SUMMARY

The largest series of instrumented spondylolisthesis reduction with longest follow-up (52 months, range 24-76 months) in the literature is presented. The complications and outcomes for 92 consecutive adults treated with spondylolisthesis reduction (degenerative-73, isthmic-19), TLIF with PEEK cage, and rhBMP-2 (4-12mg/disc) produced reliable arthrodesis (99.4%) and improved clinical outcomes (P<0.001). The single rod reduction technique, interbody fusion technique, and BMP placement strategy are described. There were no complications related to reduction, and few related to BMP.

INTRODUCTION

Spondylolisthesis reduction allows indirect decompression, improved sagittal balance, and more room for interbody cage. Achieving both slip reduction and TLIF can be technically demanding. This is the largest series of complications and outcomes for low-grade spondylolisthesis reduction and TLIF using rhBMP-2.

METHODS

Prospective outcomes were analyzed for 92 consecutive adults with spondylolisthesis (degenerative-73, isthmic-19) undergoing decompression and fusion, and followed 52 months (24-76mo). Age averaged 62 years (19-84 yrs), 6 smokers, 30 had prior decompression/fusion. Fusions averaged 1.7 levels (1-3 levels). Technique: All patients underwent laminectomy, posterior instumented translational spondylolisthesis reduction with a single rod prior to TLIF (2nd rod placed after TLIF). Interbody BMP 8.5mg/disc (4-12mg/disc) was inserted prior to insertion of autograft filled PEEK cage, and backfill with local autograft. Outcomes included VAS, Oswestry Disability Index (ODI), pain medication records, and radiographic imaging pre-op, 1 year, 2 years, and latest follow-up.

RESULTS

91/92 patients fused (156/157 levels), the nonunion being a smoker with 2-level spondy. BMP related complications: seroma-2 (6mg, 8mg/disc, resolved with decompression), bony overgrowth-1 (6mg/disc, resolved with decompression). Additional complications: adjacent degeneration- 23 (5 revised late), adjacent level fractures-2 (none revised), infection-1. There were no neuro deficits or implant failures. Significant improvements were noted in VAS (pre-5.64, 1 yr-2.1, 2 yrs-2.2, P<.001), ODI (pre-42, 1 yr-19, 2 yrs-21, P<.001).

CONCLUSIONS

Posterior reduction, fusion, and TLIF produces significantly improved outcomes in patients with low-grade spondylolisthesis. There were no complications related to the reduction, and few problems related to the use of interbody BMP with TLIF (none at 4mg/disc).

SIGNIFICANCE

Instrumented reduction of low-grade spondylolisthesis, TLIF, PEEK cage and BMP is safe, produces excellent clinical outcomes with few complications in the largest series with longest follow-up in the literature.