ISSN: 2475-6296

Case Report

Journal of Clinical & Experimental Immunology

A Very Rare Benign Giant Osteoma in Tempero-Parieto-Occipital Region

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Submitted: 26 May 2019; **Accepted:** 01 June 2019; **Published:** 11 June 2019

Abstract

Osteoma is a slow growing benign mesenchymal osteoblastic tumor formed by mature bone tissue. The most common site reported is the fronto-ethmoidal region and neighboring sinuses. Involvement of the temporal and occipital squama is extremely rare. Like giant osteomas in other locations of the skull, they can reach large volumes but are essentially benign and potentially curable by excision. The author presents a case of giant osteoma in Temporo-Parieto-Occipital region in a teenage girl.

Keyword: Osteoma, Tempero-Parieto-Occipital Region, Giant

Introduction

Osteomas in the parietal occipital and mastoid regions are exceptionally rare. Asymptomatic in most of the cases, patients may present with esthetic issues or symptoms of external auditory obstruction [1-4]. Computed tomography is the gold standard for diagnosis [5]. The main aim of the radio imaging is to rule out invasion of the dinner table of the calvarium and its intracranial extension of the lesion [1]. Complete excision in the symptomatic and giant osteomas is the therapeutic goal [4].

Case Report

An 18-year-old female from Mymensing, Bangladesh reported to the Neurosurgery OPD of Dhaka Medical Collage Hospital with aslowly progressive swelling on the right side of her head for more than 5 years. It was gradually increasing in size. There was no history of trauma, headache, hearing impairment, otorrhoea, dizziness, vomiting, visual trouble, or neurological deficit or similar swellings elsewhere in her body. It slowly progressed in size over time. Once it attained a massive size, she and her family think for medical advice. There were no important past medical or surgical illnesses. Her bladder and bowel habits were normal.

On examination it was sessile bony growth which was bilobed and communicated to each other. The larger one is about 26×23×10cm in dimension and the small one is 13×9×5cm in dimension. Both of them are smooth, bony hard, and non-tender. The skin overlying the lesion was normal. The margin of the lesion was clearly demarcated.

Her CT scan with 3D reconstructions (Figure 2) head revealed a bony mass in the right parietal, right temporal and upper part of squamous part of the occipital bone with same measurement. It originated from the outer table of the skull with no evidence of destruction of the dinner table or extension of the mass intracranial. Hence, a diagnosis of osteoma was made.

Surgical excision was carried out for cosmetic purposes using Gigli saw and a small part by chisel. The osteoma was sessile not pedunculated. It was arising from the outer table. The bleeding from the base was controlled with the application of a bone wax. The mastoid air cells were tried not to violate and open. The inner table of the bone was removed to prevent recurrence. The gross specimen (Figure: 6&7) was smooth, ivory white in appearance. We remove the osteoma by piece meal fashion. The largest one was about 17×15×8 cm in dimension (Figure 6). The histopathology report was osteoma composed of compact bone. The patient had csfotorrhoea which was treated by lumber drain with no recurrence in the 2-month follow-up.

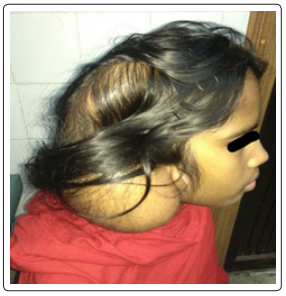
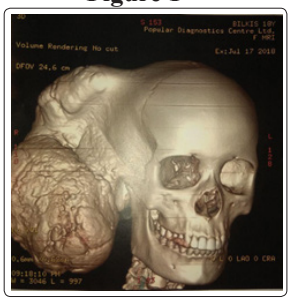


Figure 1



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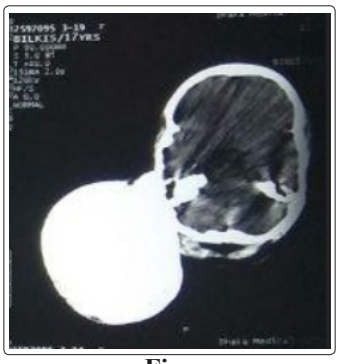

