Comparative Analysis Between Adults Undergoing Elective Posterior Lumbar Fusion and Combined Posterior/Interbody Lumbar Fusion

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Introduction

Lumbar fusion is an acceptable surgical treatment modality for a variety of lumbar pathologies. Posterior fusion can be achieved by way of segmental posterior lumbar fusion (PLF) or lumbar interbody techniques such as posterior lumbar interbody fusion (PLIF) or transforaminal lumbar interbody fusion (TLIF). The existing literature lacks a comparative study between patients undergoing PLF versus those undergoing PLF + PLIF or TLIF.

Methods

Adult patients (=18 years) who underwent lumbar fusion between 2005 and 20012 were identified in the NSQIP database and divided into two groups: those who underwent PLF (CPT 22612) and those who underwent PLF + PLIF/TLIF (CPT 22633). Patient demographics, comorbidities and operative variables were analyzed. Outcomes assessed included all complications including mortality, return to OR, unplanned readmission, and LOS >5 days. Propensity matching was done to ensure patient populations were adequately comparable. Univariate analysis was performed on demographics, comorbidities, operative variables and others. Only variables with $p<0.2$ were evaluated for inclusion in the final step-wise multivariate logistic regression. Statistical significance was maintained at $p<0.05$.

Results

A total of 1,643 patients met inclusion criteria, with 1,339 patients matched into the PLF group and 304 patients matched into the PLF + PLIF/TLIF group. In regards to 30-day postoperative complications, no differences existed between the two groups in terms of any complication ($p=0.74$), mortality ($p=0.63$), wound complication ($p=0.32$) and neurologic complication ($p=0.29$). Those in the PLF + PLIF/TLIF had a greater chance of graft failure ($p=0.03$) while those in the PLF group were more likely to experience unplanned reoperation ($p=0.005$). Multivariate regression analysis found PLF to be an independent risk factor for unplanned reoperation (OR 12.26, 95% CI 1.62-92.64, $p=0.015$).

Learning Objectives

By the conclusion of this session, participants should be able to understand the comparative outcomes between PLF and PLF+ PLIF or TLIF

Conclusions

No significant differences exist between PLF and PLF + PLIF/TLIF in terms of any complications, mortality, LOS, unplanned readmission, and return to OR. PLF, however, was found to be an independent risk factor for unplanned reoperation within 30 days.