

ORBITAL HYDATID CYST SECONDARY TO TRAUMATIC MANDIBULAR
INVOLVEMENT: RAPID PROGRESSION AND SURGICAL MANAGEMENT

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ABSTRACT

Background: Hydatid disease is a zoonotic infection caused by the larval stage of *Echinococcus granulosus*. The liver and lungs are common locations, but involvement of craniofacial bones or orbit is a rare presentation. In endemic regions, post-traumatic swellings may mask an underlying hydatid disease. **Case Presentation:** A 17-year-old shepherd initially presented to the maxillofacial department with right mandibular condyle swelling and proptosis after trauma. Incisional biopsy resulted in a hydatid cyst, but patient's father refused definitive treatment. Approximately one year later, the patient presented to the oculoplastic clinic with severe proptosis, diplopia, and progressive visual loss. Imaging demonstrated a multiloculated cyst extending from the mandibular fossa into the orbit and compressing the optic nerve. Urgent anterior orbitotomy was performed to remove the lesion and decompress the optic nerve. **Conclusion:** Hydatid disease can present in unexpected parts of the head and face. In our experience, Early removal of the cyst, careful irrigation with scolicidal agents during surgery and a course of antiparasitic therapy led to a good result with decreased chance of cyst recurrence.

KEYWORDS: Orbital Hydatid disease, *Echinococcus granulosus*, larva stage, hydatid cyst, proptosis.

INTRODUCTION

Echinococcosis remains a significant public health problem in sheep-raising regions of the Middle East, Mediterranean basin, and Africa.^[1] Humans become accidental intermediate hosts by ingesting eggs shed in canine feces.^[2] After penetrating the gut, oncospheres migrate via the portal circulation to the liver, lungs and other organs where they develop into fluid-filled cysts.^[3] Orbital hydatid cysts are rare, affecting less than 1% of cases, and typically present with progressive proptosis and visual loss.^[4-6] Trauma as a cause of hydatid cysts is rare but may occur when contaminated material is introduced into tissues.^[7] Incisional biopsy or marginal excision of suspected hydatid lesions is not recommended due to the risk of releasing highly antigenic fluid containing viable larvae, resulting in dissemination and anaphylaxis.^[8]

CASE PRESENTATION

Initial mandibular presentation

This patient's story begins with a visit to the maxillofacial clinic at the Jordanian Royal Medical Services (previously reported by Alzoubi et al.^[12]). A 17-year-old shepherd from rural Jordan presented with painful swelling of the right mandibular condyle, right-sided proptosis, dystopia, and decreased vision. Computed Tomography Scan (CT) and Magnetic Resonance Imaging (MRI) showed a multiloculated lesion eroding the mandibular condyle and ramus (Figure 1). An incisional biopsy through the right mandibular fossa was performed to obtain diagnostic material. Histopathological examination revealed the characteristic laminated and germinal layers of a hydatid cyst.^[9,10] After receiving the diagnosis, the patient's father refused definitive surgical removal due to fear from complications.

Delayed orbital presentation

Approximately one year later the patient noticed progressive forward displacement of his right eye, blurred vision and diplopia. Examination at our oculoplastic clinic revealed severe right proptosis with vertical dystopia, restricted extra-ocular motility and a relative afferent pupillary defect (Figure 2). Visual acuity had decreased to counting fingers. The right hemifacial region showed healed scars from the previous biopsy.^[11,12]

Orbital CT and MRI demonstrated an 8×6×5 cm multiloculated cystic lesion originating from the right mandibular fossa, extending superiorly through the infratemporal fossa into the orbit, displacing the globe and compressing the optic nerve (Figure 3). There was no intracranial extension. When we compared two MRI scans ten months apart, the cyst had grown dramatically—about three times its original size—filling the right orbit and adjacent structures (Figure 4). These imaging characteristics, together with the previous histopathological diagnosis, confirmed a progressing orbital hydatid cyst.^[13–15]

Treatment

Due to optic nerve compromise and the risk of irreversible vision loss, urgent surgical intervention was planned. The patient started on albendazole 400 mg tablets twice daily for two weeks to reduce intracystic pressure and decrease the viability of larvae.^[16] Under general anesthesia, a curvilinear skin-crease incision was made along the upper eyelid to access the lateral orbit. Gentle dissection exposed a tense, translucent cyst wall adherent to orbital tissues. As a result of extreme thinness, the wall ruptured during manipulation. Immediate management included copious irrigation of the operative field with hypertonic saline and chlorhexidine solution to inactivate free scolices as recommended for ruptured hydatid cysts.^[17,18] The cavity was then aspirated, and residual debris was removed using suction and gauze. After confirming haemostasis, the wound was closed in layers. Postoperative albendazole therapy was continued for four weeks to eradicate any residual parasites and minimize the risk of recurrence.^[19,20]

