

# Foreign Body Granuloma Mimicking Recurrence of Convexity Meningioma

## Rekürren Konveksite Menenjiomunu Taklit Eden Yabancı Cisim Granülomu

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**Abstract:** In this report we presented a case of an intracranial foreign body granuloma found in a 54-year-old female patient 10 year after she underwent a craniotomy for a right fronto-temporal convexity meningioma. While recurrence of meningioma is well known, foreign-body granuloma is a very rare intracranial mass lesion. Foreign body granuloma should be included in the differential diagnosis of previously operated recurrent intracranial masses.

**Key Words:** Foreign body granuloma, meningioma, tumor recurrence

**Özet:** Bu çalışmada sağ fronto-temporal konveksite menenjiomu nedeniyle ameliyat edilen 54 yaşındaki bir kadın hastada, 10 yıl sonra aynı lokalizasyonda gelişen bir kafa içi yabancı cisim granülomu olgusunu sunduk. Meningiom rekürrensi olağan bir durum olmasına karşın, yabancı cisime bağlı granülom gelişimi oldukça nadir görülen intrakranial bir patolojidir. Daha önceden ameliyat edilmiş fakat tekrarlayan kafa içi lezyonlarının ayırıcı tanısında yabancı cisim granülomu da düşünülmelidir.

**Anahtar sözcükler:** Meningiom, tümör rekürrensi, yabancı cisim granülomu

### INTRODUCTION

Chemical hemostatic materials such as cotton pads are routinely used in neurosurgical operation to aid intraoperative hemostasis. However, it can cause a foreign body reaction (1-3, 5, 6) which appears and not distinguish from recurrent tumor even on magnetic resonance (MR) images in post operative period (6).

The present report summarizes a case in which a 54-year-old female patient with a history of resection of a right fronto-parietal mass, presented 10 years later with a right fronto-temporal mass that clinically, radiologically and grossly mimicked a convexity meningioma. Identification of these rare lesions is important to prevent unnecessary surgery or inappropriate treatment of presumed tumor recurrence.

**CASE REPORT**

A 54 year-old woman had undergone resection on a right fronto-temporal convexity meningioma at another institution in 1991(Fig 1).



1. Figure 1: Axial CT scan shows a right fronto-temporal convexity meningioma.

Ten years later, she admitted to our institution with the complaint of headache, vomiting, nausea for two weeks and two generalized seizures. T<sub>1</sub>- weighted, T<sub>2</sub>-weighted, coronal flair, and gadolinium-enhanced magnetic resonance imaging demonstrated an enhancing mass in the resection cavity, which was suggestive of recurrent tumor (Fig 2). In addition, there was evidence of a previous craniotomy, with a surgical defect in the right fronto-temporal bone and adjacent right frontal lobe encephalomalacia (Fig 3).

During surgical exploration the tumor was globular and partly lobulated hard, well-demarcated, and yellowish-gray. It was firmly attached to the right temporal dura and removed completely. The postoperative course was uneventful. Histopathological examination revealed no evidence of a meningioma, but a foreign body granuloma with remnants of cotton fibers, mononuclear phagocytic cells and multinuclear giant cells (Fig 4). Cotton fibers were birefringent at the polarized light microscopy (Fig 5). No calcification or evidence of neoplasm was seen.

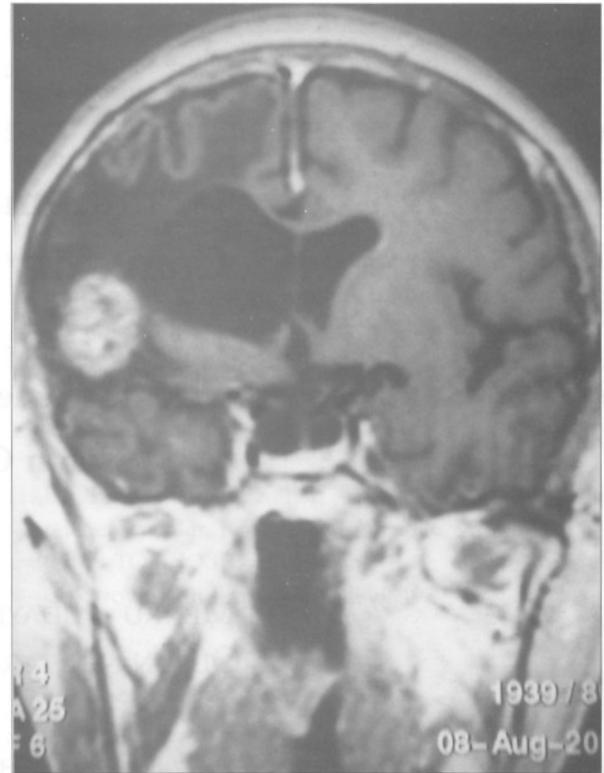


Figure 2: Coronal gadolinium-enhanced magnetic resonance imaging demonstrated an enhancing mass in the resection cavity, which was suggestive of recurrent tumor.

