

Cervicothoracic Posterior Spinal Fusion using PliaFX® Strip and ViviGen®

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CASE STUDY

Posterior cervical fusion is frequently used to treat cervical spinal disorders. Iliac crest bone autograft (ICBA) is commonly used as grafting material in cervical fusion procedures; however, there is evidence that autograft harvesting can cause morbidity in up to 35% of patients.¹ Morbidity complications can include donor-site pain, infection, scar numbness, and nerve sensory alteration or loss.^{1,2} The harvesting procedure can also significantly extend time in the operating room.² Lastly, ICBA's are limited in the amount that can be taken from the body³ and can vary in quality, especially if the patient has undergone previous ICBA harvesting. Allografts may be used as an alternative to autograft in spinal fusion procedures.

PliaFX Strip is an allograft made of demineralized cortical bone fibers that provide an osteoconductive scaffold which can promote cellular attachment and proliferation. The PliaFX Strip contains no carrier, and is precisely demineralized using PAD® technology to help maximize osteoinductive potential to encourage bone formation. The PliaFX Strip becomes flexible upon rehydration and can be cut to match the surgical site. PliaFX Strip is processed using Allowash XG® technology, which provides a sterility assurance level (SAL) of 10⁻⁶.

The following describes the use of PliaFX Strip for cervicothoracic posterior spinal fusion.

Patient

- 71-year-old male
- Presented with handwriting changes, balance abnormalities, unsteady gait, decreased coordination, bilateral upper extremity radicular pain/numbness/weakness, thoracic paresthesia that had persisted for over six months
- Diagnosed with cervical myeloradiculopathy, cervical spondylolisthesis, and Ossification of the posterior longitudinal ligament (Figures 1-5)
- Takes blood pressure and pain medications
- Patient also has rheumatoid arthritis treated with Enbrel and Methotrexate

Procedure

- Cervicothoracic posterior fusion of C3-7 with eight levels of surgery using C2-T2 Pedicle/Lateral Mass Screws
- One 100 mm 10 cc PliaFX Strip was split down the middle and rehydrated in 10 cc iliac crest aspirate
- Two large kits of ViviGen (20 cc), 30 cc local autograft, and 10 cc iliac crest aspirate were also used
- Follow-up through three months (Figures 6-9)

Results

- Fusion was assessed via radiograph at three months follow-up (Figures 10, 11)
- Fusion criteria included osseous bridging and lack of motion with flexion/extension
- Not all levels demonstrated fusion yet but excellent consolidation was observed
- VAS improved from 3 preoperative to 1 at three months follow-up
- Subjective improvement in paresthesia, bilateral upper extremity radicular pain/numbness/weakness, balance and coordination
- There were no post-operative complications

Conclusion

- Excellent consolidation and clinical outcomes were observed following the use of PliaFX Strip in cervicothoracic posterior spinal fusion



Figure 1.
Preoperative anterior-posterior



Figure 2.
Preoperative lateral



Figure 3.
Preoperative lateral flexion



Figure 4.
Preoperative MRI sagittal



Figure 5.
Preoperative CT sagittal



Figure 6.
Two weeks postoperative anterior-posterior



Figure 7.
Two weeks postoperative lateral



Figure 8.
Six weeks postoperative anterior-posterior

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Figure 9.
Six weeks postoperative lateral



Figure 10.
Three months postoperative
anterior-posterior

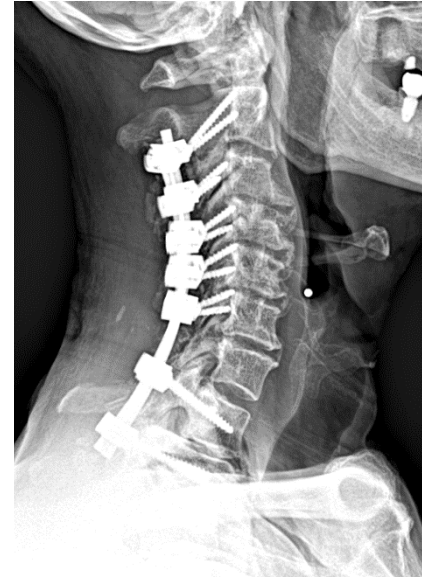


Figure 11.
Three months postoperative
lateral

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

References

1. Robertson PA, Wray AC. Natural history of posterior iliac crest bone graft donation for spinal surgery: a prospective analysis of morbidity. *Spine*. 2001;26(13):1473-1476.
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3. Sagi HC, Young ML, Gerstenfeld L, Einhorn TA, Tornetta P. Qualitative and quantitative differences between bone graft obtained from the medullary canal (with a Reamer/Irrigator/Aspirator) and the iliac crest of the same patient. *J Bone Joint Surg Am*. 2012;94(23):2128-2135.

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