Outcome and follow-up

The patient's post-operative course was unremarkable. Proptosis decreased significantly over the first week, and visual acuity improved to 6/9 by one month. At three months follow-up his visual acuity was 6/6, Hertel exophthalmometer readings had equalized with the contralateral eye, and ocular motility was full. Follow-up with MRI showed no residual or recurrent cyst at six months follow up (Figure 5). We advised the patient and his father to continue regular follow-up appointments and to take care to avoid re-exposure to the infection.^[21,22]

Ethical approval was obtained from the Jordanian Royal Medical Services Ethics Committee (approval no. JRMS 14/2025, dated 13 October 2025), and written informed consent was secured from all participants on 5 October 2025.

DISCUSSION

Hydatid cysts of the skull or orbit are tricky to recognize and are often mistaken for tumors or inflammatory masses.^[1,2,4] Two take-home messages arise from this case. First, when someone from a region where echinococcosis is common, hydatid disease should be at the top of the differential diagnosis.^[5–7] Imaging modalities such as CT and MRI can identify characteristic features, including multiloculated appearance, daughter cysts and a low-intensity rim on T2-weighted images.^[8–10] Serological tests may support the diagnosis but are neither sensitive nor specific.^[11] If hydatid disease is a possibility, it's best to avoid incisional biopsy or incomplete excision. This can release highly antigenic fluid and spread the larvae leading to anaphylaxis and dissemination to adjacent tissues.^[12–14] Whenever possible surgeons should remove the cyst totally in one procedure.^[15,16]

Second, surgery around the eye presents its own challenges. Because the bony orbit leaves little space for any swelling, even small increases in volume can compromise the optic nerve and threaten vision.^[17] Ideally the cyst should be removed intact, but the thin wall and tight space sometimes make the risk of rupture high.^[18,19] In case of intraoperative rupture, copious irrigation with scolicidal agents such as hypertonic saline, hydrogen peroxide or chlorhexidine should be done to kill any daughter cysts and decreasing the recurrence rate.^[20–22] Hypertonic saline acts by creating a strong osmotic gradient across the parasite's wall, and chlorhexidine has broad antiseptic activity.^[23,24] Giving albendazole therapy before and after surgery helps sterilize the cyst and reduces recurrences. This combination of prompt surgery, good irrigation and prescribing antiparasitic drugs led to an excellent result and recovery.^[16,17,19]

Finally, The case also reminds us that puncturing a hydatid cyst can spread the infection, so in patients with cystic masses from endemic areas clinicians should take in consideration a hydatid disease and depends on imaging and serology instead of biopsy for diagnosis.^[14,20,21]

