

Effects of mesh fixation with collagen-fibrin sealant in a rat ventral hernia model.

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Abstract:

Introduction: Chronic pain after hernia surgery has lead to research into new possibilities for MESH fixation. Aim: To determine if a collagen-fibrin sealant (Tachosil) provides adequate mesh fixation and prevents adhesions. Method: Sprague Dawley rats were operated 2 times in isofluran anaesthesia. Act one to create 2 ventralhernia (10 mm). Partial abdominal wall excision was made through both rectus muscles. Act two, 2 weeks after was hernia repair with 2x2 cm prolene MESH (Parietene). Fixation was with Tachosil (group 1) while a peritoneal suture was added to the Tachosil on the other side (group2). Eight weeks after hernia repair the rats were sacrificed and MESH migration, adhesion grades, surface and severity scores were registered, both for MESH surface and edges. Results: 31 rats were operated. Four rats were euthanized due to wound dehiscence. The average weight at operations was 526.9 g and 542.6 g, respectively. Adhesions to the net were noted in 18(33.3%) of 54 operations. MESH migration was 37% (group 1) vs. 11% (group 2), $p = 0.023$. There was no difference in adhesion grade or surface for MESH center or edge adhesions between groups $p = 0.993$ and $p = 0.935$, $p = 0.22$ respectively. Mean adhesion severity score for both groups was 5.7 (1-16). Total adhesion grade was 2.9 ± 1.2 , for center of MESH 2.8 ± 1.3 and edge 3.1 ± 1.1 ($p = 0.013$). Conclusion: MESH fixation with Tachosil does not effectively prevent mesh migration, but serves as a good shield for adhesion formation. Modelling of the MESH produces more severe adhesions on the edge.