Case Report

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Intradiploic epidermoid cyst in a 15-year-old female: a rare case report

Ahmad Reshad Payenda, MD[a], Maimoona Zubair, MBBS[a], Nazmin Ahmed, MS[b], Adnan Khan, MD[a], Waseem Dad Khan, FCPS[a], Saad Siddiqui, FCPS[a], Masroor Hasan, MBBS[a], Shabna Shafiq, MD[c], Bipin Chaurasia, MS[d,*]

Introduction and importance: Intradiploic epidermoid cysts are rare, benign, slow-growing lesions that originate from the inclusion of ectodermal elements during the closure of the neural tube. This article reports a case of a rare, benign intradiploic epidermoid cyst.

Case presentation: A 15-year-old female patient had a cystic swelling located in the occipital region, caused the patient to experience a progressively enlarging swelling and intense headaches. It was diagnosed as intradiploic epidermoid cyst on MRI. Surgery was done and removed. Postoperative outcomes were very good.

Clinical discussion: Intradiploic epidermoid cysts are quite rare. Although these cysts usually happen because of this ectoderm inclusion, the patient's history of falling raises questions about whether trauma could have caused it too. We really need more research to see if there's a connection between injuries & these types of cysts.

Conclusion: The importance of prompt diagnosis and appropriate surgical intervention is necessary while highlighting the rarity of these lesions and their potential traumatic origin.

Keywords: benign tumor, head trauma, intradiploic, occipital region, rarity, surgical intervention

Introduction

Intradiploic epidermoid cysts are rare, benign, slow-growing lesions that originate from the inclusion of ectodermal elements during the closure of the neural tube. They are typically located within the diploic space of the cranial bones and can cause significant morbidity due to their compressive effects on the surrounding structures[1-3].

This case report aims to shed light on the rare occurrence of intradiploic epidermoid cysts, emphasizing their potential association with trauma. By documenting this case, we seek to enhance understanding of these rare lesions, underscore the importance of early diagnosis, and contribute to the growing body of literature on post-traumatic cranial cysts. This case also highlights the clinical significance of considering epidermoid cysts in differential diagnoses.

Case presentation

A 15-year-old female, presented to the outpatient department with the chief complaint of a progressively enlarging occipital swelling (Fig. 1) and associated symptoms of severe, throbbing headache present for the past 3 months, worsening with exertion, nausea, fever, body aches, and left eye pain.

The patient had a history of a fall from stairs approximately 6 years ago, which resulted in the development of a small bulge in the occipital area. There was no loss of consciousness at the time of the incident. Over the years, the bulge had gradually increased in size, and in the past month, it had started causing significant discomfort, limiting her daily activities.

The general physical examination did not reveal any signs of pallor, jaundice, bluish discoloration, clubbed fingers/toes, swelling, or enlarged lymph nodes. The patient was hemodynamically stable, meaning their vital signs were within normal range. There was a soft, fluctuant, non-transluminating lump in the occipital (back of head) region, which was fixed to the underlying structures and the overlying skin. The lump was mildly tender and not movable relative to the underlying bone. The patient was conscious and fully oriented, with a Glasgow Coma Scale score of 15/15, indicating normal neurological status. The pupils were equal in size and responded normally to light. There were no obvious motor or sensory deficits. Deep tendon reflexes were normal, and the plantar reflexes were flexor bilaterally. There were no signs of cerebellar dysfunction or meningeal irritation. All other systems examined were within normal limits. The ophthalmological evaluation showed normal visual acuity of 6/6 in both eyes, and the eye movements were normal in all directions.

[a]Northwest General Hospital & Research Center, Parwan, Afghanistan, [b]Department of Neurosurgery, Ibrahim Cardiac Hospital & Research Institute, Shahbag, Dhaka, Bangladesh, [c]Department of Obstetrics and Gynecology, Malalai Maternity Hospital, Kapisa, Afghanistan and [d]Department of Neurosurgery, Neurosurgery clinic, Birgunj, Nepal

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*Corresponding author. Address: Department of Neurosurgery, Neurosurgery Clinic, Birgunj, Nepal. E-mail: trozexa@gmail.com (B. Chaurasia).

