*American Journal of Medical Case Reports, 2020, Vol. 8, No. 12, 467-470*
Available online at http://pubs.sciepub.com/ajmcr/8/12/9
Published by Science and Education Publishing
DOI:10.12691/ajmcr-8-12-9

# Invasive Recurrent Meningioma with Extracranial Tissue Involvement: A Case Report

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*Received July 23, 2020; Revised August 25, 2020; Accepted September 03, 2020*

**Abstract** Meningioma is a common benign intracranial neoplasm. The incidence of extracranial extension to other sites is rare. Due to the neglected intracranial component, the chances of an under diagnosis or a misdiagnosis of the extracranial component is there, which may adversely affect the management and therefore, the prognosis of the patient.

***Keywords:*** *invasive meningioma*

**Cite This Article:** Neeraj Salhotra, Sheikhan Al Hashmi, Aml Eid Mohammad Saleh, Mahmood Marhoon Al Hatalli, Simin Laiq, Zahra Al Hajri, and Kauther Al Zakwani, "Invasive Recurrent Meningioma with Extracranial Tissue Involvement: A Case Report." *American Journal of Medical Case Reports*, vol. 8, no. 12 (2020): 467-470. doi: 10.12691/ajmcr-8-12-9.

## 1. Introduction

Meningioma is the second most common primary brain tumor. It accounts for accounts for 13-15% of all intracranial neoplasms. Traditionally, it is classified by the combination of two properties: The site of the tumor (for example, convex meningioma, sphenoid crest meningioma or cerebellar meningioma) and the pathological nature of the tumor (benign or malignant meningioma). This classification provides accurate localization of the tumor and enables the selection of the appropriate surgical approach, in addition to allowing the setting of a multidisciplinary management plan and an estimation of patient's prognosis. In general, the pathological nature of meningioma determines its association with the brain parenchyma, i.e., benign meningioma is usually compressive to the brain parenchyma due to its expansive growth, and malignant meningioma is more likely to be invasive into the neighboring brain parenchyma due to its intrusive growth. However, clinical observations have indicated that there is a sub-group of benign meningioma displaying a malignant growth pattern, that is, invasion into the neighboring brain tissue and overlying bony and soft tissues. We herewith present a case in this category (atypical meningioma in 2009).

## 2. Material and Methods

This 50-year-old patient presented to our hospital with a history of undergoing multiple operations for a midsagittal left sided meningioma in a medical center abroad. Now he presented with right sided hemiplegia and aphasia and scalp swelling. Examination revealed a fungating tumor in the left parietal region. CT and MRI imaging further delineated the extent of the disease, as shown in Figure 1. All possible risks and benefits of surgery were explained to the patient, with overall guarded prognosis for recovery of hemiplegia and aphasia. After the family agreed for the surgery, a detailed planning discussion was done, which included plastic surgery team for flap reconstruction.

## 3. Results

Patient underwent re-exploratory left parietal craniotomy and excision of the invasive parasagittal meningioma. Duraplasty was done. The resultant complex bony and soft tissue defect was large (11x 11 cm) on the vertex region of scalp. This was successfully reconstructed by the plastic surgery team using a large rotation advancement flap (10x 30 cm) based on the left occipital and posterior auricular arteries. The donor site of the flap was resurfaced with split thickness skin graft harvested from the right thigh as per Figure 4, Figure 5, Figure 6 and Figure 7. A lumbar drain was kept to allow healing which was converted to a lumboperitoneal shunt later. Patient later required a revision of the flap due to edge necrosis. Histopathology revealed the lesion to be an Anaplastic meningioma, WHO grade III, as per Figure 2 and Figure 3. Currently the patient is gradually recovering, he is on aggressive physiotherapy and awaits radiotherapy after completed wound healing.

