Efficiency of fleece-bound sealing (TachoSil) of air leaks in lung surgery: a prospective randomised trial.


Anegg U; Lindenmann J; Matzi V; Smolle J; Maier A; Smolle-Juttner F
Division of Thoracic and Hyperbaric Surgery, University Medical School, Graz, Austria.
udo@anegg.net

OBJECTIVE: Persistent air leakage following pulmonary resection is a major limiting factor for discharge from hospital. The aim of this study was to evaluate the sealing capacity of TachoSil for the closure of alveolar air leaks following parenchymal resections and to determine its effect on time to chest drain removal and duration of hospitalisation. Methods: A total of 173 patients undergoing lobectomy or segmentectomy were enrolled in a single-centre, randomised study to compare the efficacy of TachoSil with standard treatment. Alveolar air leaks were evaluated intraoperatively by submersion of the resection site in saline and were graded according to the Macchiarini scale as 0 (no bubbles), 1 (single bubbles), 2 (stream of bubbles), 3 (coalescent bubbles). Patients with grade 1 or 2 air leaks were randomised to TachoSil or standard treatment. Grade 3 patients received standard treatment until the air leak was downgraded to grade 1 or 2 at which point they were randomised. Patients with grade 0 leakage were excluded. The primary efficacy endpoints of the study were postoperative quantification of air leakage on postoperative days 1 and 2. Other efficacy measurements included mean time to chest drain removal and mean time to hospital discharge. Results: The mean intraoperative post-treatment air leakage was significantly lower in the TachoSil group (153.32ml/min, range: 10-450ml/min) compared with the standard treatment group (251.04ml/min, range: 15-970ml/min; P=0.009). The significant difference in air leakage volume observed intraoperatively post-treatment was maintained postoperatively. TachoSil showed a trend towards reduced incidence of postoperative leakage when measured >48h or >7 days after surgery (30.7% vs 38.96% and 24% vs 32.46%, respectively). The mean times to chest drain removal and to hospital discharge were significantly reduced following the use of TachoSil (5.1 days vs 6.3 days, P=0.022 and 6.2 days vs 7.7 days, P=0.01, respectively). Conclusions: The use of TachoSil following pulmonary resection resulted in a reduction in air leakage compared with standard techniques. This reduction in air leakage resulted in a significant reduction in both the time to chest drain removal and the period of hospitalisation.