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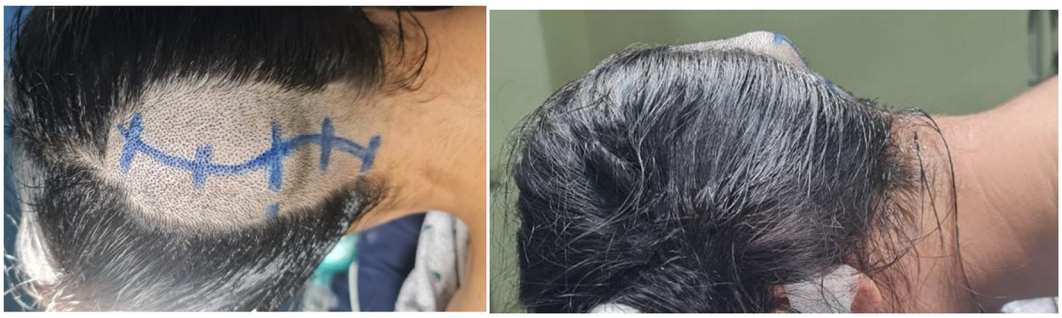

Figure 1. Pre-op images of the pathology.

Diagnostic workup

Magnetic resonance imaging (MRI) of the head was performed, which revealed a well-defined, intradiploic, cystic lesion in the occipital bone, consistent with an epidermoid cyst (Fig. 2).

Surgical management

On August 2nd, 2024, the patient underwent surgical treatment for the intradiploic epidermoid cyst (Fig. 3).

Postoperative course

The postoperative course was uneventful. The patient was thoroughly examined, investigated, and found to be clinically and vitally stable. She was mobilized, pain-free, and discharged on home medication with follow-up instructions (Fig. 4).

Histopathological findings

The surgical specimen was sent for histopathological examination, which confirmed the diagnosis of an intradiploic epidermoid cyst (Fig. 5).

Outcome

At the 1-month follow-up, the patient reported significant improvement in her symptoms, with no further headaches, nausea, or eye pain. The surgical site was well-healed, and the