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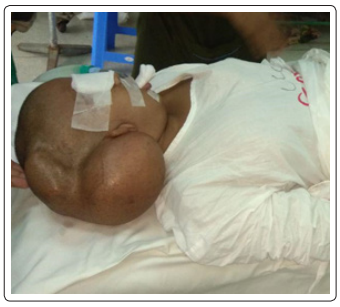

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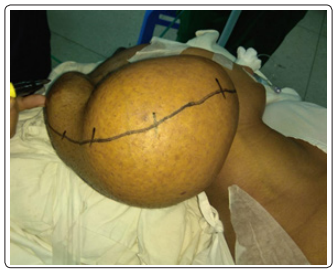

Figure 4

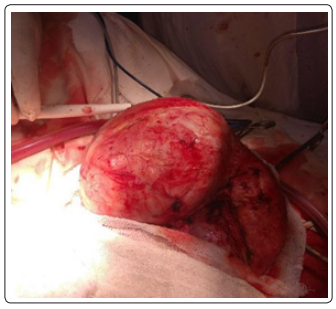

Figure 5

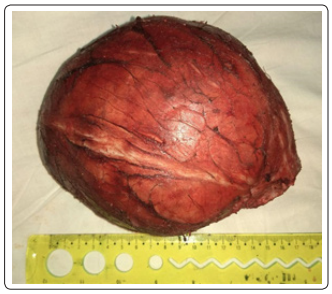

Figure 6

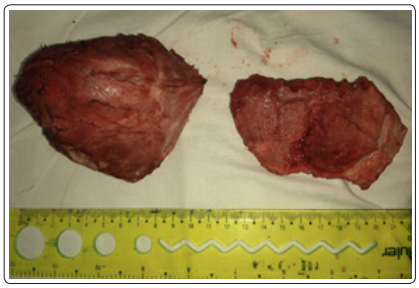

Figure 7

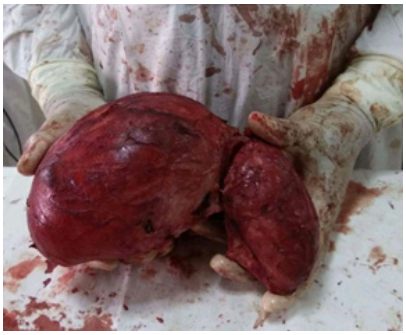

Figure 8

Figure 9: Post-operative picture

Table I: Age distribution of the study patients (n=60)

Age in years	Frequency	Percentage (%)
41-50	14	23.4
51-60	15	25.0
61-70	24	40.0
71-80	5	8.3
Above 80	2	3.3
Total	60	100
Mean±SD	62.0±20.2	
Min-Max	(45-86)	

A total of 60 patients were included in this study, they were divided into 5 groups. Age range was 45 to 86 years. It was observed that majority, 24 (40.0%) patients were from 61-70 years of age. The mean age was found 62.0±20.2 years. Highest number patients age range from 51-70 years. It was 65.0%. Other age related distributions

are shown in the table.

Table II: Distribution of the study patients by sex (n=60)

Sex	study patients (n=60)	
	n	%
Male	44	73.3
Female	16	26.7
Total	60	100.0

Table II shows sex distribution of the study patients. Among the 60 patients in the study it was observed that majority, 44 (73.3 %) patients were male and 16 (26.7 %) patients were female. A male predominance was observed.

Table III: Distribution of the study patients by past history of illness (n=60)

Past history of illness	Frequency of study subjects (n=60)	
	n	%
DM	20	33.3
HTN	28	46.7
CVD	18	30.0

Table III shown past history of illness of the study patients. It was observed that two third, 20 (33.3%) patients' were suffering from DM. Other 28(46.7%) patients' had HTN. CVD observed in 18(30.0%) cases.

Table IV: Distribution of the study patients by clinical presentation (n=60)

Clinical presentation	Frequency in study subject (n=60)	
	n	%
Loss of consciousness	60	100.0
Hemiparesis	32	53.3
Vomiting	48	80.0
Convulsion	4	6.7
Respiratory distress	54	90.0
Motor deficit	44	73.3
Restlessness	18	30.0
All of the above	4	6.7

Table IV shown distribution of clinical presentation in the study patients. The entire patients in both groups were unconscious at the time of presentation. It was observed that majority, 48 (80.0%) patients presented with vomiting. It was also observed that 54 (90.0%) patients presented with respiratory distress. Other results are shown in the table.

