

Comparative effectiveness and cost-benefit analysis of Bone morphogenic protein (rhBMP-2) with Formagraft (FG) versus OsteoCel Plus (OC+)

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Introduction

Osteocel-plus and BMP-Formagraft (12% bovinederived collagen and 88% of hydroxyapatite and beta tricalcium phosphate) are used as fusion extenders to promote bony fusion. Their comparative cost and effectiveness have not been studied so far. We present our analysis based on 36 patients.

Formagraft has minimal subsidence

Methods

A retrospective chart review on patients who underwent one level elective lateral lumbar interbody fusion surgery (XLIF) using a combination of BMP-FG versus OC+ were evaluated. The formation of trabecular bone for fusion onset, height of disc space and graft subsidence into the vertrbral body were evaluated independently by radiologist and the senior author (SV) based on follow-up Xrays at approximately 3,12 and 24months.

Learning Objectives

BMP with formagraft versus osteocel plus have similar outcome on patients undergoing spine fusion BMP had more number of

patients with subsidence but was not statistically significant BMP- Formagraft was more expensive than Osteocel plus for interbody fusion

Results

We had 18 patients who received OC+. So we analyzed 18 patients in chronological order with the same start date for BMP-FG one level fusion.

Conclusions

Although both groups of patients has similar outcome with respect to days of hospital stay, bony fusion and wound healing, we noted that the Osteocel-plus cost 18% less.

Results (CONTINUED)

Extra-small BMPs with large strips of Formagraft were used in this cohort of patients. All patients had robust fusion with formation of bridging bone. The cost of extra-small BMP was \$1,726 and large strip of Formagraft was \$1,649. The total cost for biologics for one level fusion using BMP-FG was \$3375 (1726+1649). Prior to BMP-FG usage, we used small BMP only which cost \$3,451. In contrast, 5cc of Osteocel-plus was used per level which cost \$2,756.

Subsidence for Osteocel-plus patients were 2mm (n= 2) and zero (n=16) with no change in the disc height. The subsidence of BMP was zero (n=8), 2(n=1), 3(n=1), 4(n=2), 5(n=2) and 6mm(n=3) with similar reduction in disc heights.

Conclusions (CONTINUED)

Although both groups of patients has similar outcome with respect to days of hospital stay, bony fusion and wound healing, we noted that the Osteocel-plus cost 18% less. In addition, there was increase in the subsidence with BMP-FG patients but was not statistically significant. Subsidence can be affected by several variables like osteoporosis, minor intraoperative endplate breach, age and sex of the patients. Further studies are required to evaluate this further.

References

The role of Osteocel Plus as a fusion substrate in minimally invasive instrumented transforaminal lumbar interbody fusion. Ammerman JM, Libricz J, Ammerman MD. Clin Neurol Neurosurg. 2013 Jul;115(7):991-4. PMID: 23182179

BMP causing subsidence

