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Introduction

Symptomatic Chiari I malformations require decompressive surgery with the removal of the lamina of the first through third cervical vertebra and part of the occipital bone with incision into the dura. Biologic grafts, synthetic grafts, and autologous pericranial and ligamentum nuchae grafts have been used for duraplasty. However, in addition to dural closure, obliteration of space created by incisive myotomy is necessary. Muscle flap choices have included the trapezium, latissimus dorsi, and free muscle flaps, each with its own limitation. In 1994 a splenius capitis muscle flap for reconstruction of the posterior neck was described in a case report with no other reports published since. The purpose of this study is to report outcomes of patients who have undergone splenius capitis muscle flap for posterior neck space obliteration in Chiari I malformation decompression procedures.

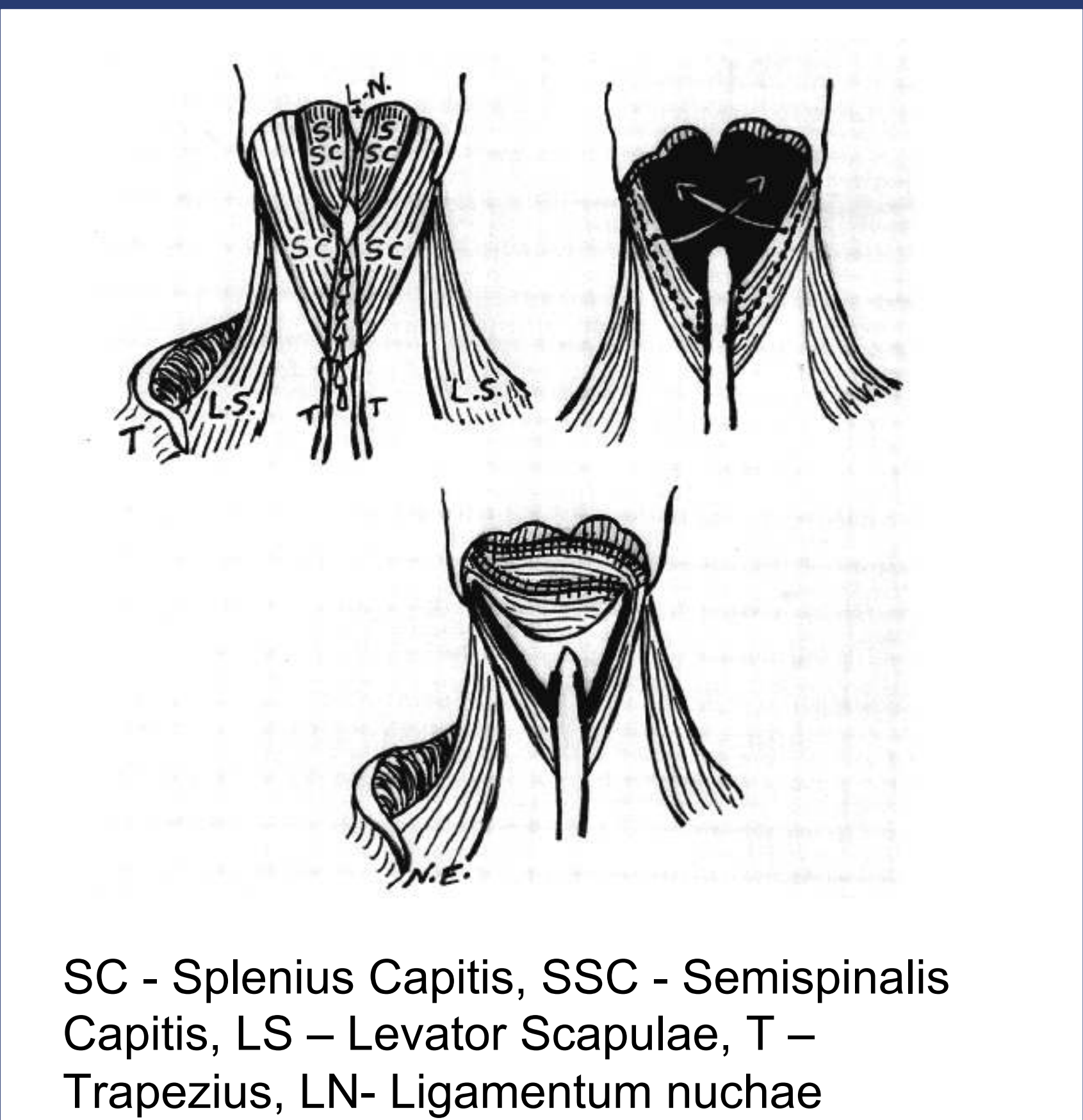
Methods

The Institutional Review Board deemed the retrospective case series exempt. Patients who undergoing Chiari I malformation decompression with splenius capitis muscle flap reconstruction were evaluated. Patient demographics, prior surgical intervention; variations in surgical techniques, as well intraoperative and postoperative complications were analyzed between the years of 2000 and 2022.

Results

- A total of 22 patients who underwent Chiari I malformation decompression with splenius capitis muscle flap reconstruction were identified.
- Age range 16-59 (3 male, 19 female)
- CSF leak N=2, superficial wound infection N=2, incision dehiscence N=2, functional muscle N=0.
- The CSF leak patients were treated with lumbar drain alone and healed.
- No wound complications showed compromise of the muscle flap.
- There were two non-incisional related complications: DVT=1, ischemic stroke=1.