Table V: Distribution of the study patients by admission GCS (n=60)

Admission GCS	Frequency of GCS score (n=60)	
	n	%
7	25	41.7
8	16	26.7
9	13	21.7
10	5	8.3
11	1	1.6
Total	60	100.0

Table V shown distribution of admission GCS in the study patients. GCS is an important predictor of outcome. GCS 7 were included for the surgery. It was observed that 25 (41.7%) patients had GCS 7. Other results are also shown in the table.

Table VI: Distribution of the study patients by CT scan finding (n=60)

CT scan finding	Frequency among patents (n=30)	
	n	%
ventricular extension	60	100.0
midline shifting	28	46.7

Table VI shown CT scan finding of the study patients. It was observed that100% patients ha ventricular extension of ICH. Also, 28 cases also had midline shifting.

Table VII: Distribution of the study patients by post operative GCS (n=60)

Post operative GCS	Frequency of GCS score (n=60)	
	n	%
7	0	0.0
8	0	0.0
9	26	43.3
10	15	25.0
11	16	26.7
12	3	5.0

Table VII shown distribution of post operative GCS score in the study patients. GCS is an important predictor of outcome. GCS 7 were not found post operatively in any cases. GCS 8 was not also observed. GCS 9 was observed in 26 (43.3%) cases. Whereas, GCS 10, 11, 12 were found in 15 (25.0%), 16 (26.7%), 3 (5.0%) cases respectively.

Table VIII: Distribution of the study patients by GOS at discharge (n=60)

Post operative GCS	Frequency of GCS score (n=60)	
	n	%
Dead	6	10.0
Alive	54	90.0
Persistent vegetative	8	13.4
Severe Disability	9	15.0

Moderate disability	14	23.3
Good recovery	23	38.3

Table VIII shows GOS at discharge of the study patients, it was observed that more than three forth, 54 (90.0%) patients were alive and 6 (10.0%) cases died. The alive patients were again divided into 4 sub groups, as shown in the table. Good recovery observed in 23 (38.3%) cases. Moderate disability existed in 14 (23.3%) cases. Again, severe disability and persistent vegetative cases observed in 9 (15.0%), 8 (13.4%) cases.

Table IX: Distribution of the study patients by GOS at 6 months (n=60)

GOS at 3 months	frequency of cases (n=60)	
	n	%
Dead	**6**	**10.0**
Alive	**54**	**90.0**
Persistent vegetative	9	16.7
Severe disability	11	20.3
Moderate disability	9	16.7
Good recovery	25	46.3

Table IX shown GOS at 3 months of follow up of the study patients, it was observed that more than three forth, 54 (90.0%) patients were alive and 6 (10.0%) cases died. The alive patients were again divided into 4 sub groups, as shown in the table. Good recovery observed in 25 (46.3%) cases. Moderate disability observed in 9 (16.7%) cases. Again, severe disability and persistent vegetative cases observed in 11 (20.3%), 9 (16.7%) cases respectively.

Table X: Distribution of the study patients by overall functional outcome (n=60) at discharge

Overall functional outcome	Group A (n=30)	
	n	%
Favourable GOS: 4 and 5	37	61.6
Unfavourable (poor outcome) GOS: 1,2 and 3	23	38.3

Table X shown overall functional outcome of the study patients at the time of discharge, it was observed that 37 (61.6%) patients had favorable outcome (GOS 4 and 5) and 23(38.3%) patients had Unfavorable outcome (GOS 1,2 and 3).

Table XI: Comparison between pre operative with post operative outcome of the patients of underwent EVD

Per operative with post operative outcome	Pretreatment (n=30)	Post treatment (n=30)	*P* value
	Mean GCS	Mean GCS	
GCS	7	9	[a]0.001
Min-Max	(7-11)	(9-12)	

[a]P value was reached from paired t-test.

