

# Intracranial Chondroma - A Rare Case Report

Dr. Meghana V. Chougule<sup>1</sup>, Dr. Prasanna Patankar<sup>2</sup>

<sup>1</sup>Consulting Neuropathologist, Shanti Pathology Laboratory, Kolhapur

<sup>2</sup>Consulting Neurosurgeon, Krishna Institute of Medical Sciences, Karad

**Abstract:** A 30 years female presented with lobulated extraaxial mass lesion along left high convexity. It is predominantly hyperintense on T2 W1 & 180 to hypointense in T1W1. Mild heterogeneous enhancement noted on contrast study. Foci of T2 shortening are noted within suggestive of calcification measuring 57x72x36 mm. Intraoperatively, the tumor was extraaxial, avascular, firm to hard attached to dura. Histologically, a tumor composed of lobules of amitotic chondrocytes variably showing mild nuclear enlargement with small nucleoli within well-formed lacunae. The intervening stroma is scanty and shows presence of thin walled blood vessels. There is no evidence of atypical cells, multinucleated or mitotic activity. Another differential diagnosis is low-grade chondrosarcoma, showed that a combination of five parameters (high cellularity, presence of host bone entrapment open chromatin, mucoid matrix quality, and age above 45 years) allowed optimal differentiation between enchondromas and chondrosarcomas grade I. Complete resection is the treatment of choice when the lesion is amenable to total removal. On conclusion chondromas are benign tumors that arise from skull base but may arise from convexity as well. Complete surgical resection is the treatment of choice. Histological differentiation from low grade / chondrosarcoma-1 is important.

**Keywords:** Intracranial tumor, Chondroma

## 1. Introduction

Chondromas are benign tumors that usually occur in small bones of hands and feet. Intracranial chondromas are rare and represent approximately 0.5% primary intracranial tumors.<sup>1,2</sup> These usually arise from at the base of skull from embryonic chondrocytic cell remnants.<sup>3</sup> But may also originate in falx and convexity dura.<sup>4,5,6,7</sup>

In our case chondroma was located in the left high fronto-parietal convexity measuring 52 x72 x 36 cm. (ML x AP x SI)

## 2. Case Summary

A 30 years female presented with lobulated extraaxial mass lesion along left high convexity. It is predominantly hyperintense on T2 W1 & 180 to hypointense in T1W1. Mild heterogeneous enhancement noted on contrast study. Foci of T2 shortening are noted within suggestive of calcification. Mass effect noted in the underlying brain parenchyma. Lesion is abutting the sinus, but no obvious sign is noted. The mass measures about 57 x 72 x 36 mm. (Fig.1)



Figure 1: MRI

### Operative approach

Left Fronto-parietal craniotomy was done. Dura was vascular and the tumor was adherent to dura. The dura was opened with base to Superior Sagittal Sinus. However, overlying inner table of skull bone did not show any gross deformity. The tumor was extraaxial and easily separable from rest of brain parenchyma. The tumor was firm to hard, avascular in consistency. It was possible to remove tumor completely. (Fig.2a, 2b)

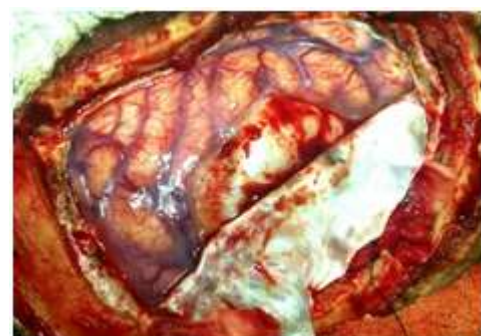


Figure 2 (a)



Figure 2 (b)

#### Gross Findings

We received an already cut-opened, well circumscribed, whitish and firm to hard tumor. Cut-section of the tumor revealed whitish, firm to hard areas. (Fig 3b)



Figure 3(a): Intact tumor

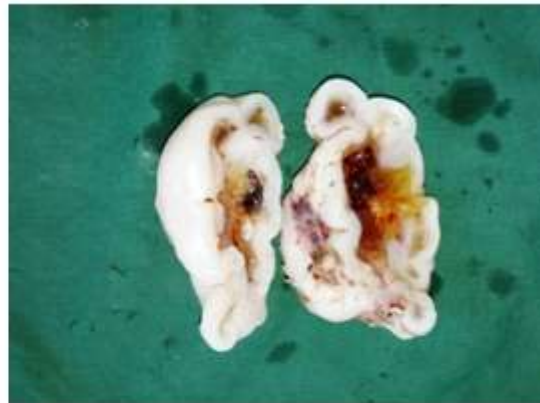


Figure 3(b): Cut section of the tumor

#### Gross images

#### Microscopy

Histological examination revealed a tumor composed of lobules of amitotic chondrocytes variably showing mild nuclear enlargement with small nucleoli within well-formed lacunae. The intervening stroma is scanty and shows presence of thin walled blood vessels. There is no evidence of atypical cells, multinucleated or mitotic activity. (Fig.4)

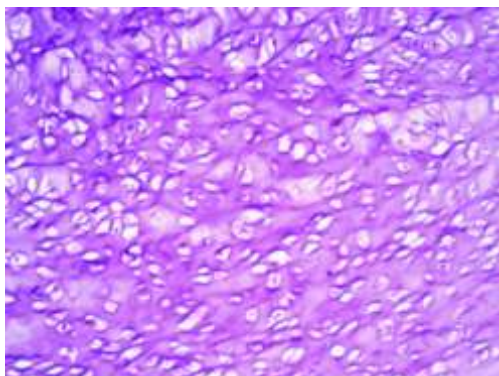


Figure 4: Microscopy photograph of chondroma 40x.

