

Laparoscopic fixation of biologic mesh at the hiatus with fibrin or polyethylene glycol sealant in a porcine model.

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Abstract:

Background The objective of this study was to determine the acute and chronic fixation strengths achieved by fibrin or polyethylene glycol (PEG) sealants to secure biologic mesh at the esophageal hiatus in a porcine model. **Methods** For this study, 32 female domestic pigs were divided into four groups of 8 each. The four groups respectively received acute fibrin sealant, acute PEG sealant, chronic fibrin sealant, and chronic PEG sealant. Laparoscopically, a 5.5 x 8.5-cm piece of Biodesign Surgisis Hiatal Hernia Graft (porcine small intestine submucosa) was oriented with the U-shaped cutout around the gastroesophageal junction and the short axis in the craniocaudal direction to simulate hiatal reinforcement with a biologic mesh. The mesh then was secured with 2 ml of either fibrin sealant or PEG sealant. The pigs in the acute groups were maintained alive for 2 h to allow for complete polymerization of the sealants, and the pigs in the chronic group were maintained alive for 14 days. After the pigs were euthanized, specimens of the mesh-tissue interface were subjected to lap shear testing to determine fixation strength, and hematoxylin and eosin (H&E) stained slides were evaluated for evidence of remodeling. **Results** No significant differences were observed between the acute and chronic fixation strengths or the remodeling characteristics of the two sealants. However, fixation strength increased significantly over time for both types of sealant. Evidence of remodeling also was significantly more pronounced in the chronic specimens than in the acute specimens. **Conclusions** This study demonstrated the feasibility of using fibrin or PEG sealants to secure biologic mesh at the hiatus in a porcine model. © Springer Science+Business

