

Clinical Outcomes Following Spine Tumor Resection and Posterior Spinal Fusion with Myofascial Flap Closure vs. Primary Closure

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INTRODUCTION

- Myofascial flap closures performed by plastic surgeons have been shown to decrease complications in posterior spinal fusion (PSF)
- It remains unclear whether muscle flap closure improves outcomes in patients with spinal tumors

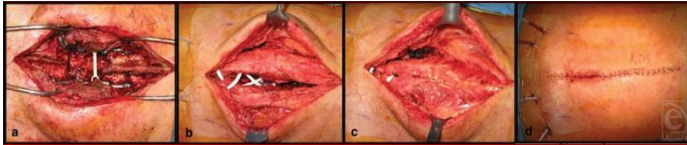


Figure 1. Muscle flap closure after PSF

Study Aim: Evaluate postoperative complications and rates of spine fusion following PSF with tumor resection using conventional and muscle flap closures

METHODS

Retrospective Cohort Study (n=49 patients)

- 29 (59.2%) with conventional closure
- 20 (40.8%) with muscle flap closure

Postoperative Complication Rates

- Matched on a 1:1 ratio based on demographic factors, comorbidities, and operative characteristics
- Univariate analysis to compare complication rates

Spinal Fusion

- Attending neuroradiologist evaluated CT scans at 2 postoperative time points to assess fusion

RESULTS

- No difference in length of hospital stay, intraoperative complications, or postoperative mortality between groups ($p>0.05$)

	Plastics Closure (n = 20)	Conventional Closure (n = 29)	p-value
Immediate Postop Complications, n (%)	5 (2.4%)	16 (55.2%)	0.003
Superficial infection, n (%)	2 (9.5%)	4 (13.8%)	0.257
Bone/Hardware infection, n (%)	1 (4.8%)	1 (3.4%)	1
Epidural fluid collection, n (%)	0 (0.0%)	3 (10.3%)	0.038
Hematoma, n (%)	0 (0.0%)	1 (3.4%)	0.297
Readmission, n (%)	6 (28.6%)	9 (31.0%)	0.685
Reoperation, n (%)	3 (14.3%)	3 (10.3%)	1
CSF leak, n (%)	1 (4.8%)	1 (3.4%)	0.243
Wound dehiscence, n (%)	1 (4.8%)	0 (0.0%)	0.243
Skin necrosis, n (%)	0 (0.0%)	1 (3.4%)	0.161
VTE or PE, n (%)	1 (4.8%)	7 (24.1%)	0.742

Table 1. Postoperative outcomes in patients undergoing tumor resection and posterior spinal fusion with myofascial flap closure by plastic surgery versus primary closure by their spine surgeon.

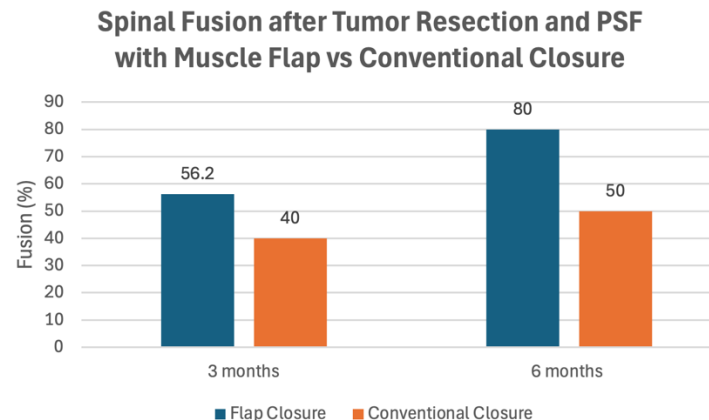


Figure 2. Percent of patients with partial or complete fusion at 3 and 6 months postoperatively with muscle flap closure and conventional closure

CONCLUSIONS

- Muscle flap closure was associated with significantly lower rates of immediate postoperative complications compared to conventional closure
- Muscle flap closure may also improve spinal fusion rates in patients undergoing PSF with tumor resection
- Findings support the use of muscle flap closure by plastic surgery in this high-risk population

REFERENCES

- Wright MA, Weinstein AL, Bernstein JL, Franck P, Lara DO, Samadi A, Cohen LE, Härtl R, Baaj AA, Spector JA. Muscle Flap Closure following Complex Spine Surgery: A Decade of Experience. *Plast Reconstr Surg*. 2020 Nov;146(5):642e-650e. doi: 10.1097/PRS.0000000000007274. PMID: 32826729.
- Houten, J. K., Weinstein, G. R., Collins, M. J., & Komlos, D. (2021). Bilateral paraspinal muscle flap closure technique for reduction of wound complications from posterior thoracolumbar spinal fusion: results of a series of 716 patients. *Journal of Neurosurgery: Spine SPI*, 34(2), 211-217.

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