

## **Not All Returns to the Operating Room Are the Same: A Comparison of Re-operations in Tether Versus Posterior Spinal Fusion**

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**INTRODUCTION:** Re-operation rates after AVBT for AIS are higher than after PSF. However, the types of re-operations also differ. Direct comparisons of re-operation rates may not accurately reflect the risks and morbidity associated with choosing AVBT versus PSF.

**METHODS:** This study reviewed a multicenter database of patients with AIS undergoing PSF as well as AVBT. We included all returns to the operating room for spine-related surgery, for patients with at least two years of follow-up from their index operation. The rates and types of re-operations were compared.

**RESULTS:** 3816 PSF patients were included from 1996-2022 with a mean follow-up of 2.35yrs and a reoperation rate of 6.8%. 462 AVBT patients were included from 2011-2021 with a mean follow-up of 3.09yrs and a reoperation rate of 12.6%. Among the 261 re-operations after PSF, reoperations were: Surgical Site/Incision 36.9% (n=96), Instrumentation 31.2% (n=81), Pseudoarthrosis 9.6% (n=25), Adding on/Junctional failure 8.1% (n=21), Neurologic 5.4% (n=14), Pain(hardware removal, secondary spine pathology) 5.0% (n=13), Pulmonary(Chest tube) 1.9% (n=5), Dural tear/Leak – 1.2% (n=3), and Medical/Aborted Primary – 0.8% (n=2). Among the 58 re-operations that occurred after AVBT, 41% (n=24) resulted in continuation of AVBT at the same levels (tether release, replacement, chest tube) and 29% (n=17) occurred at different levels (extension of tether, new tether for a secondary curve), 29% (n=17) were converted to PSF and 2% (n=1) had another spinal pathology. No re-operations for infection were recorded in the AVBT group.

**DISCUSSION AND CONCLUSION:** The nature and rate of re-operation differs between AVBT and PSF, suggesting distinct morbidity profiles and impacts on quality of life. Future studies should further quantify these differences to improve patient counseling and informed surgical decision-making.