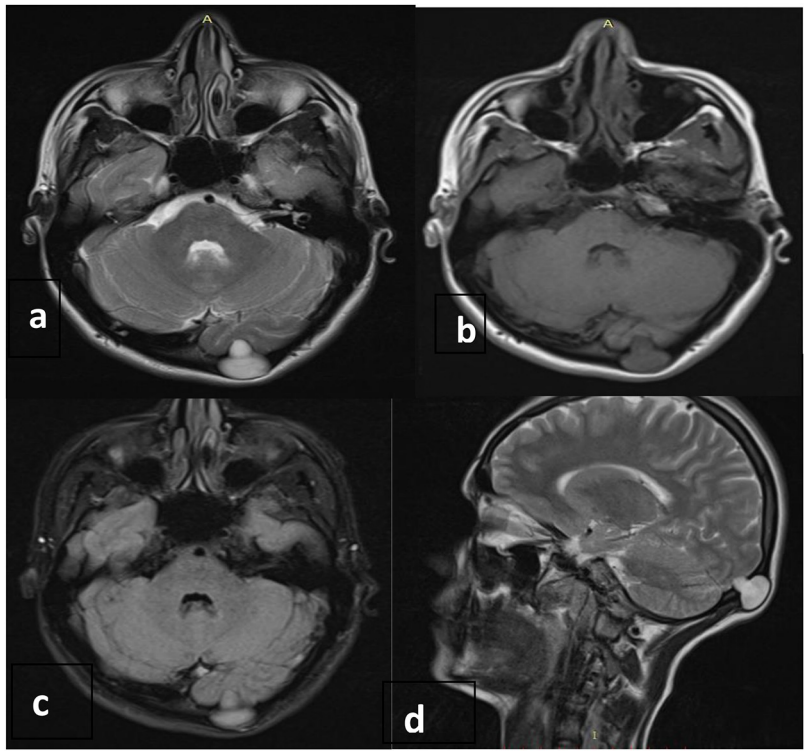

Figure 2. (a) T2WI shows lobulated lesion in the occipital region slightly left of the midline. (b) T1WI shows lesion is isointense to brain parenchyma. (c) DWI shows presence of restricted diffusion within the lesion, suggestive of epidermoid. (d) Sagittal T2DWI again showing lobulated lesion involving both the inner and outer table of the calvarium.

