Evaluation of fibrin sealant for biologic mesh fixation at the hiatus in a porcine model.

Authors: Krpata DM, Blatnik JA, Harth KC, Phillips MS, Novitsky YW, Rosen MJ

Publication Date: 2012

Abstract:

BACKGROUND: The ideal method to secure biologic mesh during laparoscopic hiatal hernia repair remains uncertain. Suture or tack fixation can be technically difficult, and serious cardiovascular complications have been reported. Fibrin sealant (FS) offers a potential solution to this problem. We hypothesized that FS provides comparable mesh fixation to suture repair during laparoscopic mesh hiatoplasty.

STUDY DESIGN: Using a porcine model, laparoscopic hiatal hernia repair was performed with suture reapproximation of the crura and reinforcement with an acellular porcine dermal matrix. Prior to repair, animals were randomized to mesh fixation with sutures (S) or FS. After 30-day survival, an esophagram was performed, the diaphragm harvested, and mesh position, fixation, and incorporation were evaluated histologically and biomechanically using a T-peel test.

RESULTS: Twenty (10 S and 10 FS) laparoscopic hiatal hernia repairs were performed. Total operative time was significantly less in the FS group (74.7 versus 127.0 min, $p < 0.01$). There were no instances of mesh migration in any animal. Mean peel force did not differ significantly between the S and FS groups (0.21 vs. 0.18 N/mm, respectively; $p = 0.49$). There was no significant difference in cellular repopularization or inflammatory changes around the mesh.

CONCLUSIONS: Fibrin sealant offers a reasonable alternative to suturing biologic mesh during

laparoscopic hiatal hernia repair with equivalent mesh fixation. At 30 days it provides adhesive strength similar to suture fixation, while significantly reducing operative time.