Interventional Pain Procedures After Anterior vs Posterior Cervical Fusion: A Propensity Score–Matched TriNetX Cohort Study



PRESENTER:
Gia Hodges, MD

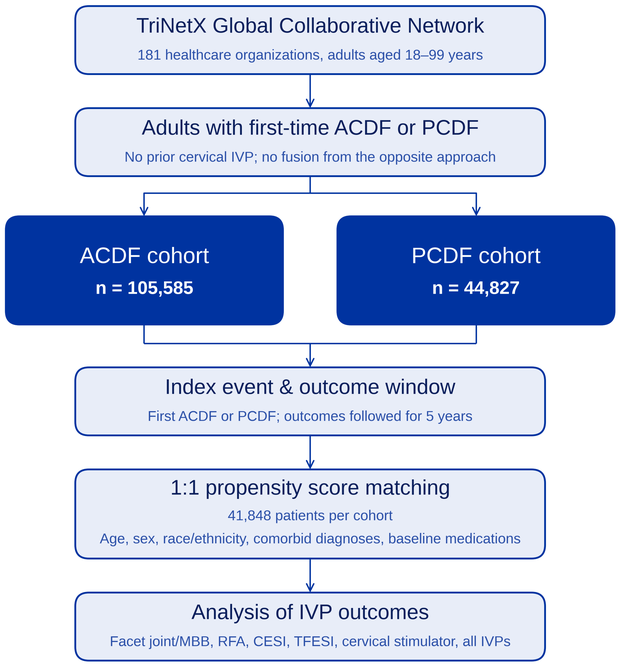
AUTHORS:
Gia Hodges, MD, Sebastian Encalada, MD, Chris Mallard, MD



BACKGROUND:

Persistent or recurrent cervical pain following spinal fusion may require interventional pain (IVP) procedures, but it remains unclear whether postoperative IVP utilization differs between anterior cervical discectomy and fusion (ACDF) and posterior cervical decompression and fusion (PCDF). This study compared the incidence of cervical IVP procedures after ACDF versus PCDF in IVP-naïve patients

METHODS:



ACDF was associated with a 42% higher risk of subsequent interventional pain procedures over 5 years.

All cervical IVP procedures	Cervical interlaminar epidural steroid injection	Spinal cord stimulator
1.48	**1.59**	**1.60**
RISK RATIO	RISK RATIO	RISK RATIO
95% CI, 1.36–1.61	95% CI, 1.40–1.80	95% CI, 1.30–1.96
ACDF 3.08% vs PCDF 2.08%	ACDF 1.46% vs PCDF 0.92%	ACDF 0.58% vs PCDF 0.36%
HAZARD RATIO	HAZARD RATIO	HAZARD RATIO
1.42 (95% CI, 1.30–1.55)	1.52 (95% CI, 1.34–1.73)	1.51 (95% CI, 1.23–1.85)

Radiofrequency ablation	Facet joint / medial branch blocks	Transforaminal epidural steroid injection
1.43	**1.33**	**1.29**
RISK RATIO	RISK RATIO	RISK RATIO
95% CI, 1.14–1.80	95% CI, 1.15–1.53	95% CI, 1.04–1.60
ACDF 0.43% vs PCDF 0.30%	ACDF 1.03% vs PCDF 0.78%	ACDF 0.46% vs PCDF 0.35%
HAZARD RATIO	HAZARD RATIO	HAZARD RATIO
1.35 (95% CI, 1.08–1.70)	1.27 (95% CI, 1.10–1.46)	1.24 (95% CI, 1.00–1.53)*



College of Medicine
Physical Medicine and Rehabilitation

DISCUSSION:

ACDF was associated with a 42% higher rate of subsequent cervical interventional pain procedures than PCDF over 5 years (HR 1.42; 3.1% vs 2.1%). The difference was seen across all five individual procedure types, largest for cervical interlaminar epidural injections and spinal cord stimulators. It may reflect differences in pain, disease progression, or clinician willingness to intervene near posterior hardware; EHR data cannot distinguish these. Because surgical approach is chosen based on pathology and patient factors, these findings reflect procedure utilization, not comparative surgical efficacy. Strengths include large matched cohorts (41,848 per group) over 5 years; limitations include retrospective coded data and residual confounding.

Further research incorporating surgical details, patient-reported pain and functional outcomes, and standardized follow-up is needed to clarify whether these associations reflect differences attributable to surgical approach

CONCLUSION:

ACDF was associated with greater subsequent IVP use within the five-year analysis window. Specific procedure frequency among recipients was similar.

RECORDED IVP OCCURRENCE

41,848 matched patients per group

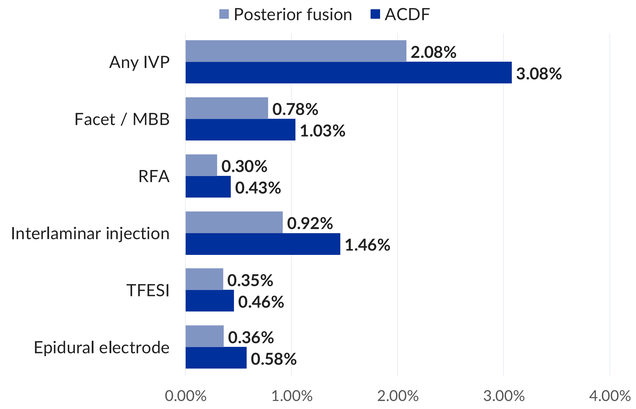


Figure 1. Patients with a recorded outcome during days 1–1,825. Risks reflect available follow-up. Outcomes overlap. MBB: medial branch block. RFA: radiofrequency ablation. TFESI: transforaminal epidural injection.