Using the growth factors-enriched platelet glue in spinal fusion and its efficiency.

Authors: Tsai C.-H., Hsu H.-C., Chen Y.-J., Lin M.-J., Chen H.-T.

Publication Date: 2009

Abstract:

STUDY DESIGN: Prospective study. OBJECTIVE: To determine if the use of platelet glue enhances fusion in instrumented posterolateral lumbar fusion. SUMMARY OF BACKGROUND DATA: Platelet gel is an osteoinductive material that has been used to enhance fusion rates in lumbar fusion surgery. There are questions, however, regarding the less adhesive property of platelet gel, and whether it is sufficient to ensure appropriate attachment of bone grafts. In the present study, we used fibrin gel with the adhesive property to reinforce the platelet gel structure and to deliver growth factors. We hypothesized that the platelet gel/fibrin glue composite (platelet glue) would increase fusion rates in posterolateral lumbar fusion. METHODS: The control group consisted of 33 consecutive patients who received instrumented posterolateral lumbar fusion with artificial bone expander and laminectomy autograft. Thirty-four patients in the study group were treated as above with the additional platelet glue. There was no significant difference between 2 groups in the demography of patients. The amount of postoperative drainage on the first and second day was recorded. Fusion rates were also assessed. Diagnosis of union was based on flexion-extension dynamic lateral radiography and fine-cut computerized tomography. All patients have been monitored for at least 2 years. RESULTS: The nonunion rate in the platelet glue group was 15% as compared with 10% in the control group. The mean postoperative drainage on the first and second day was 362 mL in the control group and 395 mL in the platelet glue group. There were no significant differences in either fusion rate or postoperative blood loss volume between the 2 groups. CONCLUSIONS: In the present study, the use of a platelet gel/fibrin glue composite (platelet glue)

could not be proved to increase fusion rates in instrumented lumbar posterolateral fusion. Further investigation is warranted to find an adequate carrier of growth factors for use in instrumented lumbar posterolateral fusion.