Improved techniques of applying fibrin glue in lung surgery.

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Abstract:

To enhance the adhesive property of fibrin glue, two techniques were developed. The first is an improvement of the conventional layer method, and the second is a further improvement of the first technique. Their adhesive properties were tested in canine lungs in two phases. In phase 1 of the experiment, two new techniques were compared with the conventional methods in the retrieved lung. In phase 2 of the experiment, the second technique examined how its adhesive properties changed after treatment comparing them with gelatin-resorcinol-formaldehyde-glutaraldehyde (GRFG) glue. In phase 1, the first technique showed a 3-fold enhancement of the adhesive properties as compared with the conventional methods, and with the second technique the adhesive properties were further improved by more than 2-fold in the retrieved canine lung, In phase 2, it was revealed that the bursting pressure of both the second new technique and GRFG glue was eventually equal, and enough to close the cut surface of the lung. In the clinical setting, two techniques showed a safe and satisfactory performance in closing the cut surface of the lung. Due to the low toxicity of fibrin glue and absorbable material, these two techniques, especially the second technique, provide better circumstances for the healing of lung injury.