

Prevention of air leakage by spraying vivostat fibrin sealant after lung resection in pigs.

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Publication Date: 2000

Abstract:

Study objectives: To evaluate Vivostat fibrin sealant in the prevention of air leakage after experimental lung resection in pigs. Design: Randomized study. Setting: University laboratory. Methods: Six Landrace pigs were operated on in both lungs through a median sternotomy. Five different resection sites were created in each lung. Intervention: Randomization was performed to either application of Vivostat fibrin sealant (ConvaTec; Skillman NJ) or human albumin 20% (control) at the resection sites. The lung parenchyma was occluded with a soft clamp for either 1, 2, 5, or 10 min in the treatment group and 10 min in the control group. After removal of the clamp, the lung was ventilated with an increasing intrabronchial pressure of 20, 30, and 45 cm H₂O for 2 min at each step. Results: At inspiratory pressures of 20 and 30 cm H₂O air leaks were found in the control group but not in the Vivostat group ($p < 0.001$). At an inspiratory pressure of 45 cm H₂O, there were two small air leaks in the Vivostat group at each clamping time (four at 5 min), compared with five small and seven large leaks in the control group. Analysis of the data after 10 min of clamping showed that the Vivostat group was superior to the human albumin group ($p = 0.002$). Conclusions: This randomized study shows that Vivostat fibrin sealant is effective in preventing air leakage after small lung resections in pigs, even at high inspiratory pressures.