

Use of fibrin sealant for prosthetic mesh fixation in laparoscopic extraperitoneal inguinal hernia repair.

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Abstract:

OBJECTIVE: To evaluate the efficacy of mesh fixation with fibrin sealant (FS) in laparoscopic preperitoneal inguinal hernia repair and to compare it with stapled fixation.

SUMMARY BACKGROUND DATA: Laparoscopic hernia repair involves the fixation of the prosthetic mesh in the preperitoneal space with staples to avoid displacement leading to recurrence. The use of staples is associated with a small but significant number of complications, mainly nerve injury and hematomas. FS (Tisseel) is a biodegradable adhesive obtained by a combination of human-derived fibrinogen and thrombin, duplicating the last step of the coagulation cascade. It can be used as an alternative method of fixation.

METHODS: A prosthetic mesh was placed laparoscopically into the preperitoneal space in both groins in 25 female pigs and fixed with either FS or staples or left without fixation. The method of fixation was chosen by randomization. The pigs were killed after 12 days to assess early graft incorporation. The following outcome measures were evaluated: macroscopic findings, including graft alignment and motion, tensile strength between the grafts and surrounding tissues, and histologic findings (fibrous reaction and inflammatory response).

RESULTS: The procedures were completed laparoscopically in 49 sites. Eighteen grafts were fixed

with FS and 16 with staples; 15 were not fixed. There was no significant difference in graft motion between the FS and stapled groups, but the nonfixed mesh had significantly more graft motion than in either of the fixed groups. There was no significant difference in median tensile strength between the FS and stapled groups. The tensile strength in the nonfixed group was significantly lower than the other two groups. FS triggered a significantly stronger fibrous reaction and inflammatory response than in the stapled and control groups. No infection related to method of fixation was observed in any group.

CONCLUSION: An adequate mesh fixation in the extraperitoneal inguinal area can be accomplished using FS. This method is mechanically equivalent to the fixation achieved by staples and superior to nonfixed grafts. Biologic soft fixation with FS will prevent early graft migration and will avoid the complications associated with staple use.