Table XI shown comparison of pre operative with post operative GCS of the study patients. It was observed that the mean GCS was found 7 in pretreatment and 9 in post treatment. Table also shown maximum and minimum range of GCS both before and after surgery. It also shown improvement after surgery. GCS difference before and after surgery were statistically significant ($p<0.05$) in paired t-test between the two groups.

Table XII: Comparison between GOS at 6 month with admission GCS

GOS at 3 months	Admission GCS					Total
	7	8	9	10	11	
Dead						6
Persistant vegetative						9
Severe disability						11
Moderate disability						9
Good recovery						25
Total						60

Table XII shown a comparison of GOS at 3 month with admission GCS of the study patients. It was observed that death was found 6 patients among which ..... had GCS score 8 whereas ..... had GCS score 7. Again, ... became persistent vegetative with GCS score ..... Good recovery and moderate disability were observed among 25 and 9 patients respectively. Good recovery observed in patients with GCS score ..... among 8.

Discussion

Osteoma is a slow growing benign mesenchymal osteoblastic tumor formed by mature bone tissue [5]. Stuart first defined osteoma as a benign, circumscribed, slow-growing bony tumour of mastoid [1]. Osteomas, constituting 0.1–1% of all benign skull tumors, are extremely rare [6]. The most common site reported is the front oethmoidal region and neighboring sinuses. Involvement of the temporal and occipital squama is extremely rare [7, 8]. Most often they are localized on sutures. Osteomas larger than 3 cm are termed giant osteomas [9]. They are also common in the front oethmoidal region with above 40 cases reported in the literature [10, 11]. Only few cases of giant osteomas involving the occipital region, posterior skull base, and the atlas have been reported in the literature so far [2-4, 12]. Etiology of the entity includes trauma, previous surgery, radiotherapy, chronic infection, and hormonal factors [13]. They may be a reliable marker for early detection of carriers of Gardner syndrome [14]. They are mostly asymptomatic, but they can present with deformity, swelling, pain, deafness, and chronic discharge [15]. The main clinical symptom is headache of varying intensity and quality, and in most cases not proportional to the size of the osteoma, which ranges from the size of a pepper bean to the size of a child's head. Computed tomography is the imaging modality of choice which demonstrates a rounded bony lesion on the mastoid outer cortex having distinctive margins with sessile or pedunculate base [16, 17].

The main differential diagnosis includes osteosarcoma, osteoblastic metastasis, isolated eosinophilic granuloma, ossifying fibroma, Paget's disease, giant cell tumor, osteoid osteoma, hemangioma, calcified meningioma, and monostotic fibrous dysplasia [5, 18-21]. However, edges of these lesions are generally less distinct compared to the osteomas.

Osteomas are respected only if they are symptomatic or else for cosmetic reasons. Surgery is indicated in cases of deafness,

discharge, dizziness and headache [2]. The surgical target must be outlining normal cortical bone all around the lesion. Because these lesions are limited to the external cortex, finding a plane of cleavage between the osteoma and normal bone is not difficult [22]. If mastoid air cells are exposed, a cortical mast oidecto my should be done [23]. Partial excision is justified if there is an extension to either facial nerve, bony labyrinth, or the fallopian canal [24, 25]. In such invasive scenario, damage to the facial nerve, tearing of the sigmoid sinus, and postoperative auricular discharge may complicate the postoperative course [13].

Histological, osteomas are composed of well-differentiated, mature bone characterized by dense lamellae with organized Haversian canals. Histological, there are three different subtypes: compact, spongiotic, and mixed [25].

The prognosis of the osteoma may be considered the best in terms of cosmetic and curative aspects provided complete excision is undertaken. Malignant transformation has not been reported yet [24]. The recurrence is also uncommon as only two cases have been reported so far [26].

In young patients with skull osteomas, complete workup needs to be done to rule out Gardner syndrome by screening for the concurrent presence of intestinal polyps, soft tissue tumors, and dental abnormalities [27].

Conclusion

Giant occipital osteomas have been rarely reported in the literature. Like giant osteomas in other locations of the skull, they can reach large volumes but are essentially benign and potentially curable by excision. Proper assessment of its extension especially when it is in the vicinity of the mastoid and the sub occipital regions is imperative to providing complete excision and limiting postoperative complications.

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