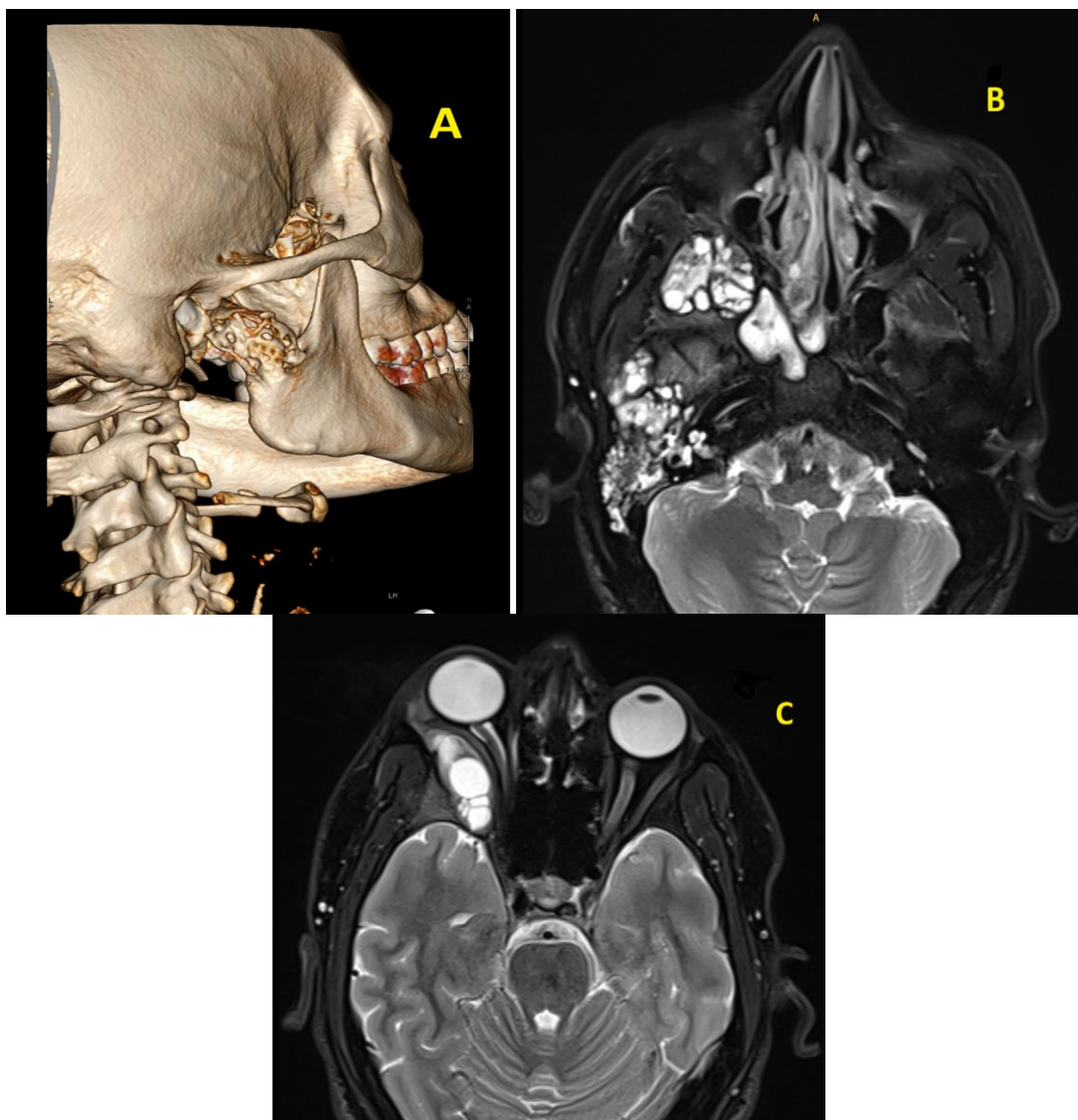


Fig. 1: A) 3D-CT reconstruction showing massive cortical destruction of the right mandibular condyle and ramus. B) Axial T2 MRI image showing Multiloculated, hyperintense cystic mass with daughter cysts in mandibular condyle, ramus, and parotid/masticator space. C) Axial T2 MRI image showing Separate hyperintense cyst causing compression/proptosis in the right orbit.



Figure 2: Clinical photograph demonstrating right ocular proptosis with vertical dystopia and pupillary dilation.

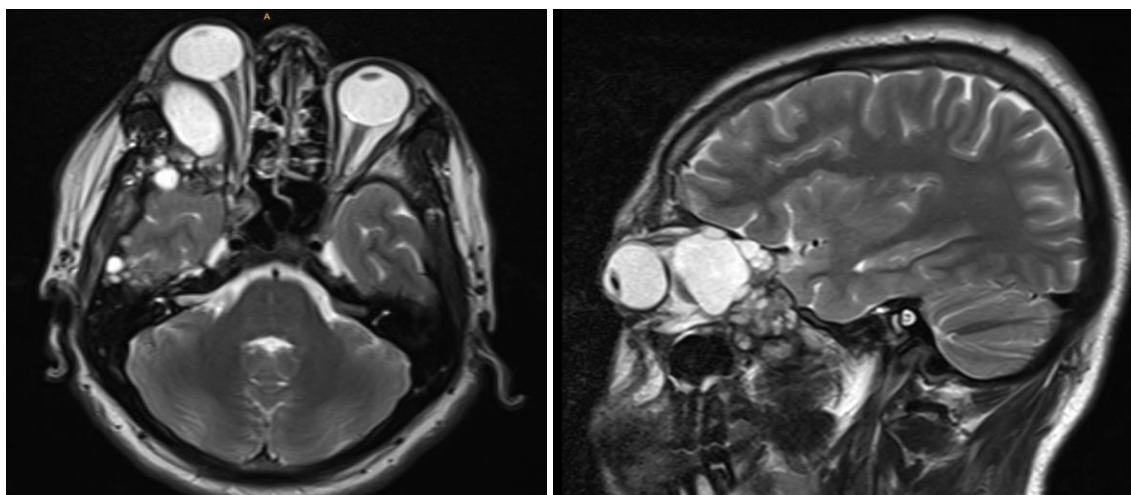


Figure 3: Axial and Sagittal T2 MRI images showing hyperintense cystic lesion extending from the eroded mandibular fossa into the right orbit, compressing the globe and optic nerve with proptosis.

