

# **Staple pneumoreduction with fibrin sealant application: a reliable method of transplanting oversized lungs.**

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## **Abstract:**

Transplantation of a large lung allograft into a small chest could lead to atelectasis and hemodynamic instability. We developed a technique by which larger-sized lungs could be reduced to fit into smaller recipients. This entails multiple applications of a stapler device to progressively remove excessive lung tissue until the lung fits adequately into the recipient's chest cavity. An experimental animal model was used to test the applicability and safety of this technique. Because air leak from the resected margins was anticipated, we further examined the feasibility of reducing the latter by application of fibrin glue. Eight small mongrel dogs (20 to 25 kg) received left lung allotransplants from eight larger-sized dogs (35 to 40 kg) with the staple pneumoreduction technique. This group was further stratified to receive (group 1A; n = 4) or not receive application of fibrin sealant (group 1B; n = 4) to the stapled resection margins. Group 2 received lungs from similar-sized animals (20 to 25 kg; n = 4 each). Group 3 consisted of size-mismatched animals without pneumoreduction (n = 2). Recipient dogs were compared for facility of chest closure, gas exchange, and hemodynamic stability. The ability of the newly implanted lung to support respiratory function was also assessed by ligation of the opposite pulmonary artery at 4 hours. No difference was noted between groups 1 and 2 in terms of these variables. In sharp contrast, group 3 animals showed a rapid and profound drop in blood pressure after chest closure.(ABSTRACT TRUNCATED AT 250 WORDS)