

Evaluation of rat soft tissue response to implantation of glycerolized bovine tunica vaginalis

ABSTRACT

The aim of this study was to evaluate glycerolized bovine parietal tunica vaginalis implant in rat model. Pieces of 3_2.5 cm bovine parietal tunica vaginalis preserved in 99.5% glycerol and stored at 4 degrees C were used to repair 3_2.5 cm full thickness abdominal wall defects created in a group of 30 male Sprague Dawley rats (300-400 g). Another group of 30 rats were underwent sham operation and used for comparison. Each group was divided into five subgroups (n=6) and sacrificed at post-surgical intervals of 1, 3, 6, 9 and 18 weeks for macroscopical, histological and mechanical evaluation. Loose adhesions were observed between the implanted graft and underlying visceral organs in 6.6% of the treated group. Histologically the graft was biocompatible and gradually replaced by the recipient fibers tissue. The graft healing tensile strength increased with time in both groups and no significant different ($P>0.05$) was observed between the overall means of healing tensile strength of the two groups. The outcome of this study revealed that glycerolized bovine tunica vaginalis is biocompatible surgical patch that can be used for reconstruction of soft tissue defects. However, further investigation is required regarding the glycerol preservation efficiency.

Keyword: Animal models; Glycerol; Grafts; Healing; Histology; Surgery; Surgical operations