The effects of antireflux surgery on asthmatics with gastroesophageal reflux

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Authors' objectives
To review the available literature on the effects of antireflux surgery in asthma.

Searching
MEDLINE (1966-August 1998) was searched using the following terms: 'lung disease', 'asthma', and 'pulmonary function', combined with 'GER' and different antireflux surgeries ('gastropexy', 'Belsey', 'Allison', 'Toupet', 'Lortat-Jacob', 'Boerema', and 'Hill'). Additional studies were located through searching the bibliographies of retrieved articles. Only English language studies were included in the review.

Study selection
Study designs of evaluations included in the review
Studies of any design were reported in the review including: controlled studies, case series, retrospective reviews and uncontrolled studies.

Specific interventions included in the review
Antireflux surgery including the following specific procedures: transthoracic repair, Allison, Belsey, anterior gastropexy, hiatus hernia repair, Nissen, Boerema, fundoplication, Hill's procedure, Toupet Lortat-Jacob, posterior gastropexy, lap Nissen. Comparators included placebo, ranitidine and cimetidine therapy

Participants included in the review
Individuals (infants, children and adults) with asthma and gastroesophageal reflux (GER) regardless of how the diagnoses were made were included in the review. Wheezing, in the setting of other diseases such as bronchitis, bronchiectasis, or aspiration pneumonia was not considered to be diagnostic of asthma. However, studies of antireflux surgery in individuals with other respiratory diseases were also included

Outcomes assessed in the review
Improvement in GER symptoms, asthma severity, medication use, and pulmonary function.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The authors do not report the method used to assess quality, or how the quality assessment was performed.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Information about asthma severity, medication use, intervention groups, study design, confirmatory tests, population details, pulmonary function, and demographics were reported. The authors do not state how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
A narrative summary was used, with studies grouped according to their design.

**How were differences between studies investigated?**
Differences between the studies were not formally assessed.

**Results of the review**
Twenty-four studies (2 controlled studies and 22 open studies) including data on 417 patients who underwent antireflux surgery were included. Ten of the studies included data on ten or fewer than ten patients, two were only published as abstracts and asthmatic data could not be separated from non-asthmatic data in four studies.

Sixteen studies were conducted in adults only (or mostly adults), five in children only, one in all ages and one included only infants and children. Overall, 173/192 patients showed an improvement in GER symptoms, 296/376 showed an improvement in asthma symptoms, 177/201 showed an improvement in medication usage and 32/118 showed an improvement in pulmonary function.

**Controlled studies in adults (n=2):**
One study compared reflux surgery with placebo and cimetidine therapy and found that the results for cimetidine and surgery were similar at 6 months. Compared to the placebo group, both cimetidine and surgery patients experienced an improvement in asthma symptoms and decreased medication requirements, but spirometry did not improve (effect sizes not reported). The second study compared reflux surgery to ranitidine and placebo. Asthma symptoms (17/23 individuals) and medication requirements (8/23) improved post-operatively, but peak expiratory flow only improved by 10% in one third of patients (no further details, study was only published in abstract form).

**Authors' conclusions**
Antireflux surgery may improve GER and asthma symptoms and decrease medication requirements, but it has little effect on pulmonary function. The effects of antireflux surgery on asthma are similar to those of medical antireflux therapy.

**CRD commentary**
This review is based on clearly stated although quite broad inclusion criteria. The literature search is reasonable although the search was based on only one electronic database and relevant data may have been missed by the inclusion of only English language publications. In addition, no specific attempts were made to locate unpublished work and so there is a possibility of publication bias.

In terms of the methodology of the review, very few details were reported about how and who selected the studies for inclusion. Despite the inclusion of a wide range of studies, the quality of the studies was not discussed, although the two controlled studies were discussed separately. The majority of the data were, however, based on uncontrolled studies, often with very few participants. Given the wide inclusion criteria and consequent level of heterogeneity, the use of a narrative review would seem appropriate. Details of the studies were also summarised in tables however; exact details of the study design and sizes of the outcome effects observed were not reported. In view of these problems the authors findings and conclusions should be treated with caution, although the recommendations for further research would appear valid.

**Implications of the review for practice and research**
Practice: The authors do not state any implications for practice.
Research: The authors state that the role of surgical antireflux therapy in asthma patients requires further investigation. In particular future studies should be controlled, they should be large enough to avoid beta errors, and they should objectively document the severity of both GER and asthma both preoperatively and postoperatively. Patients enrolled in these studies require adequate run-in periods to allow proper assessment and stabilisation of their asthma, and they should be followed for an adequate time after surgery to ensure healing of esophagitis and airway inflammation.
'properly evaluated quality of life tools should be used to assess the effects of therapy' and 'studies should report the side effects of asthma and antireflux medications, as well as surgical and anaesthetic complications'.

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