BMP vs. Alternatives: Cost Savings and Clinical Outcomes Data in 137 ALIF Patients with 2 yr. Follow-up

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Introduction

Linking basic science data to clinical results can be difficult. Published studies demonstrate osteogenic properties and low inflammation with micron-textured titanium surfaces, even without the addition of exogenous biologic additives. Interbody implants with these surface characteristics may be able to actively stimulate a portion of the fusion integration, potentially reducing surgeons' reliance on the more expensive and inflammatory biologic additives.

Methods

137 patients undergoing anterior lumbar interbody fusions were enrolled consecutively and followed for 24 months. All patients received implants with a unique micron-scale textured surface. Group 1: 75 patients received rhBMP-2. Group 2: 62 patients received a bone graft extender (DBM+AGF or ceramic). Clinical outcomes (VAS/ ODI) were collected for 2 years after surgery. Cost savings analysis was performed using manufacturer's list pricing.

Results

Both groups achieved similar and clinically significant improvements at all time points compared to pre-op baseline. Leg pain was higher at all time points in the BMP cohort (Group 1), compared to the non-BMP cohort (Group 2) reaching statistical significance at 2 years. Cost savings between high and low cost biologics was $2565 (1 level), $2373 (2 level), and $2103 (3 level).

Conclusions

Biological activity of bone graft extenders may be less relevant in the presence of an osteogenic fusion implant. There was no measurable clinical benefit realized by using BMP or DBM+GF with this specific implant. The patients in the non-BMP group trended towards better clinical outcomes at all time points with statistically significant lower residual leg pain at 2 years, compared to the BMP group. This study demonstrates that excellent clinical outcomes and significant cost savings can be achieved in these cases without the need for the most expensive or inflammatory biologics.

Table 1

Table 1	VAS Leg		VAS Back		ODI	
	Group 1	Group 2	Group 1	Group 2	Group 1	Group 2
Baseline	5.1	4.9	7.1	7.2	55	49
6 month	2.5	1.9	3.9	3.4	35	32
12 month	2.1	1.7	3.6	3.4	31	27
24 month	2.4	1.3 *	3.5	3	31	25
						*p< 0.001

Health related quality of life survey data comparing the group which received rhBMP-2 (Group 1) versus bone graft extenders (Group 2).

Table 2

Table 2			
Spinal Segments Fused	rh-BMP2	DBM + AGF	Ceramic
1	$4,089	$4,597	$2,032
2	$5,787	$5,451	$3,413
3	$6,626	$6,753	$4,650

List pricing for biologic graft materials used per segment fused.

Learning Objectives

To determine if comparable clinical outcomes and cost savings opportunities can be realized in ALIF fusions with a micron-surface titanium implant, comparing 3 different bone graft substitutes of variable biological potencies.

References