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## Case Report / Приказ случаја

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### Surgical treatment of cranio-facial dermoid cyst Хируршко лечење кранио-фацијалне дермоидне цисте

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## Surgical treatment of cranio-facial dermoid cyst

### Хируршко лечење кранио-фацијалне дермоидне цисте

#### SUMMARY

**Introduction** Intracranial extension is rarely seen with craniofacial dermoid cysts, with few cases reported in the literature.

**Case Outline** We report a case of a 30-year-old woman who was initially seen with a subcutaneous mass of the frontotemporal region. The patient underwent a right craniotomy by a frontal approach. Histopathologic analysis confirmed the diagnosis of a dermoid cyst.

**Conclusion** Craniofacial dermoid cysts may be associated with an intracranial extension.

**Keywords:** dermoid cyst; congenital tumor; frontotemporal region; intracranial extension

#### САЖЕТАК

**Увод** Интракранијална екстензија је ретко виђена код краниофацијалних дермоидних циста, са неколико случајева пријављених у литератури.

**Приказ болесника** Код 30-годишње жене првобитно је уочена субкутана маса фронтотемпоралног региона. Урађена је краниотомија фронталним приступом. Хистопатолошка анализа потврдила је дијагнозу дермоидне цисте.

**Закључак** Краниофацијална дермоидна циста може бити повезана са интракранијалним ширењем.

**Кључне речи:** дермоидна циста; урођен тумор; фронтотемпорална област; интракранијално ширење

#### INTRODUCTION

Craniofacial dermoid cysts are presented as solitary, slow-growing, subcutaneous masses [1–4]. During congenital development they result from sequestration of epidermal and dermal cells and consist of epithelium-lined cysts with skin appendages. Dermoid cysts are associated with mature adnexal structures (hair follicles, sebaceous and eccrine glands) and this differentiates them from epidermoid cysts. They are visible at birth or in childhood as a slow-growing, subcutaneous mass and not so usual they can be inflamed or infected [5]. Rarely, dermoid cysts of the frontotemporal region may be associated with an intracranial extension [4, 5].

We report an unusual case of an 30-years-old female adult with a fronto-temporal dermoid cyst presenting as a massive subcutaneous mass associated with intracranial involvement.

#### CASE REPORT

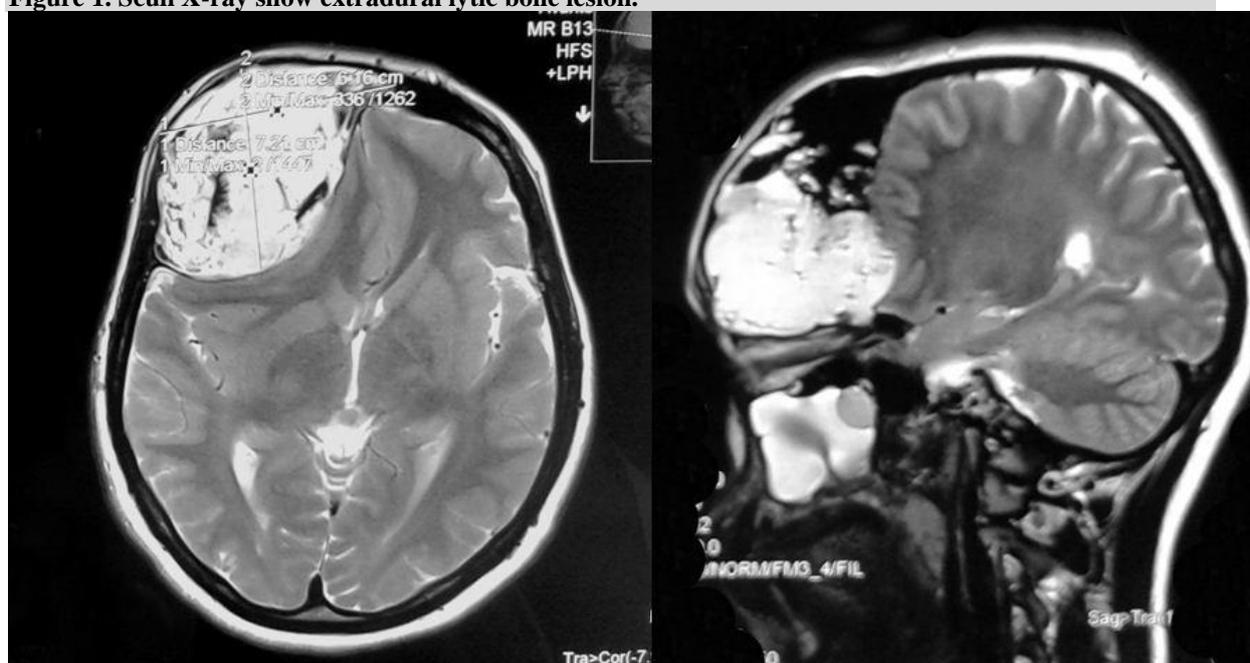
A 30-years-old female patient was admitted to our department of neurosurgery with severe headaches and lost of eyesight on the right side. She had history of more than 12 years of slowly progressing mass in the right frontal region. Neurologic clinical examination revealed right sided supraorbital subcutaneous mass with exophthalmus resulting in diplopia and reduced visual acuity. There was no organic problem in his medical history and there was no family history of oncologic diseases. Routine hematological and biochemical parameters were normal. The patient denied any kind of trauma to this region.

Routine X-ray of the skull was made and lesion of the frontal bone was seen (Figure 1). MRI scan brain showed enhancing extradural lytic bone lesion with a 6.16x7.21 cm, well-defined hyperdense, on T2-weighted image, mass lesion in the right frontal lobe without perilesional edema (Figure 2). Preoperative cerebral angiography was undertaken to check the blood supply of the mass and eliminate vascular anomalies: abnormality was not observed. No further neuroradiological

examination was needed because the present finding showed clearly extracerebral mass with frontal bone erosion.



