

Intermediate Dosing of Recombinant Human Bone Morphogenetic Protein-2 (rhBMP-2) Improves Fusion Rates With No Increase in Major Complications but Does Not Improve Health Related Quality of Life for Adult Spinal Deformity (ASD) at Minimum Two Years: A

ISSG INTERNATIONAL SPINE STUDY GROUP

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Introduction

Controversy persists regarding rhBMP-2 use in spine surgery. Purpose: compare minimum 2 year complications, fusion rates and clinical outcomes for BMP and NOBMP patients in a prospective, multi-center consecutive cohort.

Methods

Multicenter, prospective analysis of complications, spine fusion (Lenke grade) and health related quality of life (HRQOL; SRS-22r, ODI, SF-36) for consecutive ASD patients receiving rhBMP-2 (BMP) or no BMP (NOBMP). Inclusion criteria: ASD, age = 18 years, spinal fusion= 4 levels, minimum 2 years follow up. Type and timing of complications evaluated and multivariate analysis (MARS) performed. BMP divided into posterolateral dose used; <5, 5-10, and >10mg/level.

Results

199 patients, mean follow up 44.3 months (range 23.3-60.3), met inclusion criteria. BMP (n=130; mean posterolateral dose/level 3.1 mg, mean interbody dose/level 1.8 mg) had had similar preoperative deformity and total fusion levels as NOBMP (n= 69). BMP had greater Charleson comorbidity index, operative time, and anteroposterior surgery than NOBMP; NOBMP had more 3 column osteotomies than BMP (p<0.05). Early minor complications (< 3 and 3 -6 months) were greater for BMP vs. NOBMP (p<0.05). Total major complications were similar BMP vs. NOBMP, however NOBMP had greater return to surgery rates at 6-12 months, greater pseudarthrosis rates, and deep infection and implant failures constituted a greater interbody and posterior fusion grades and rates than NOBMP (p<0.05). BMP dosed at 5-10mg demonstrated greater fusion grades and rates vs. NOBMP, while BMP dosed at <5mg group did not. HRQOL values were similar BMP vs. NOBMP at all time points.

Conclusions

RhBMP-2 at intermediate dosing may improve fusion rates with no increase in major complications in ASD surgery, however HRQOL measures were similar between groups. Longer follow up is needed to assess if fusion rates correlate with HRQOL and revision surgery.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) understand that patients treated with rhBMP-2 had lower incidence of pseudarthrosis and higher fusion grades than those without rhBMP-2 and 2) that there were no differences in HRQOL between the groups

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