

Comparison of healing after cystotomy and repair with fibrin glue and sutured closure in the porcine model.

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Abstract:

PURPOSE: We compared healing after laparoscopic cystotomy using fibrin glue, sutures, or a combination to determine whether fibrin glue can obviate the need for sutures and whether there is any detriment when glue is used in the presence of sutures.

MATERIALS AND METHODS: In 24 Yorkshire pigs, a 3.5 cm vertical cystotomy was created laparoscopically and repaired as follows: Group 1--no closure; group 2--fibrin glue closure; group 3--suture repair; group 4--combined fibrin glue and suture repair. All animals had a Foley catheter for 1 week. In each group, three animals were harvested at 1 week (acute) and three animals were harvested at 6 weeks (chronic).

RESULTS: Acute: Group 1--all pigs had an unhealed defect that leaked when evaluated by cystography. Groups 2, 3, 4--mean leak pressures were 80, 97, and 60 cm H₂O (P = 0.36), respectively. Mean bladder capacity was not significantly different between groups. Chronic: No leakage seen on a cystogram at 1 week; at 6 weeks, bladders were filled at > or =95 to 100 cm H₂O without leakage. Histologically, there was more inflammation in the acute group v chronic group pigs. In the acute group pigs repaired with glue or suture + glue, there was more inflammation and less epithelial continuity than in the suture alone group. At 6 weeks, there was no difference between groups.

CONCLUSION: Fibrin glue provoked an intense inflammatory response that might have delayed healing acutely, resulting in a lower burst pressure in both scenarios in which it was used (i.e., alone or in combination with sutures). However, by 6 weeks, there did not seem to be any difference between groups either clinically or histopathologically.