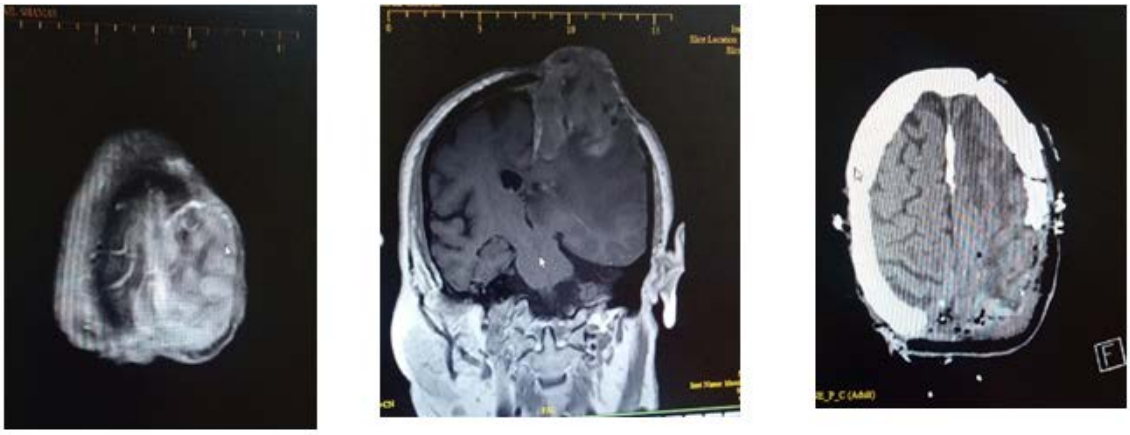

**Figure 1.** Preoperative images of the patient

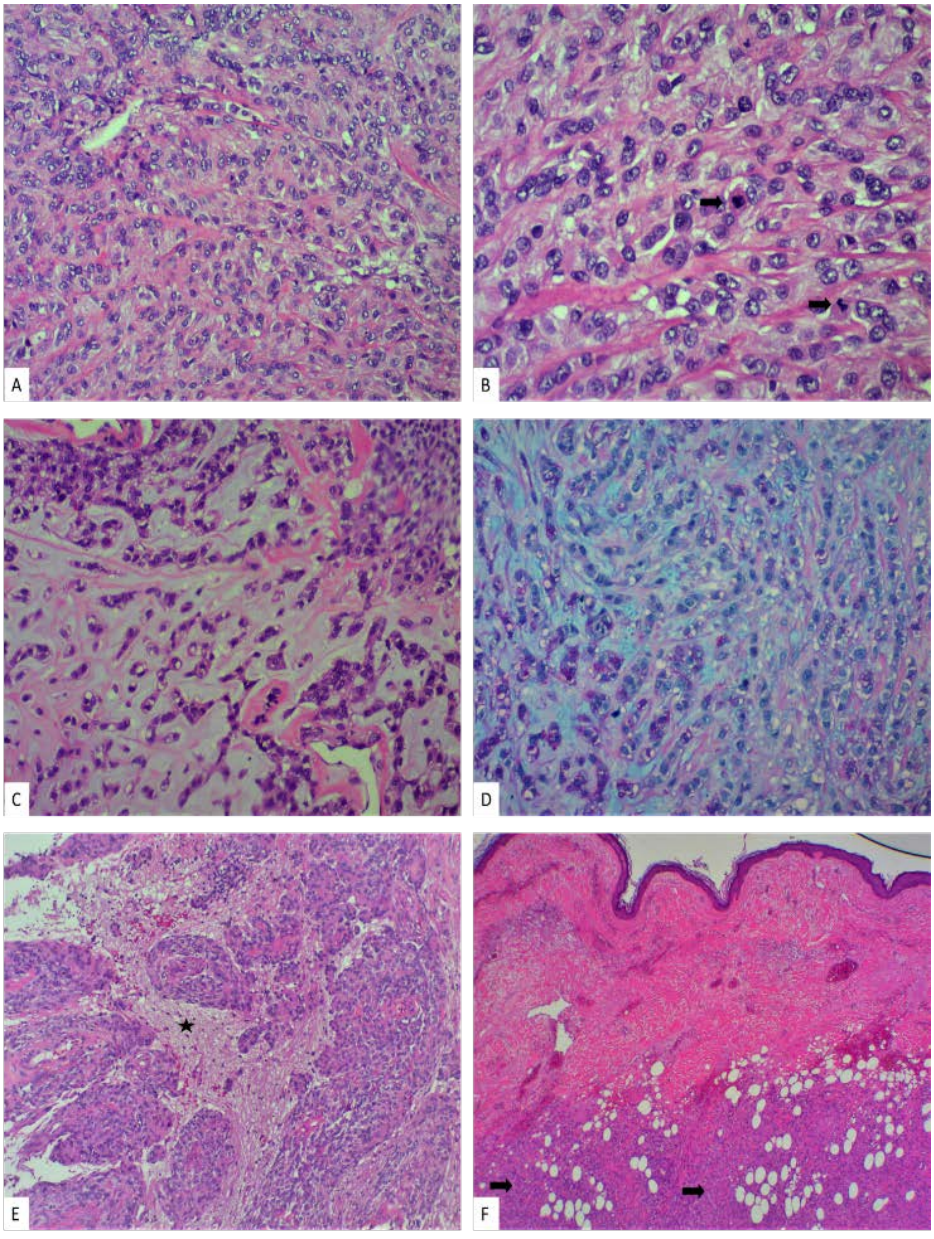


**Figure 2.** A. Anaplastic meningioma with sheeting architecture (10x magnification). B. Anaplastic meningioma with increased mitosis (black arrows) and nuclei showing prominent nucleoli (20x magnification). C. Chordoid meningioma areas with cells arranged in cords and trabeculae, surrounded by mucoid background (20x magnification). D. Alcian Blue/PAS special stain highlights mucous-rich matrix (light blue color) in Chordoid meningioma areas (20x magnification). E. Focal invasion of brain parenchyma (black star) by meningioma (10x magnification). F. Focal invasion of subcutaneous tissue by meningioma (black arrows), no infiltration into above dermis/epidermis (5x magnification)