### 3. Discussion

Russell and rubinstein<sup>8</sup> reported aberrant growth of cartilage rests could cause chondroma in parts of intracranial cavity other than skull. Intracranial chondromas can arise from dura mater, while the remaining were located inside the brain parenchyma or the choroid plexus. Intracranial chondromas may coexist with similar growths in other bones, with systemic predisposition for such tumors in Ollier's multiple enchondromatosis and Maffucci's syndrome.<sup>5,9</sup>

Clinically, patients with intracranial chondromas often present with long standing symptoms that can be attributed to the slow-growing nature of these tumors. Headache, seizures, focal neurological deficits, and signs of increased intracranial tension maybe present.<sup>10</sup>

Chondromas are characterized by their large size at presentation as the case in our patient. Unlike meningioma, chondromas do not have any sex predilection. They have a peak incidence in the third decade of life, as in our case.

Radiologic differential diagnosis of meningioma, low-grade chondrosarcoma, and chordoma is essential. Angiography may be the diagnostic method for differentiating between chondroma and meningioma. Chondromas are avascular, whereas meningiomas typically exhibit a late-capillary and early-venous tumor blush from the meningeal arterial supply. CT scans reveal a well-circumscribed mass with lesional calcification, accompanied by erosion and destruction of the surrounding bone.<sup>2</sup> MRIs of intracranial chondromas show peripheral hypointensity relative to brain parenchyma on T1- and T2- weighted images that represent mature hyaline cartilage. The lack of peritumoral edema indicates slow growth over a period of many years.<sup>3</sup> Another differential diagnosis is low-grade chondrosarcoma, Eefting et al.<sup>12</sup> showed that a combination of five parameters (high cellularity, presence of host bone entrapment open chromatin, mucoid matrix quality, and age above 45 years) allowed optimal differentiation between enchondromas and chondrosarcomas grade I.

Complete resection is the treatment of choice when the lesion is amenable to total removal. Radiation therapy is not effective for chondroma and a malignant transformation to

chondrosarcoma has been reported after partial removal. On conclusion chondromas are benign tumors that arise from skull base but may arise from convexity as well. Complete surgical resection is the treatment of choice. Histological differentiation from low grade / chondrosarcoma-1 is important.

## References

- [1] Ref. Acampora S, Troisi F, Fisco G, Del Gaizo S: Voluminous Intracranial chondroma. *Surg. Neurol* 1982;18: 254-257.
- [2] Berkman Y , Blatt E. Cranial and Intracranial cartilaginous tumors. *Clin Radiol.* 1968; 19:327-333
- [3] Patel A, Munthali L, Bodi I. Giant cystic intracranial chondroma of the falx with review of literature. *Neuropathology*, 2009;29:315-317.
- [4] Kurt E, Beute GN, Sluzewski M van Rooij WJ Teepen JL. Giant chondroma of the falx. Case report and review of the literature. *J Neurosurg.* 1996;85:1161-1164.(PubMed)
- [5] Pallini R, Lauretti L, Fernandez E, Colodimo C. Giant chondroma of the falx . *J Neurosurg .* 1997;87:333-334 (PubMed)
- [6] Nakazawa T, Inoue T, Suzuki F, Nakasu S, Handa J. Solitary intracranial chondroma of the convexity dura: case report. *Surg Neurol.* 1993;40:495-4998.(PubMed)
- [7] Dewene B, Gilliard C, Nisolle JF, Trigaux JP, Lahdou JB. Unusual location of an intracranial chondroma. *AJNR Am J Neuroradiol.* 1997;18:573-575. (PubMed)
- [8] Russell D.S. rubinstein L.S. pathology of tumors of nervous system. 2<sup>nd</sup> london: Edward arnoid lacerate D, Gagne F, Copty M. Intracranial chondroma. Report of two cases and review of the literature. *Can J NEUROL Sci* 1996;23:132-137
- [9] Traflet R, barbaria A, barolt G, et al. intracranial chondroma in a patient with oliers disease : case report. *J neurosurg.* 1989;70:276.
- [10] Brownlee R, sevick R, reycastle N, et al. radiologic-pathologic correlation. Intracranial chondroma. *ANR.* May 1997; 18:889-893.
- [11] Eefting D, Schrage YM, Geirnaerd MJ, et al. assessment of interobserver variability and histologic parameters to improve reliability in classification and grading of central cartilaginous tumors. *Am J surg pathol.* 2009;33:50-57. (PubMed)
- [12] Grossman RI, Davis KR. Cranial computed tomographic appearance of chondrosarcoma of the base of the skull. *Radiology.* 1981;141:403-408. (PubMed)