with hydrodissection, which allows for safe dissection without further damaging the surrounding parenchyma [1,2]. We performed an extended fronto-orbito-zygomatic approach because we needed to access both the temporal and orbital lesions.

The frontotemporal-orbitozygomatic (FTOZ) approach is an extension of the standard pterional (AP) approach and allows for broad exposure of the orbit and the anterior, middle, and posterior cranial fossae. Similar to the pterional approach, the superficial layers of the frontotemporal region are carefully dissected to preserve the temporal branches of the facial nerve (TBFN) and mobilize the temporalis muscle. However, the FTOZ approach involves dissecting the periorbita to elevate the zygoma, orbital roof, and superior and lateral orbital walls as a second bone flap. Removing this orbito-zygomatic bone fragment ensures maximum exposure of the intradural structures while improving aesthetic outcomes and eliminating the need for additional bone reconstruction around the orbit. In particular, the FTOZ approach has provided a larger working area and angle of exposure than the pterional approach [3,4,5].

The FTOZ approach facilitates access to the anterior communicating arterial complex through wide working angles. The technique involves creating multiple burr holes: one at MacCarty's keyhole and another above the zygomatic arch in the temporal squamous bone. Six bone incisions are made: the first from the temporal burr hole toward the supraorbital foramen; the second connecting the temporal burr hole to MacCarty's; the third from MacCarty's to the inferior orbital fissure; the fourth through the lateral orbital wall; the fifth extends into the orbital cavity; and the sixth connects back to MacCarty's along the orbital roof [6,7].

3 CONCLUSION

The FTOZ approach is one of the most effective techniques in neurosurgery which offers wide exposure and better exclusion of the temporal hydatid cyst, allowing wide access to the cavernous sinus and the anterior, middle and posterior cranial fossae of the skull base.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent and verbal permission were obtained from the patient before the submission of this article. In addition, this article follows both the Consensus-based Clinical Case Reporting Guideline and the Recommendations for the Conducting, Reporting, Editing, and Publication of Scholarly Work in Medical Journals.

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