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*Title* **Lung Volume Reduction Surgery for Emphysema: Systematic Review of Studies Comparing Different Procedures**

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## Aim

To evaluate the clinical benefit and harm of different lung volume reduction (LVRS) procedures.

## Conclusions and results

Four RCTs and 10 cohort studies met the inclusion criteria. Of the 4 RCTs, 3 compared LVRS procedures with or without buttressing, and 1 compared laser versus staple procedures. Of the 10 cohort studies, 2 compared unilateral with bilateral procedures, 5 compared median sternotomy (MS) with video-assisted thoracoscopic surgery (VATS), 1 compared unilateral with bilateral procedures and MS with VATS, and 2 compared staged and simultaneous procedures.

Limited evidence from RCTs of low quality suggest that buttressing the staple lines may provide better results than no buttressing, and that LVRS using the stapling procedure may be better than the laser resection method. The studies comparing unilateral versus bilateral procedures, staged versus simultaneous procedures, or MS versus VATS were nonrandomized. The evidence from these studies is weak and inconsistent, and it is impossible to conclude definitively if one procedure offers an advantage compared with the other procedure.

## Recommendations

Not applicable.

## Methods

Relevant studies were identified by searching electronic databases and websites. Randomized controlled trials (RCTs) and cohort studies were selected for inclusion if they compared different LVRS procedures for treating emphysema and reported at least one of several outcomes.

The relative benefit and harm of different LVRS procedures were determined by examining their impact on quality of life (QoL), complications associated with treatment, mortality, shortness of breath (dyspnea), and pulmonary function.

## Further research/reviews required

Unless appropriate RCTs are undertaken, uncertainty will continue as to which LVRS procedures are the most beneficial.

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