Effects of methyl prednisolone acetate, fibrin glue and combination of methyl prednisolone acetate and fibrin glue in prevention of epidural fibrosis in a rat model.

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Abstract:

Objectives: Epidural fibrosis, which develops during the post-operative period in 6-20% of the patients who undergo lumbar spinal surgery, can cause persistent low-back pain and signs of root compression. Conservative treatment protocols or repeat operations performed for the symptoms of epidural fibrosis are long-term and costly treatments and impairs the patient's quality of life. In this experimental study, we applied methyl prednisolone acetate mixed with fibrin glue to the surgical field and examined the effects on epidural fibrosis in the surgical field by delaying the absorption of methyl prednisolone acetate. Methods: One hundred Sprague-Dawley rats were divided into five groups, and animals underwent total laminectomy of L4 and L5. We applied 0.05 ml/kg fibrin glue, 0.05 ml/kg methyl prednisolone acetate, 0.05 ml/kg fibrin glue + methyl prednisolone acetate and 0.10 ml/kg fibrin glue + methyl prednisolone acetate topically to the operative sites. Normal saline was applied in the control group. Following the surgery, animals were killed at weeks 1, 2, 4 and 6, and laminectomy sites were examined histopathologically for fibrosis, acute inflammation, necrosis and abscess formation. Results: None of the options had a statistically significant transcendence over others in terms of preventing epidural fibrosis. Conclusion: Many biological and non-biological materials have been tried in a quest to prevent epidural fibrosis. However, inducing least amount of injury to the anatomy of the tissues and a very good hemostasis seem to be the most effective methods in the prevention of epidural fibrosis.