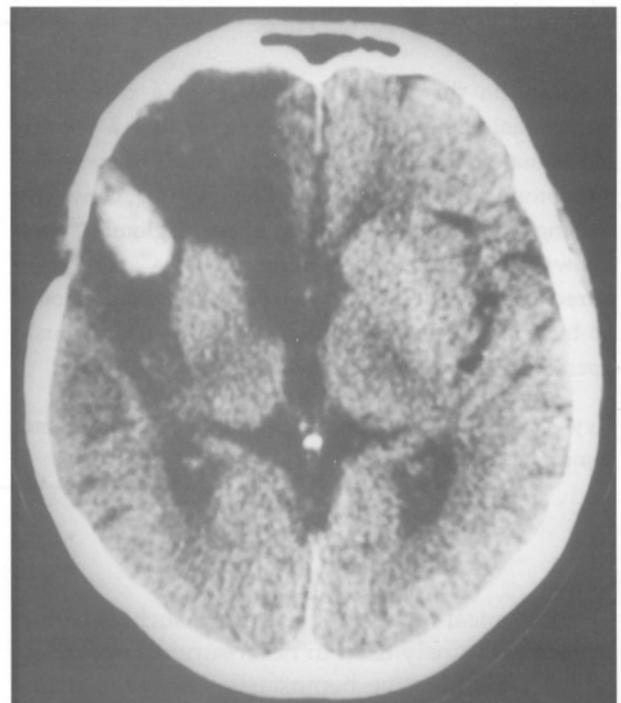


Figure 3: Axial CT scan shows a previous craniotomy, with a surgical defect in the right fronto-temporal bone and adjacent right frontal lobe encephalomalacia.

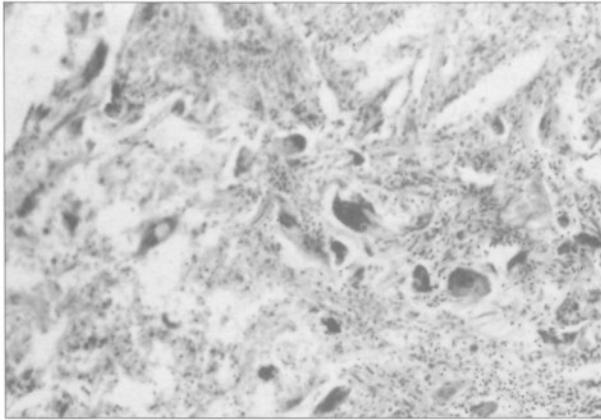


Figure 4: Microscopic appearance of resected material showing a granulomatous foreign body reaction. Cotton fibers and multinucleated giant cells were seen (HEx200).

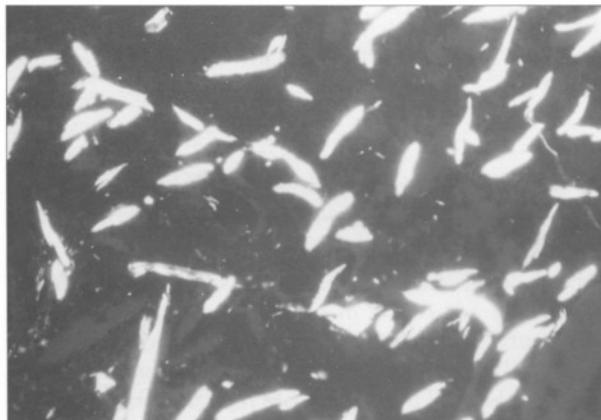


Figure 5: Photomicrograph of the same area showing birefringence at the polarized microscopy (Hex200 polarized light microscopy).

## DISCUSSION

Granulomas of the foreign body type following neurosurgical procedure are very rare (1, 2, 4, 6). A search of the literature published from 1965 to 2001, using subject headings "foreign body granuloma" and "brain," produced only 20 such reports. Anecdotal evidence that commonly used cotton materials for hemostasis may cause a granulomatous reaction that may mimic recurrent or progressive neoplasm or abscess on postoperative imaging studies (1-3, 5, 6).

Accurate information concerning the original surgery and postoperative therapies, length of time since surgery and careful examination of

radiological findings can assist in the differential diagnosis of previously operated recurrent intracranial masses that mimic a foreign body granuloma.

The capacity of CT and MR imaging to assist the neurosurgeon in diagnosis of a foreign body granuloma is insufficient. However, MR imaging findings of low intensity on T<sub>1</sub>-weighted images with heterogeneous high intensity and enhancement on T<sub>2</sub>-weighted images, respectively, seem to be rule for foreign body granulomas, as demonstrated in this case and in others (4, 6).

Some radiographic guidelines suggest that the presence of a visible ring of density on a precontrast scan is not associated with self-limited conditions but is instead associated with malignant phenomena, such as recurrent tumor, and may likely require surgical intervention for histopathological diagnosis.

In our case, even though the lesion does not make a mass effect, we remove it with suspicion of a recurrent tumor and treatment for headache and seizure. Although rare, foreign body granuloma should be included in the differential diagnosis in case of enhancing masses that appear on MR imaging at site of previous craniotomies.

To avoid such a complication, high quality radioopaque cotton pads which have thread should be chosen.

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## REFERENCES

1. Chambi I, Tasker RP, Gentili F: Gauze-induced granuloma ("gauzoma"): an uncommon complication of gauze reinforcement of berry aneurysms. *J Neurosurg* 72: 163-170, 1990
2. DeSousa AL, Kalsbeck JE, Batnitzky S: An unusual late complication of gasserian ganglion decompression surgery. Case report. *J Neurosurg* 48: 834-837, 1978

3. Feldman RP, Marcovici A, Suarez M, Goodrich JT: Foreign body granuloma mimicking intracranial meningioma: case report and review of the literature. *Neurosurgery* 44: 855-858, 1999
4. Kothbauer KF, Jallo GI, Siffert J, Jimenez E, Allen JC, Epstein FJ: Foreign body reaction to haemostatic materials mimicking recurrent brain tumor. Report of three cases. *J Neurosurg* 95:503-6, 2001
5. Shimosaka S, Waga S: Foreign-body granuloma simulating recurrence of falx meningioma. Case report. *J Neurosurg* 59: 1085-1087, 1983
6. Vishteh AG, Apostolides PJ, Dean B, Spetzler RF: Magnetic resonance image of postcraniotomy retained cotton or rayon. Case illustration. *J Neurosurg* 88: 928, 1998