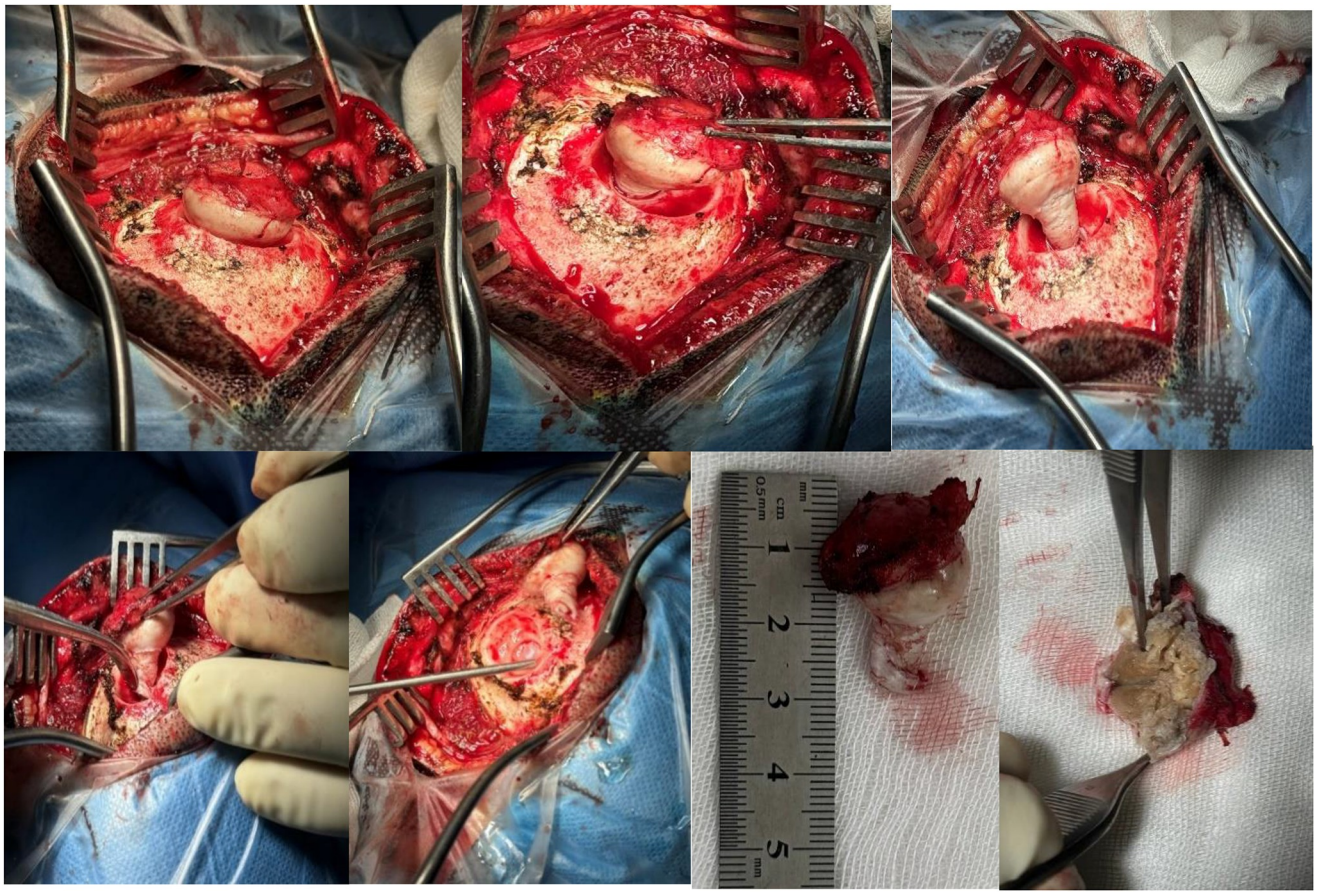

Figure 3. Intraoperative photographs demonstrating thick capsule and bony destruction and infiltration of soft tissue.

patient was advised to continue with the recommended lifestyle modifications and follow-up as scheduled.

The work has been reported in line with the SCARE 2023 criteria[4]

Discussion

Intradiploic epidermoid cysts are quite rare. They are benign growths, making up less than 1% all tumors found inside the

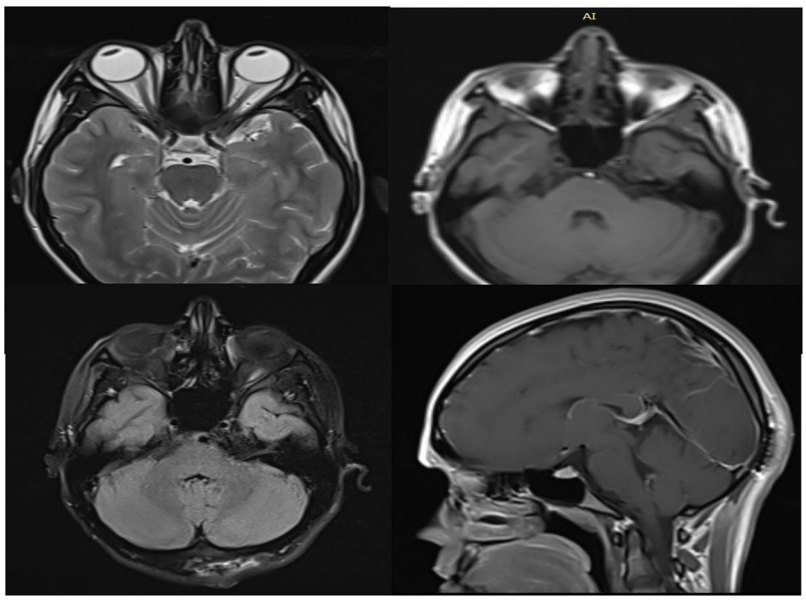

Figure 4. Post-op imaging showing complete resection of the lesion with some post-surgical changes in the scalp soft tissue of occipital region.

