

Management of Dural Venous Sinus Thrombosis Following Microsurgical Resection of Vestibular Schwannoma

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Introduction Dural venous sinus thrombosis (DVST) is a known complication of microsurgical resection of vestibular schwannomas (VS), typically secondary to exposure or retraction of venous structures. Risk of clinical progression and optimal management of perioperative DVST is relatively understudied. Spontaneous DVST treatment is anticoagulation, however this is typically contraindicated in the immediate postoperative period. Conversely, untreated DVST can lead to elevated intracranial pressure and dural venous scarring. **There is a lack of evidence-based guidelines that weigh patient characteristics, risk factors, and complications for management of these patients.**

Study Goals:

- Measure rates of DVST associated with microsurgical resection of vestibular schwannoma.**
- Identify current management of surgery-related DVST and radiographic outcome.**

Methods a retrospective chart review of patients with VS who underwent surgical resection of VS between 2013-2022 was conducted at a single institution. Radiology reports and source films were screened for evidence of DVST. Demographic data, surgical approach, symptoms attributed to DVST, DVST management, and complications were assessed through chart review.

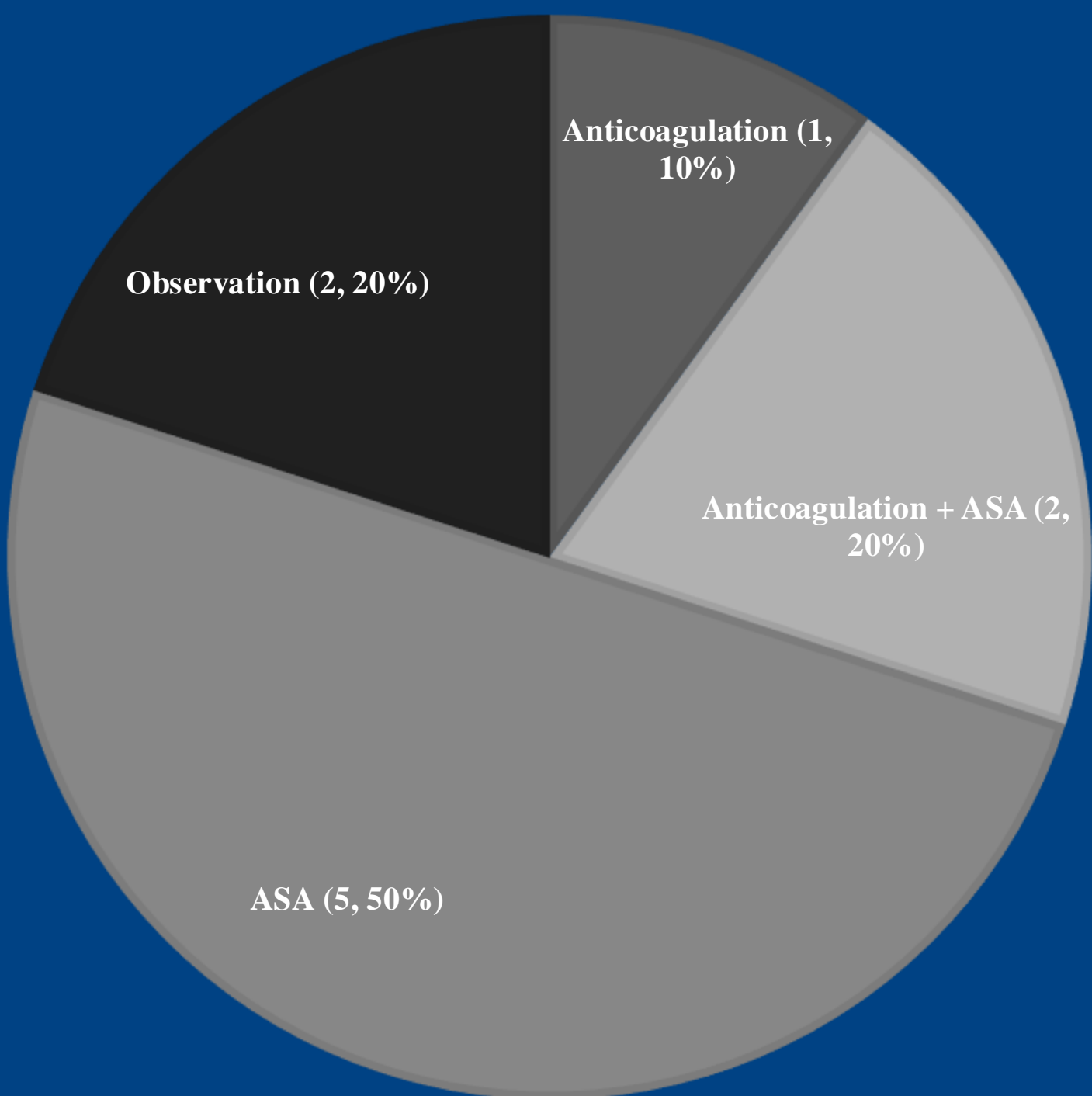
Results Of 166 patients who underwent surgery for VS resection, 10 (6%) patients developed postoperative DVST. 8 (80%) were female, 8 (80%) were translabyrinthine approach and 2 (20%) were retrosigmoid.

When looking at incidence by surgical approach, 9.9% of all translabyrinthine (n=81) cases resulted in a DVST versus only 2.4% of total retrosigmoid (n=82) approaches.

	Total Cohort (n=166)	Postop DVST (n=10)
Gender		
Male	78, 47.0%	2, (20.0%)
Female	88, 53.0%	8, (80.0%)
Approach		
Translabyrinthine	81, 48.8%	8, (80.0%)
Retrosigmoid	82, 49.4%	2, (20.0%)
Middle fossa	5, 3.0%	0, (0.0%)

Patient #	Symptom	Treatment
1	Headache	None
2	Nausea, vomiting, vertigo, headache	Heparin, required thrombectomy
3	Headache, photophobia	ASA 325mg

TREATMENT



Key Points

- DVST is an uncommon complication of VS resection in this population (6%)
- There is a higher incidence of DVST in translabyrinthine cases (9.9%) as opposed to retrosigmoid (2.4%)
- Management of postoperative DVST varies
- One patient (12.5%) experienced a bleeding related complication while on anticoagulation
- Both anticoagulation and ASA appear to be equally efficacious management strategies

TREATMENT

Three patients with DVST were symptomatic (30%), two of whom received treatment. 8 total patients underwent treatment with either anticoagulation alone, anticoagulation plus ASA, or ASA alone.

COMPLICATIONS

6 (75%) of the 8 treated patients did not experience any complications. One patient experienced a fat graft site hematoma while undergoing ASA and lovenox therapy. One patient required recanalization via venous thrombectomy for symptomatic propagation of thrombus despite anticoagulation. Four patients had persistent thrombus on follow-up imaging, all of whom were treated with ASA. Five patients had resolved thrombus on imaging and one patient did not have follow-up imaging available to review.

Conclusion

Postoperative DVST is an uncommon complication of VS resection and management can vary. There is a possible increased incidence via translabyrinthine approach versus retrosigmoid. Optimal management is unclear, although anticoagulation is likely to be associated with a higher risk of bleeding complications as opposed to antiplatelet therapy. Both appear to be equally efficacious in preventing further complications.

Abbreviations:

- DVST = dural venous sinus thrombosis
- VS = vestibular schwannoma
- ASA = aspirin
- CSF = cerebral spinal fluid