Synthetic Hydrogel Application for Sealing Pulmonary Tissue after Thoracoscopic Resection Using Endoscopic Stapler

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Introduction
Postoperative air leaks are a major cause of morbidity after lung resections irrespective of the approach- conventional or minimal access. Various biological and synthetic materials have been applied to seal the resected edge of lung tissue to date; however no product has been proven to be effective. Between the two groups, synthetic materials have found a preference, as they overcome the issues that are associated with the manufacture, storage and application of biological substitutes. The use of a novel synthetic biodegradable hydrogel that can be applied as a spray to seal lung tissue after thoracoscopic resection is investigated in pediatric patients presenting with bullae and blebs.

Materials and Methods
Thoracoscopic lung resections were performed in 5 patients that presented with bullae or blebs over a period of 3 years. The patients was placed in lateral decubitus position and using a 5mm 30° scope the lesions was identified. The tissue around the blebs or bullae was held using graspers and was resected using endoscopic linear staplers; after which the hydrogel sealant was employed prophylactically. PleuraSeal™ lung sealant (Covidien, Mansfield, MA, USA) was applied as a spray on the edge of the stapled pulmonary tissue using the MicroMist™ applicator (Covidien, Mansfield, MA, USA) through a 5mm port.

Results
All the procedures were completed without any intraoperative or postoperative complications. Intraoperative the hydrogel could be sprayed after the lung resection with a uniform spray applicator introduced through one of the working ports. The hydrogel was easy to identify since the mixing of the components permitted the formation of blue gel. The special spray applicator also permitted the cessation in use without formation of any clots in the nozzle. Also, the hydrogel formed an elastic layer on the surface of the lung and accommodated the lung expansion without any tears.

Discussion and Conclusions
PleuraSeal™ hydrogel is a single use application kit which offers offers a novel off the shelf synthetic biodegradable lung sealant which can be applied as a visible blue colored spray and can be used as a prophylactic adjunct in thoracoscopic lung procedures.

Disclosures
Authors have nothing to disclose.