

## Dermoid Cyst on the Temporal Surface of Skull - An Unusual Case Report

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### ABSTRACT

A dermoid cyst is a subcutaneous mass derived from both ectodermal and mesodermal tissues. Dermoid cysts of the temporal region involving the bone are rare. We present a case of a child with an enlarging, palpable mass in the temporal region of the scalp. Parents of a 4-year-old male child presented with complain of a swelling on the right lateral side of the head, above the ear. Physical examination revealed a subcutaneous, cystic mass on the right lateral side of the head, above the ear in the temporal region, approximately 1.5 cm in diameter. The CT scan revealed a bony depression in the skull near the fronto-temporo-parietal-sphenoidal junction. Enucleation of cyst done with hemicoronal approach. Histopathological examination confirmed the diagnosis of a dermoid cyst. Early removal is recommended not only to establish a definitive diagnosis but also to prevent chronic inflammation, enlargement, invasion, or rupture of the cyst.

**Keywords:** Bony depression, Demoid cyst, Hemicoronal approach, Rare, Temporal cyst

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### INTRODUCTION

A dermoid cyst is a subcutaneous mass derived from both ectodermal and mesodermal tissues.<sup>1</sup> Dermoid cysts have been reported in various locations, including the head and neck region, which accounts for approximately 7% of cases. In this region, they are often asymptomatic.<sup>2</sup> Some patients may present with symptoms such as yellow discharge, tenderness on palpation, headache, swelling, or pruritus. In rare instances, more severe manifestations have been documented, including sudden onset of oculomotor nerve palsy, blindness, chronic otitis media, and other neurological signs and symptoms.<sup>3</sup> Congenital dermoid cysts of the temporal region involving the bone are rare, with only scattered case reports available in the literature. In 1937, New and Erich reported a single temporal dermoid in their review of 103 head and neck dermoid cases.<sup>4,5</sup> We present a case of a child with an enlarging, palpable mass in the temporal region of the scalp.

### CASE REPORT

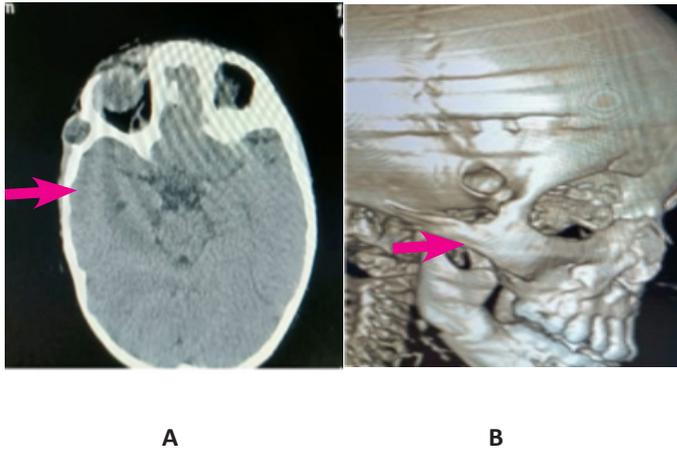
Parents of a 4-year-old male child presented to us at Chhinnamasta Hospital, Rajbiraj, Saptari, a rural hospital of Nepal, complaining of a swelling on the right lateral side of

the head, above the ear. They attributed the swelling to a road traffic accident that occurred six months prior. The accident was minor and did not require hospital admission. The parents noticed the swelling three to four months after the accident. They did not see such a type of lesion before trauma. The child's caregiver denied any history of infection or changes in the size of the swelling.

The patient was otherwise asymptomatic, with no visual impairment or any neurological signs or symptoms. There was no other relevant past medical history. Physical examination revealed a subcutaneous, cystic mass on the right lateral side of the head, above the ear, and behind the orbit in the temporal region. The lesion measured approximately 1.5 cm in diameter. The lesion was not mobile from base, but the overlying scalp/ skin is mobile. It was noncompressible and nontender, with no evidence of an associated sinus tract, skin dimpling, discoloration, or communication with adjacent structures. The rest of the head and neck examination was unremarkable.

A computed tomography (CT) scan was performed due to the unusual presentation of the mass in the temporal region. The CT scan revealed a bony depression in the skull near the fronto-

temporo-parietal-sphenoidal junction (Pterion region) (Figure 1). It also confirmed that the subcutaneous mass was not in communication with adjacent structures, specifically showing no intraorbital or intracranial involvement.

