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Title: Bronchoscopic intrabullous endobronchial autologous blood instillation (BIABI) for the treatment of giant bullae

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Body: Background: At present, surgical bullectomy is the standard of care for the treatment of patients with giant bullae. However, a significant proportion of patients are not suitable for surgical treatment due to high operative risk and co-morbidities. There is also limited availability to bullectomy, a high cost, and a significant morbidity associated with the surgical approach. Autologous blood instilled endobronchially can induce an inflammatory reaction leading to scarring, fibrosis, and ultimately volume loss. Methods: We recruited 5 subjects with giant bullae (2 not fit for surgery, 2 had previous pleurodeses, 1 refused surgery). They were treated with fluoroscopically guided bronchoscopically instilled unaltered autologous blood directly into their bullae. All treatments were performed using moderate sedation as day-case procedures. Measures of exercise capacity, quality of life, lung function, and computerised tomography (CT) scans of the chest were performed before and three months after the procedures. Results: Three of five subjects had significant shrinkage of the bullae on CT scans three months after treatment, leading to large and clinically meaningful improvements in lung function. Mean (SD) change for the cohort was: FEV1 Δ+17.3 (17.2)%; RV Δ-0.73 (0.50) litres; 6MWD Δ+88 (70) m; SGRQ Δ-11.1 (13.3) points. Conclusions: Directed intrabullous autologous blood instillation into giant bullae represents a cheap, minimally invasive and safe alternative to surgical bullectomy in patients not suitable for surgery. This approach has the potential to alter the treatment pathway of patients with giant bullae and a larger clinical trial is warranted.