ISSN: 2754-4923

Journal of Diagnosis & Case Reports

SCIENTIFIC Research and Community

Case Report

Open Access

Successfully Treated Parasagittal Meningioma Filling the Posterior One Third-Superior Sagittal Sinus with Upfront Stereotactic Radiosurgery without Resection

Oumerzouk Jawad[1]*, Hafidi Jawad[2] and Bourazza Ahmed[1]

[1]Neurology Department. Mohammed V Military Instruction Hospital. Rabat. Morocco

[2]Anatomy Department. Medecine Faculty. Mohammed V Souissi University Faculty of Medicine and Pharmacy. Rabat. Morocco

***Corresponding author**
Oumerzouk Jawad, Neurology Department, Mohammed V Military Instruction Hospital, Rabat, Morocco.

Received: October 31, 2025; **Accepted:** November 03, 2025; **Published:** November 26, 2025

Introduction

We herein describe a superior sagittal sinus (SSS) meningioma with a complete occlusion of flow in the sinus and its successful treatment with stereotactic radiosurgery (SR). A previously healthy 41-year-old man with no prior medical history presenting with 2 months of progressive headaches, visual changes and 2 ictal episodes of generalized tonic-clonic seizures. On physical examination, he had biateral papilledema, blurring and temporal pallor of the optic papillae edges. Gadolinium-enhanced magnetic resonance imaging (MRI) of the brain revealed a posterior median interhemispheric extra-axial mass measuring 29×27×50 mm, developed in hemisphere from a wide base of meningeal implantation on the layers of the posterior one third of the SSS, indicating a parasagittal meningioma (PSM) along the posterior one third of the SSS. The mass was isointense on T1 (Figure 1A) with intense and homogeneous enhancement after injection of gadolinium (Figure 1B), and hyperintense on T2, FLAIR and diffusion-weighted images (Figure 1C, 1D, 1E). There is also a meningeal contrast uptake all around creating a "dural tail" appearance. This process invades the lumen of the SSS, completely obstructing its lumen, without involvement of the adjacent cortical veins which remain permeable. MRI revealed also an interesting pattern of collateral venous drainage. We also note a tortuous aspect of the optic nerves, papillary excavation and empty sella indicating intracranial hypertension (Figure 1F). Magnetic resonance venography (MRV) showed an interruption of flow through the superior sagittal sinus in the area of the lesion and systemic anticoagulation (Rivaroxaban 10mg/day) asscoiated with acetazolamide was utilized to treat thrombus formation and intracranial hypertension. Histopathological microscopic examination of a tissue specimen collected during stereotactic biopsy was consistent with meningioma (WHO grade I tumor). Microsurgery was not considered and stereotactic radiosurgery (Gamma Knife surgery, GKS) was performed using a Leksell stereotactic frame (Elekta AB), MRI-guided dose planning, and the Perfexion model Gamma Knife unit. A central dose of 24 Gy and a marginal dose of 15 Gy was delivered to the posterior one-third of the SSS including the extent just inferior to the confluence of sinuses. A contrast-enhanced brain MRI performed 18 months after, showed a mass within the SSS originating from the site of SR and extending posteriorly all the way into the confluence of sinuses. The length of this tumor extension beyond the SR volume was 1 cm, and the first course of stereotactic radiosurgery (SR) had proved ineffective in stopping tumor progression. Microsurgery was not considered again and the patient was treated with a seconde course of SR (the same first target volume) and he received 54 Gy in 30 fractions over 60 days; a tumor margin dose of 15 Gy and a maximum dose of 30 Gy was delivered to the posterior one-third of the SSS including the extent just inferior to the confluence of sinuses. The patient's postoperative course over of the next 6 months was uncomplicated and a follow-up MRI with contrast 16 months later showed no tumor volume regression but with no further re-growth. However, MRV at 2 years showed patency of the venous blood flow in the SSS. Five years after radiosurgery the patient is symptom free and follow-up MRI showed no further progression of the PSM within the SSS. Continued surveillance with biannual MRI was recommended.

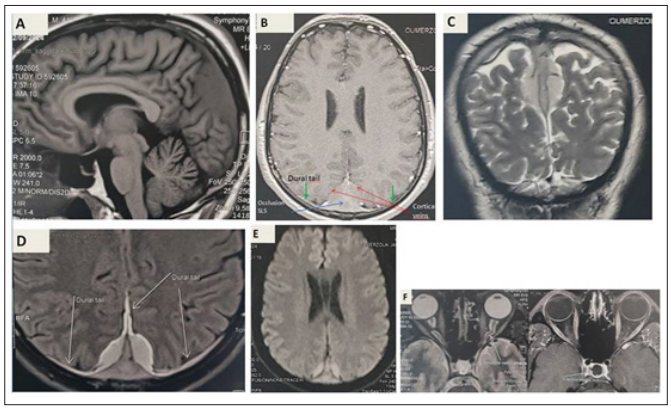

Figure 1 : Brain MRI revealed a posterior median interhemispheric extra-axial mass isointense on T1 (A) with intense enhancement after injection of gadolinium (B), hyperintense on T2 (C), FLAIR (D) and diffusion-weighted images (E) corresponding to a parasagittal meningioma involving the posterior one third of the superior sagittal sinus, with lumen obstruction. There is also a meningeal contrast uptake all around creating a "dural tail" appearance (B) and intracranial hypertension radiologic signs (F).