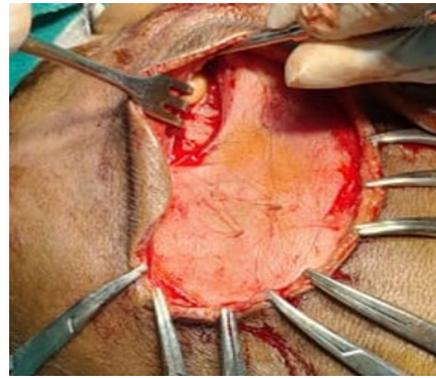


**Figure 1: CT scan reveals a bony depression in the skull near the fronto-temporo-parietal-sphenoidal junction. A: Axial view, B: 3D view, Arrow: showing lesion**

Given the unsatisfactory appearance of the mass, the parents' concern about potential growth, and the possibility of cranial involvement, surgical enucleation of the mass was planned under general anesthesia. Various surgical approaches, including endoscopic surgery, were discussed with parents. Enucleation of the cyst via the hemicoronal approach was chosen for surgery, and then verbal and written consent was taken for the procedure. Hairline Hemicoronal incision extending into the preauricular area was given. A scalp and temporal skin flap was elevated to expose the temporalis fascia (Figure 2). Hemostasis was achieved with bipolar cautery and fine hemostats. The cyst was then exposed by incising the temporalis fascia and temporalis muscle (Figure 3). Complete enucleation of the cyst was performed carefully.

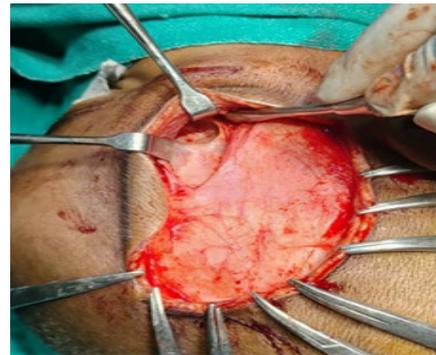


**Figure 2: Hemicoronal incision (expose the temporalis fascia)**



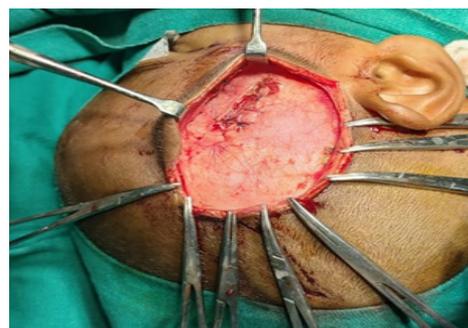
**Figure 3: The Temporalis muscle is dissected vertically, exposing the cyst**

A bony depression approximately 1.5 cm in diameter was noted near the pterion region, with intact bony walls on all sides; no underlying cranial defect was observed (Figure 4). Peripheral osteotomy of the bone cavity was performed after enucleation using round burs, accompanied by thorough saline irrigation.



**Figure 4: Bony depression after cyst enucleation and peripheral osteotomy**

Final hemostasis was confirmed, the temporalis fascia and temporalis muscle was closed with 4-0 Vicryl suture (Figure 5). Skin closure was done with 4-0 Prolene sutures (Figure 6). The patient was discharged on the second postoperative day with an uneventful recovery. The incisions healed well without any complications.



**Figure 5: The temporalis fascia and temporalis muscle was closed with 4-0 Vicryl suture**

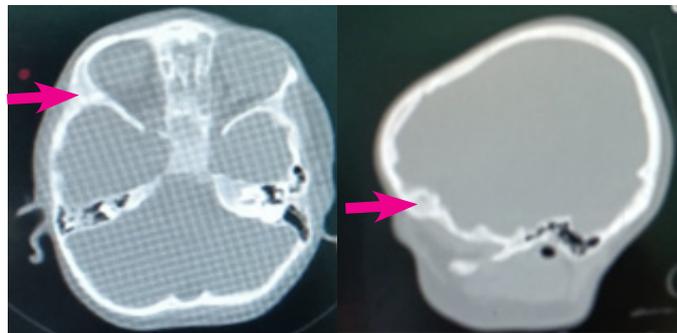


**Figure 6: Skin closure done with 4-0 Prolene**



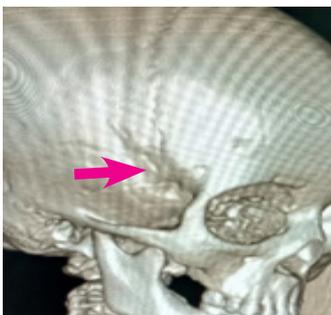
**Figure 8: Normal healing with mild alopecia noted in the incision line**