**Figure 1. Skull X-ray show extracerebral lytic bone lesion.**



**Figure 2. MR image showing a well-circumscribed, heterogeneous and fat-density mass involving the right frontal wall.**

Complete removal of the lesion was carried out through a right frontal craniectomy in general anesthesia. A curved incision was performed in the frontal region of the scalp and a large cyst was found to have created a cavity in the frontal bone and intracranially. The dura was intact. The cyst was yellow, containing dirty brown, grumous, oily material. Hair and other dermal elements were observed.

Microscopic examination revealed a cystic lesion of the dermoid type. Histologic examination showed a keratinized stratified squamous epithelial lining, associated with mature adnexal structures (hair follicles and shafts, sebaceous and eccrine glands).



**Figure 3. MR image after six months of cranioplasty showing no recurrence of dermoid cyst.**

The patient was then referred to our maxillofacial unit for treatment. We performed a second operation together with maxillofacial specialist. We did reconstruction of bone deficit with cranioplasty and reconstruction of frontal sinus (Figure 3).

Postoperative recovery was uneventful, and the patient was discharged 10 days after second surgery. In the early postoperative period, an improvement was evident. During the following six months after the surgery there was no evidence of tumour recurrence.

### DISCUSSION

Dermoid cysts are benign soft tissue cysts of embryonic origin that arise along lines of skin fusion. During congenital development they result from sequestration of epidermal and dermal cells and consist of epithelium-lined cysts with skin appendages (hair follicles, sebaceous and eccrine glands). They are described as “oil cysts” by Hirschberg [6], and they represent the common mass of the orbitofacial region in the pediatric population. Very rare, they can be found in adults, as slow growing subcutaneous masses of head and face region. Our case presents 30-year-old woman who was initially seen with a subcutaneous mass of the frontotemporal region, which revealed an intracranial dermoid cyst so we emphasize that dermoid cyst should be included in the differential diagnosis of all nodular cyst-like lesions in the head and face region.

In 1993, Bartlett [7] proposed a topographic segregation into three groups: frontotemporal, orbital, and nasolabellar dermoids. The algorithm was based on the potential extension of the lesions to the contiguous structures (meninges, orbital soft tissues, skin). According to Bartlett frontotemporal and orbital dermoids with definable margins are superficial, slow-growing masses that can be excised, without an extensive radiologic diagnostic workup. However, the orbital dermoid cysts required a thin-section MRI because of their propensity to extend beyond the bone (into the orbit, intracranially). In contrast to this research and data we can find, intracranial involvement very rarely occurs with frontotemporal dermoids and there are just few cases [7, 8, 9]. This is more common with midline nasal and scalp cysts [7, 8, 9].

Our case represent frontotemporal dermoid in 30 years old adult with intracranial extension and close contact with meninges and orbital soft tissues which caused exophthalmos resulting in diplopia and reduced visual acuity.

The diagnosis of dermoid cyst was suggested by imaging (skull radiographs, CT scan, MRI) and confirmed by histology. MRI scan allows for good assessment of both skull involvement and

intracranial extension and reveals the exact site, limits, and characteristic bone defects of these lesions. Differential diagnosis should include epidermoid cyst, hydatid cyst, cholesterol granuloma, eosinophilic granuloma, and meningioma [10]. It is particularly common to misdiagnose an dermoid cyst as a epidermoid cyst, as the difference between them is mainly histological. The definite diagnose can be achieved by surgical removal and histopathological confirmation.

The indications for surgery include cosmetic effect, prevention of progression of psychiatric symptoms and neurological deficit, treatment of osteomyelitis, and resection of cysts with malignant degeneration [11, 12]. Most cranial dermoids are small and do not extend intracranially, but progressive growth may result in large cranial defects or compression of the brain and vascular structures [5, 6]. There are 2 considerations about surgical treatment of dermoid cysts. First concern is the recurrence and potential for malignant transformation, which results from an incomplete excision, especially when the long-standing dermoid cyst extends deeply intracranially. The second concerns are the possible complications, including inflammation, osteomyelitis, meningitis, and cerebral abscess.

Removal of these tumors and subsequent cranioplasty, despite their large size, are recommended, particularly for very large dermoid cysts associated with significant bony defects [11]. Total removal of these cysts is associated with a very good long-term prognosis [8, 9]. Recurrence is likely if the cyst wall is not completely removed, with a recurrence rate of 8–25% and potential malignant transformation [5, 11, 12]. We were able to remove the cyst and capsule completely in our patient with combined intracranial–extracranial approach proposed by Sessions [13]. Repeated washing of the cavity with 0.9% saline prevented aseptic meningitis and recurrence. A postoperative antibiotic regimen was implemented to prevent infection.

The orbitofacial dermoid typically presents as a slow-growing, nonfixed, asymptomatic mass. These features may not be apparent in intracranial situated lesions. It is important to be aware that the subcutaneous mass of the face and head region may represent the “tip of the iceberg” of a deep dermoid cyst. For this reason, early recognition and accurate diagnosis by means of CT scan or MRI facilitate successful treatment.

Although rare, all nodular cysts-like lesions in head and neck (orbitofacial) region, in adults, should be included in the differential diagnosis of dermoid cysts. Failure to recognize and treat these lesions may lead to a progressive neurological deficit, bone distortion or recurrent infections with severe complications such as meningitis or cerebral abscess. For this reason, early clinical recognition and diagnostic procedures like CT scan or MRI facilitate successful treatment.

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