Parasagittal meningiomas (PSM) constitute 21-31% of intracranial meningiomas and PSM with infiltration of venous sinuses represent 15% of meningiomas [1,2]. It should be noted that PSM are associated with relatively high rates of recurrence and their aggressive resection is technically challenging due to invasion of dural venous sinuses and involvement of bridging cortical veins draining into these large sinuses, which often complicates surgical interventions and can prevent complete tumor resection [1,2,3]. According to the literature statistics, only 25% of patients with superior PSM can clinically obtain a Simpson grade I resection [4]. Stereotactic radiosurgey (SR) for PSM grade I with SSS involvement represents a good option as a first-line treatment [4]. Moreover, less aggressive surgical treatment (subtotal resection) followed by SR is a reasonable approach for many large PSM in order to preserve the venous structures without removing tumor infiltration and sinus reconstruction or venous by-pass, which significantly reduced the complication rate and decreases surgical risk [4,5]. Addionally, previous series demonstrate a good rate of long-term tumor control ranging from 67% to 78% at 5 years after radiosurgery with an acceptable adverse effects profile [4,5]. In a recent study, the overall 10-year recurrence after subtotal resection for meningiomas invasive to the SSS followed by SR varies from 9% to 20% and the 25-year recurrence rate is 47%. The failure to control the growth of tumors after gamma-knife radiosurgery result from two different factors: failure to control viable tumor cells within the treatment field and recurrence outside of the treated field, "out-of-field recurrence." The main factors influencing PSM recurrence rates include the sindou grade, the microscopic pattern (WHO grading), the MIB-1 labeling index, tumor size and karyotype [4,5]. For the timing of SR. Stressed that the SR method should be used as adjuvant treatment after surgery to control tumor growth and avoid recurrence, particulary in patients with Simpson grade IV resection and grade WHO II and III PSM. Addionally, the upfront SR appears to offer a reasonable benefitto-risk ratio for patients with small- to moderate-sized (<3cm) WHO Grade I PSPF meningioma. However, initial resection followed by SR for PSM seems to be a more effective treatment for tumors larger than 3 cm [4,5]. Finally, SR has proven to be a safe therapy but may have some adverse effects such as symptomatic radiosurgery-induced peritumoral edema, sudden increase in volume of hemorrhagic residual tumor, and radiation induced venous thrombosis, because of some predisposing factors such as larger tumor volume, increased prescription dose, and age older than 60 years [4,5]. In conclusion, our case demonstrated that SR used as the upfront treatment in the management of selected PSM with significant sinus invasion, that cannot be completely resected is an established efficacious alternative treatment, providing a relatively safe and minimally invasive way to control tumor growth, maintain patient functional status, and reduce the need for open resection.

Ethical Approval Statement
The study protocol was approved by an institutional ethics committee with a waiver of consent.

Funding Declaration
No funding sources to declare

Availability of Data and Materials
Not applicable

Conflict of Interest
The authors have no conflict of interest

Patient Consent Statement
Obtained

Authors' Contributions
The authors participation to analysis, draft and revision of the article

Acknowledgements
Not applicable

References

1. Elzarief AA, Ibrahim MF (2018) Long-term follow-up of motor function deterioration following microsurgical resection of middle third parasagittal and falx meningioma. Egypt J Neurol Psychiatr Neurosurg 54: 9.
2. Casali C, Del Bene M, DiMeco F (2020) Falcine meningiomas. Handb Clin Neurol 170: 101-106.
3. Alzughaibi RA, Almuhammadi GA, Alasmari SS, Khoja MM, Almashni AA (2024) Challenging Resection of Bilateral Parasagittal and Falcine Meningioma Involving Both Anterior Third and Middle Third of the Superior Sagittal Sinus: A Case Report and Literature Review. Cureus 16: e64865.
4. Chen WW, Wang Y, Hu YC, Zhao YL (2023) Analysis of the common complications and recurrence related factors of superior parasagittal sinus meningioma. Front Surg 9: 1023021.
5. Schmutzer M, Skrap B, Thorsteinsdottir J, Fürweger C, Muacevic A, et al. (2023) Meningioma involving the superior sagittal sinus: long-term outcome after robotic radiosurgery in primary and recurrent situation. Front Oncol 13: 1206059.