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**Purpose:** The INVEST trial is a recently published trial that showed no benefit of vertebroplasty over control intervention in improvement of pain severity over the course of one month. In this study, we performed a subgroup analysis comparing pain improvement over time between control and vertebroplasty groups in patients with severe pain.

**Materials and Methods:** Following IRB approval, 131 patients were enrolled in this study using the previously published enrollment criteria. Patients were asked to assess their pain at baseline (prior to control or vertebroplasty intervention) and then at days 3, 14, and 30 following control or vertebroplasty intervention. We categorized patients with a baseline pain severity score of 8/10 or higher as patients with severe baseline pain. We also collected scores on the Roland Morris Disability Questionnaire (RMDQ) at baseline and follow up in all patients with severe baseline pain. We used a Student’s T-test to compare pain improvement and RMDQ scores.

**Results:** Thirty patients randomized to vertebroplasty and 31 to control intervention reported severe baseline pain. Both groups achieved statistically significant, clinically relevant, and persistent improvements in pain and disability at all time points up to 30 days; in both groups decrease in pain severity was approximately 50% of baseline severity, while that of RMDQ improvement was approximately 30% of baseline score. At days 3, 14, and 30 vertebroplasty patients experienced similar improvements in pain as control patients (p=0.87, 0.75, and 0.50, respectively). At days 3, 14, and 30 vertebroplasty patients experienced similar improvements in RMDQ as control patients (p=0.54, 0.36, and 0.62, respectively).

**Conclusion:** Vertebroplasty patients with severe baseline pain experienced similar improvements in pain severity and RMDQ scores at all time points when compared to control patients.