Histopathological examination confirmed the diagnosis of a dermoid cyst. Regular follow-up was maintained every three months for one year. At one year post-operation, a follow-up CT scan showed normal healing of the lesion site (Figure 7). The incision scar was minimally noticeable, with mild alopecia around the incision line (Figure 8). Follow-up continued for an additional two years, during which there was no evidence of recurrence or adverse effects.



A

B



C

(A: Axial, B: Sagittal, C: 3D View, Arrow shows site of healing)

**Figure 7: Normal bony healing in 1-year-follow-up**

## DISCUSSION

Dermoid tumors were first described by Parsons in 1742.<sup>6</sup> Dermoid cysts, also known as “oil cysts,” are non-neoplastic, congenital ectodermal inclusion cysts that contain varying amounts of ectodermal derivatives, including apocrine, sweat, and sebaceous glands, as well as hair follicles, squamous epithelium, and sometimes teeth. They should not be confused with epidermoid cysts, which contain only squamous epithelium. Although similar in some respects, teratomas are a distinct entity; they are true neoplasms composed of tissues derived from all three embryonic germ layers.<sup>1,7</sup>

When evaluating a mass in the temporal region, it is important to consider a broad differential diagnosis, including capillary hemangioma, hemorrhagic lymphangioma, and non-Hodgkin lymphoma. Although dermoid cysts are relatively uncommon in the temporal region, they should still be included in the differential diagnosis.<sup>8</sup> Imaging with thin-section CT scans and/or MRI is valuable because these cysts may extend beyond the bone into the orbit or intracranially. In some cases, a biopsy may be necessary for definitive diagnosis, treatment planning, and monitoring.<sup>8,9</sup>

The treatment of choice for dermoid cysts is complete surgical excision. Early removal is recommended not only to establish a definitive diagnosis but also to prevent chronic inflammation, enlargement, invasion, or rupture of the cyst. Long-standing dermoid cysts may cause bone erosion and posterior migration, complicating surgical management. Careful dissection is essential to avoid rupture of the cyst capsule, as spillage of its contents can lead to recurrence. Lastly, the risk of malignant transformation, especially into squamous cell carcinoma, must be taken into account, though it is rare.<sup>8-10</sup>

Various types of incisions can be used for the removal of temporal dermoid cysts, including bicoronal and hemicoronal incisions. The bicoronal incision provides wide exposure but carries a higher risk of bleeding and a larger area of alopecia. In contrast, the hemicoronal incision offers excellent exposure while achieving a more cosmetically satisfactory result.<sup>10</sup> Needle aspiration can be employed to drain the cyst to facilitate surgical removal, especially when en bloc excision would require extensive dissection or risk injury to adjacent

vulnerable structures. Endoscopic removal is another option for temporal dermoid cysts. Advantages include a smaller, concealed incision within the hairline, improved visualization with magnification of the surgical field, and reduced risk of injury to critical anatomical structures.<sup>5</sup> However, this technique may be costly and demands a steep learning curve for surgeons. Regardless of the chosen method, complete removal of the cyst remains the primary surgical goal.

## CONCLUSION

We describe a relatively rare case of a temporal dermoid cyst presenting as a swelling in the temporal region, with CT imaging revealing bony involvement. Based on this case and supporting literature, we recommend that any suspected congenital mass in the temporal region, with or without an associated sinus tract, should undergo preoperative radiological evaluation using CT or MRI to assess the extent of the lesion. In cases where bony invasion is evident, a more aggressive surgical approach is warranted. This should include complete enucleation of the cyst and peripheral osteotomy, ideally involving at least the outer table of the cranium, to minimize the risk of recurrence.

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