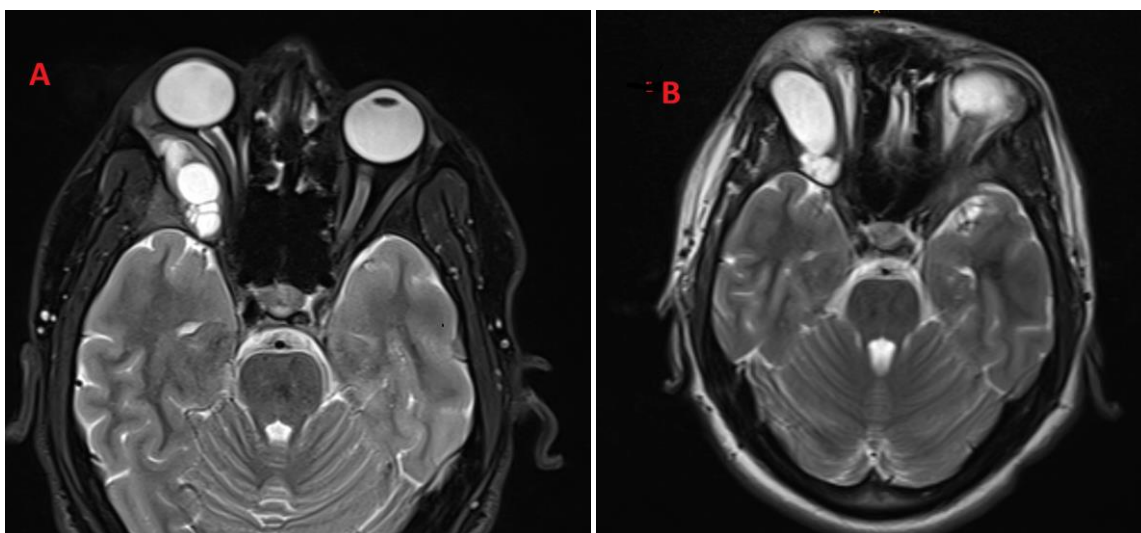


Figure 4: A comparison between two Magnetic Resonance Imaging (MRI) scans, taken approximately 10 months apart, reveals a significant and rapid growth (300%) of the hydatid cyst in the right orbit and surrounding craniofacial structures. the first presentation (A) to maxillofacial team in December 2023, and the later presentation (B) to the oculoplastic team in October 2024.

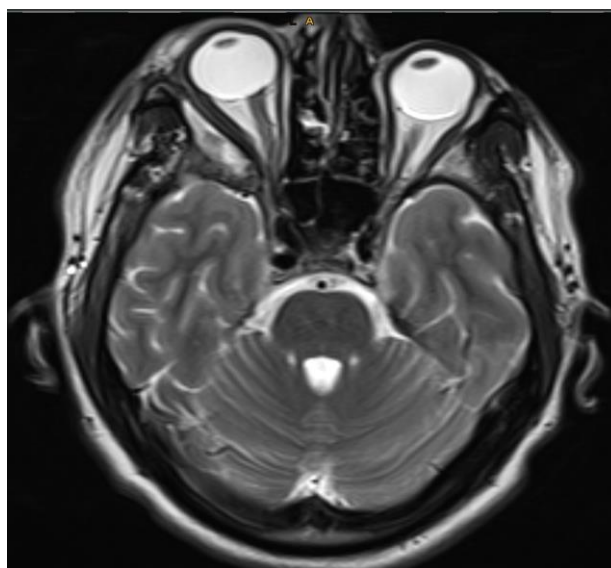


Figure 5. Follow-up with MRI showed no residual or recurrent cyst at six months follow up.

CONCLUSION

This patient is the same young man previously reported with a hydatid cyst of the mandible by maxillofacial colleagues (in the same association we are working).^[12] Our experience underlines the need to think of hydatid disease in unusual sites and to avoid incisional biopsy and plan for complete removal of the cyst. Early diagnosis, complete surgical removal, and extensive scolicidal irrigation combined with pre and post operative albendazole drug use offer the best chance for cure.^[23,24] Clinicians should keep hydatid disease in endemic areas in their differential diagnosis and depends on imaging and serology rather than invasive biopsies whenever possible.

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Conflicts of Interest: The authors declare that they have no conflicts of interest.

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