Laparoscopic treatment of Mirizzi syndrome: a systematic review
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CRD summary
This review assessed the feasibility of laparoscopic treatment of Mirizzi Syndrome (a complication of gallstone disease) and concluded that it could not be recommended as a standard procedure for this condition. For a range of reasons relating to the study quality, study size and the review synthesis, the authors' conclusions are not likely to be reliable.

Authors' objectives
To assess the feasibility of laparoscopic treatment of Mirizzi syndrome by determining the associated risks and complications

Searching
MEDLINE was searched for papers published between December 1989 and December 2008 in English or German. Search terms were reported. Bibliographies of retrieved articles were searched for further relevant studies.

Study selection
Studies were eligible for inclusion if they contained at least four patients with Mirizzi syndrome treated with laparoscopy. Eligible studies were required to report preoperative diagnosis rate, analytical conversion rate, and complication data.

The year of publication of included studies ranged from 1997 to 2007. Where reported, most included studies were retrospective, but a few were prospective. Most patients in most studies had type I rather than type II Mirizzi syndrome. Where reported, the mean age of participants ranged from 44 to 68 years; over three quarters of participants were female.

Two reviewers independently assessed study eligibility.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data extraction was conducted independently by two reviewers.

Methods of synthesis
Results from all the studies were pooled according to outcome type (whether conversion to open surgery was required, whether complications occurred) and study characteristics (preoperative diagnosis rates in studies, Mirizzi syndrome type) by simply combining the numbers of events and observations from all retrieved studies. Two-tailed Fisher's exact probability tests were performed to compare outcomes between study groups.

Results of the review
Ten studies were included in the review, including 124 patients with Mirizzi syndrome who had laparoscopic treatment. The mean duration of follow-up ranged from 12 to 26 months.

Main Outcomes: Laparoscopic treatment required conversion to open surgery in 41% of patients (51 out of 124 procedures); the most common reasons for conversion included adhesions and uncertain or abnormal anatomy. Complications occurred in 16% of cases (20 out of 124 procedures); the most common complications included bile duct injury and residual stones. Reoperation was required in six out of 124 patients. The median hospital stay was eight days.

Subgroup comparisons: Compared with studies where most patients (more than 80%) had a preoperative diagnosis of Mirizzi syndrome, lower preoperative diagnosis was associated with statistically significant (p<0.05 using Fisher exact
test) increases in conversion rates (54.5% versus 25.9%), complication rates (24.2% versus 6.9%), and reoperation rates (9.1% versus 0.0%). There were no statistically significant differences in conversion rates and complication rates according to type of Mirizzi syndrome (type I compared with type II).

**Authors' conclusions**
Laparoscopic treatment of Mirizzi syndrome could not be recommended as a standard procedure. Preoperative diagnosis of the syndrome seemed an important predicting factor of technical success.

**CRD commentary**
This review addressed a clear research question using relevant inclusion and exclusion criteria. The search was limited, as only one database was searched, and language restrictions were applied. Study selection and data extraction were conducted in duplicate, reducing the risk of reviewer bias and error.

No validity assessment was reported, so the quality of the included studies was unclear. No assessment was made of relevant comparators treatments, which made it difficult to place the results in context. Although clinical heterogeneity was explored through subgroup analyses, a simple approach was used to pool the results.

In light of the numerous limitations, the conclusions of this review of very small studies are not likely to be reliable.

**Implications of the review for practice and research**
Practice: A preoperative diagnosis of Mirizzi syndrome seems to be an important factor in predicting success of laparoscopic treatment.

Research: At least one randomised controlled trial should be conducted to compare outcomes following open with laparoscopic treatment of Mirizzi syndrome.

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