Splenius Capitis Anatomy



Conclusions

The splenius capitis flap is a safe and effective muscle flap for posterior neck space obliteration in Chiari I malformation decompression procedures. With wound related issues such as SSI and CSF, the patients healed with minimal intervention. No patients with wound complications showed compromise of the muscle flaps and there were no patients with donor site functional morbidity.

Chiari I malformation

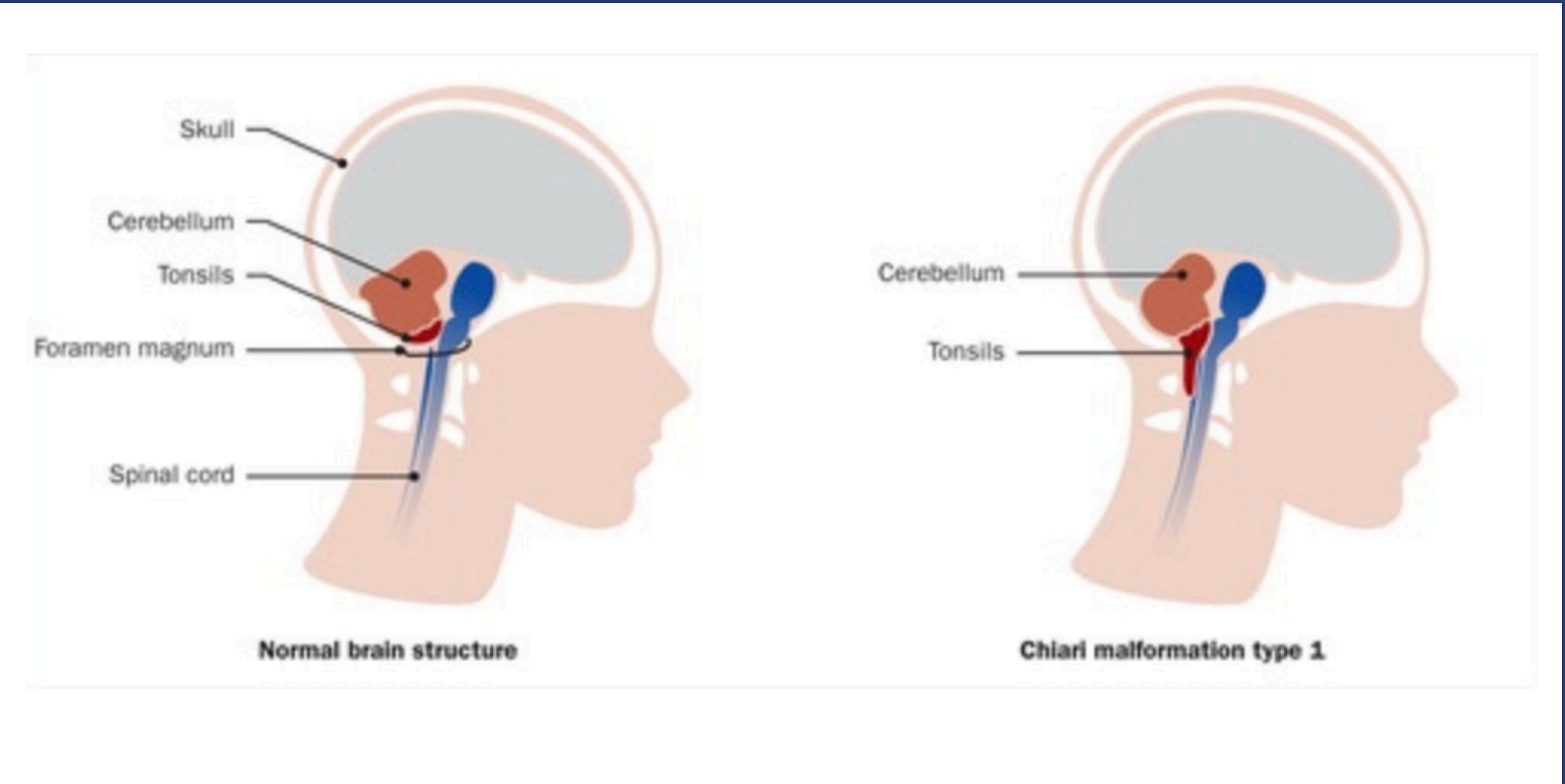


Table 1: Complications

Complications	Number of patients (22)	Percent (%)
CSF Leak	2	10
Incisional dehiscence	2	10
Superficial wound infection	2	10
Functional deficit	0	0
DVT	1	5
Stroke	1	5

Reference

[1] Elsayh NI, Achecar FA. Use of the splenius capitis muscle flap for reconstruction of the posterior neck and skull in complicated Arnold-Chiari malformation. Plast Reconstr Surg. 1994 Apr;93(5):1082-6. doi: 10.1097/00006534-199404001-00031. PMID: 8134469.

[2] Furtado, Sunil V et al. “Repair of Chiari III malformation using cranioplasty and an occipital rotation flap: technical note and review of literature.” *Surgical neurology* vol. 72,4 (2009): 414-7; discussion 417. doi: 10.1016/j.surneu.2008.09.008

[3] Norman, Sofya et al. “Myofascial Flap Closure Decreases Complications in Complex Surgery of the Craniocervical Junction in Ehlers-Danlos Patients.” *Annals of plastic surgery* vol. 88,3 Suppl 3 (2022): S201-S204. doi:10.1097/SAP.00000000000003176