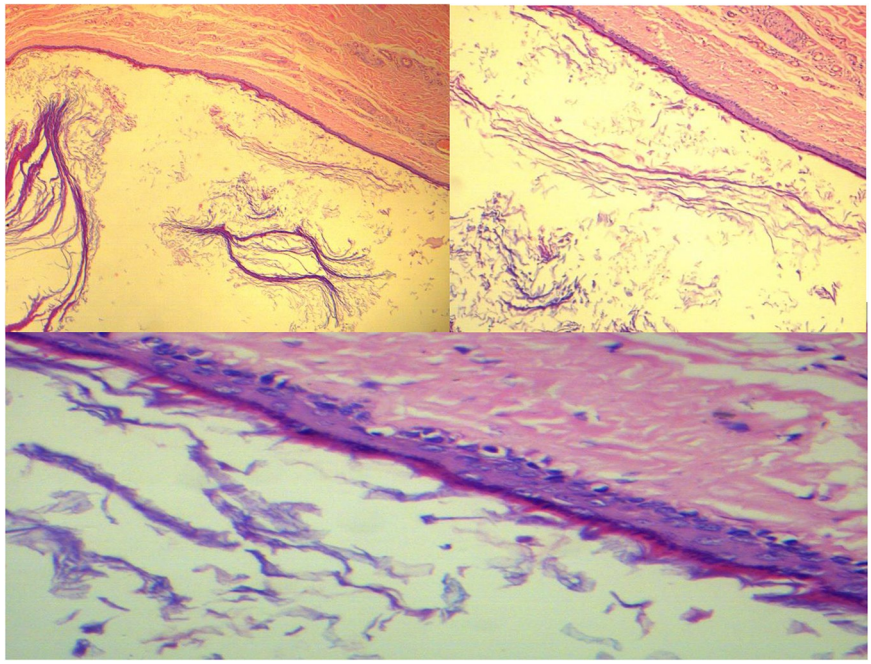

Figure 5. H&E sections at 4x, 10x, and 40x magnification of the cyst lining, showing stratified squamous epithelium filled with keratin flakes.

skull[1,2]. Cysts likely form when ectodermal elements get trapped during the closure of the neural tube. This leads to a slowly growing cyst in the diploic space of the cranial bones[1,2] .Although these cysts usually happen because of this ectoderm inclusion, the patient's history of falling raises questions about whether trauma could have caused it too[3]. We really need more research to see if there's a connection between injuries & these types of cysts.

How these cysts show up can differ a lot. It really depends on their size and where they are located. Some people might have headaches, seizures, or other issues like weakened body parts and even changes in how they look[5,6]. For example, She had a swelling at the back of her head that just kept getting bigger. She also experienced strong headaches, nausea, fever, body aches & pain in her left eye. All this made everyday stuff tough for her.

Radiological imaging (especially MRI) is super important for figuring out if someone has intradiploic epidermoid cysts. They often look like well-defined cystic masses with low signal on T1-weighted images and high signal on T2-weighted images[7,8]. The best way to treat intradiploic epidermoid cysts is through surgery. This helps to remove the lesion completely and ease the patient's symptoms[5,6,9].It's usually very effective! However, there can be complications like infections or possible neurological problems, which should be talked about with the patient[10-14]. In her case, she had surgery that involved taking out the bone and removing her occipital intradiploic epidermoid cyst. After that, they did a titanium cranioplasty too! Everything went well after the surgery; she reported that her symptoms got much better a month later.

Advantages of this case report include its contribution to rare case documentation, adding to the limited literature on intradiploic epidermoid cysts, and providing valuable insights into the potential role of trauma in their development. Additionally, the successful surgical intervention and favorable outcome demonstrate the effectiveness of timely diagnosis and treatment. However, the rarity of the condition limits the generalizability of findings, and the absence of long-term follow-up at this stage restricts comprehensive assessment of potential recurrence. There is necessity for clinicians to maintain a high index of suspicion for epidermoid cysts in patients presenting with persistent cranial swellings, particularly those with a history of trauma. Early imaging and intervention can significantly improve outcomes and prevent complications associated with delayed treatment.

Conclusion

Intradiploic epidermoid cysts, while rare, pose significant risks due to their potential to cause neurological and structural complications through progressive growth and mass effect. This case highlights the importance of early diagnosis and surgical intervention, which are critical to preventing long-term morbidity. Additionally, the patient's history of trauma emphasizes the need to consider traumatic origins in the development of such cysts. Although long-term follow-up is not yet available for this case, ongoing monitoring is planned to ensure continued success post-surgery. This case contributes valuable information to the limited literature on post-traumatic intradiploic epidermoid cysts and shows the necessity of further research into their etiology and management.

Ethical approval

Ethical approval not required for case report.

Consent

Written informed consent was obtained from the patient's parents for publication and any accompanying images. A copy of

the written consent is available for review by the Editor-in-Chief of this journal on request.

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Author's contribution

All authors have contributed equally in formation of manuscript.

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