Abrasion Plus Local Fibrin Sealant Instillation Produces Pleurodesis Similar to Pleurectomy in Rabbits.

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Abstract:

Background Pleurodesis performed either by pleurectomy or pleural abrasion is recommended in the approach to primary spontaneous pneumothorax to avoid recurrence. However, the efficacy of parietal pleural abrasion in producing pleurodesis is questioned. This study aims to determine the efficacy of apical abrasion alone, abrasion plus fibrin sealant application, and pleurectomy in producing pleurodesis in rabbits. Methods Rabbits were subjected to video-assisted thoracic surgery alone (control) or to video-assisted thoracic surgery with apical gauze abrasion, abrasion plus fibrin sealant instillation, or apical pleurectomy. Blood samples were collected preoperatively and 48 h and 28 days postoperatively to measure total leukocytes (white blood cell count), neutrophil counts, and serum interleukin (IL)-8 levels. After 28 days the animals were sacrificed for macroscopic evaluation of the degree of apical pleurodesis and microscopic evaluation of local pleural fibrosis and collagen deposition. Results White blood cell and neutrophil counts were similar in all groups, whereas the serum IL-8 level peaked at 48 h in all groups and decreased after 28 days, except in the pleurectomy group. After 28 days the abrasion plus fibrin sealant and pleurectomy groups had significantly more pleural adhesions, pleural fibrosis, and collagen deposition than the abrasion alone group, mainly due to thick mature fibers. Conclusions Abrasion with local fibrin sealant instillation is as effective as pleurectomy in producing pleurodesis in rabbits. Apical pleurectomy elicits a more persistent elevation of serum IL-8 levels than apical abrasion alone or abrasion plus fibrin adhesive instillation.