

## Introduction

Topical hemostatic agents made from collagen or gelatin and mixed with thrombin are commonly used to facilitate hemostasis in patients undergoing tumor resection. Neurosurgical patients are at considerable risk of experiencing thromboembolic complications, with a rate of deep venous thrombosis (DVT) and pulmonary embolism (PE) ranging between 2% to 20%. Association between the use of hemostatic agents and thromboembolic events in patients undergoing meningioma resection has been recently suggested.

## Methods

The authors conducted a retrospective, multicenter, clinical review of all craniotomies between 2013 and 2014 to evaluate the relationship between flowable hemostatic matrix (with or without thrombin) application and deep vein thrombosis and pulmonary embolism in 932 patients treated for brain tumor removal. The primary outcome was the presence of a thromboembolic event within 14 days of craniotomy.

## Results

Tumor pathology included 441 gliomas, 296 meningiomas and 195 metastases. Thromboembolic events were identified in 24 patients in which gelatin matrix with thrombin was applied, in 19 patients in which gelatin matrix without thrombin and in 5 cases in which classical methods of hemostasis was used. Higher rate of VTE was appreciated in deep cerebrum and parasagittal locations, while skull base and convexity tumors had a lower incidence of DVT and PE. 6% of cases with cerebral venous sinus involvement developed thromboembolic events. The mean tumor diameter among patients with thromboembolic events was 4.2 cm, compared to 4.5 cm among patients without DVT/PE. In our study there was a higher incidence of VTE in patients receiving a greater than 10 ml gelatin hemostatic matrix.

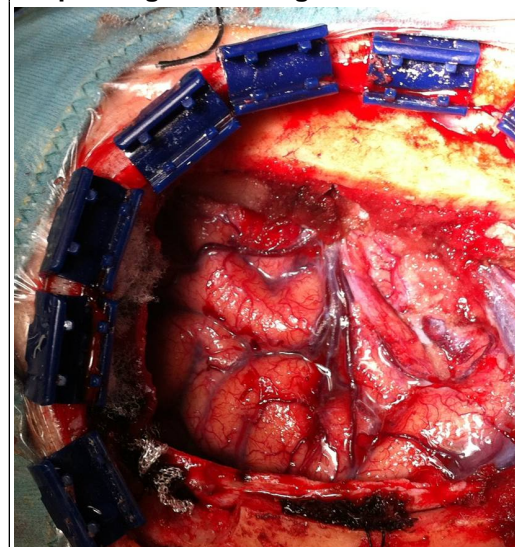
## Conclusions

There were no significant differences in age, procedure duration and hemostatic use, while thromboembolic events increased according to tumor pathology, tumor location and application of hemostatic near venous sinuses.

## Learning Objectives

By the conclusion of this session, participants should be able to identify in which location is better not to apply flowable hemostatic matrix to avoid postoperative thromboembolic events.

Gelatin matrix hemostatic use in a parasagittal meningioma removal



## References

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- 2) Hemostatic matrix sealant in neurosurgery: a clinical and imaging study. Gazzeri R, Galarza M, Neroni M, Alfieri A, Giordano M. Acta Neurochir (Wien). 2010 2011 Jan;153(1):148-54
- 3) The Safety and Biocompatibility of Gelatin Hemostatic Matrix (Floseal and Surgiflo) in Neurosurgical Procedures. Gazzeri R, Galarza M, Alfieri A. Surg Technol Int. 2012 Sep 1;XXII. doi:pii: sti22/3.