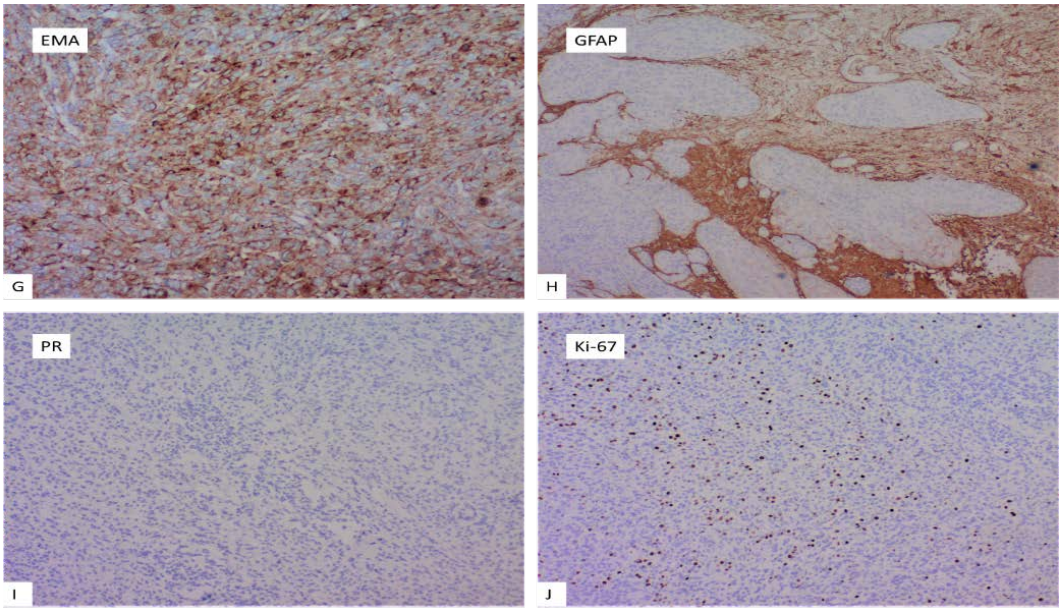


**Figure 3.** Immunohistochemical stains: G. Epithelial membrane antigen (EMA) shows positive membranous and cytoplasmic staining of tumor cells (10x magnification). H. Glial fibrillary acidic protein (GFAP) highlights invaded brain parenchyma by meningioma (10x magnification). Progesterone receptor (PR) is negative in the tumor cells (10x magnification). J. Ki-67 proliferation index is up to 15% (10x magnification)

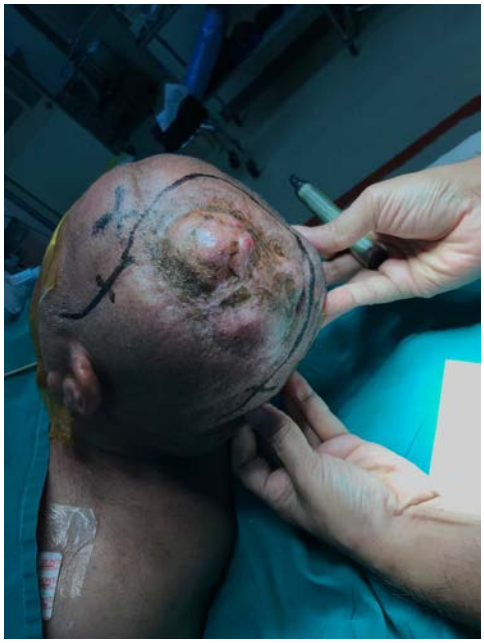

**Figure 4.** Intraoperative picture prior to excision of the lesion

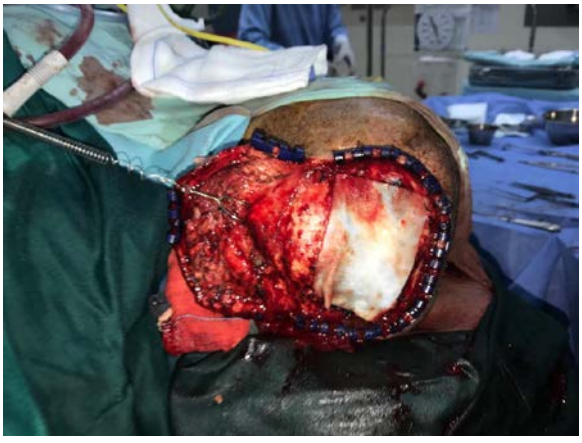

**Figure 5.** Intraoperative image after excision of the tumor and duraplasty

**Figure 6.** Scalp flap raised for covering the skin defect

**Figure 7.** Final reconstruction after scalp flap and split skin graft covering the donor area

## 4. Discussion

Sunil K Singh, in 2008, reported a case of isolated scalp meningioma [1]. Sahil I Panjavani, in 2013, reported a case of carpet meningioma mimicking a bone tumor [2]. Remodel SA, in 1999, reported SPARC as a marker in invasive meningioma [3]. Goel A in 1999 reported his series of unusual ways of presentation and spread of invasive meningioma [4]. Ashmore DL, in 2016, reported a case of recurrent meningioma of scalp after 13 years and discussed its pathophysiology [5].

## 5. Conclusion

Recurrent invasive meningioma with scalp and bony involvement is a challenge to manage and involves the collaboration among various specialties. Outcome however remains guarded towards the quality of life, recurrence and prognosis. Our case is one such case. Our patient is currently on an extensive rehabilitation treatment program and is on regular follow up in our out-patient clinic.

## References

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