

British Lung Foundation



Lung volume reduction Surgery to combat COPD - emphysema

What is emphysema?

Healthy lungs are made up of millions of little air sacs with elastic walls (alveoli). It is here that oxygen is absorbed into the body and waste gases are expelled.

Due to emphysema - which is mainly caused by cigarette smoking - the walls of these air sacs are damaged. The sacs break apart so that they merge into each other, which makes holes in the lungs.

Oxygen cannot be absorbed into the blood in these damaged areas. The damaged parts press on the remaining healthy parts, 'stretching' the chest, and so interfering with the normal working of the lungs. As a result someone with emphysema becomes increasingly breathless.

Lung volume reduction surgery (LVRS)

This is an operation aimed at removing the damaged air spaces so that the healthy parts can inflate and work better. Also, by removing the 'swollen' air spaces your chest is able to relax into a more normal shape which is more efficient for breathing.

The operation is usually done on both sides of the chest through a single incision in the centre. This is a major operation so some surgeons are trying to develop methods to do the same thing by passing an operating telescope between the ribs and so avoid a major incision.

Benefits and risks

The most successful results are very impressive with a major reduction in breathlessness and an improvement in the ability to exercise and quality of life. The average benefit in the best North American centres is claimed to be about a 50 percent improvement in walking ability.

But LVRS is a major operation and it does carry a level of risk. This usually means a lengthy stay in hospital to recover from the operation. Occasionally people have had more serious complications and even died.

The main challenge is to make sure that only people who will benefit from LVRS get the operation.

Who is suitable?

People under 75 who are still able to get out and about are likely to be most suitable. The assessment involves detailed x-rays to find out whether the emphysema is patchy

or not. Only people with patchy disease are suitable. This is because the surgeon must be able to separate the healthy parts of the lung from the damaged parts of the lung.

Because the operation is relatively new it is not yet clear exactly who stands to gain the most and who runs the greatest risk from the operation. It is already clear that only a small minority (perhaps less than one in ten) of all people with emphysema may be suitable.

LVRS is not suitable for other lung conditions such as bronchiectasis and asthma.

How effective is LVRS compared to other treatments?

There is still much to be learned about LVRS. Currently research is focused on comparing the benefit of the operation with the very best non-surgical treatment, finding out who is ideally suited to the operation, assessing the safest way of doing it and working out how long any benefits last. As with any new procedure there is considerable debate about its exact place in the treatment of emphysema and expert medical opinion ranges from enthusiastic to sceptical.

The British Lung Foundation believes that this is an important new treatment which must be evaluated properly by specialist centres before it can be generally recommended.

Where is the operation carried out?

Most specialist thoracic surgical units in the UK have shown a considerable interest in this technique. Some are undertaking carefully controlled trials to evaluate the place of LVRS in the treatment of emphysema.

People with emphysema who would like to know more, or want to be considered for inclusion in a LVRS programme, should see their GP to discuss the possibility of referral to a specialist centre.

New forms of volume reduction

One-way valves can now be placed in the lungs to block off damaged parts. Early experience shows that valves can sometimes be as good as surgery which means you can avoid an operation. This is an active area of research - valve treatment is not yet routinely available.

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