Design: This is a retrospective cohort study.

Objective: The authors describe a novel technique for direct repair of a pars defect utilizing Dynesys™ instrumentation. Moreover, the indications for repair are expanded to include those with disc disease and associated spondylolisthesis.

Summary: The challenge in treating pars defects has been that there are few techniques available to stabilize them adequately. The focus has been on fusion across the inter-space versus grafting and instrumentation of the defect itself. We hypothesize that direct repairs of the defect favor maintenance of normal motion characteristics by preserving the functional unit of the disc. This paper describes a motion-preserving procedure, early clinical outcomes and important nuances of the technique shared by the author.

Methods: Our series includes 20 patients with symptomatic bi-lateral pars defects. 15 patients met the criteria for single level fixation. 5 patients required the additional fixation of flexible posterior-lateral fusion involving the inferior segment. Rh-BMP and autologous bone graft are utilized and placed within the defect. Follow-up visits and imaging with CT were carried out to two years. Plain film x-rays were used to determine stability while thin-section CT was used to assess healing of the defect.

Results: Clinical outcomes for the entire series were: excellent n=14, good n=3, no significant help n=3. The procedure arrested any further slippage in 100% of cases. For those with follow-up >/= 2 years, bone formed in 95% of cases with CT scan demonstrating full healing in over half of these patients. For all cases there is a 5% rate of non-union.

Conclusion: Further study and development of the technique via biomechanical testing is on-going; however, the initial results are encouraging. Bone formation appears to be linked to decreasing symptoms in patients with bilateral pars fractures who have failed conservative treatment.