CRD summary
This review concluded that laparoscopic sleeve gastrectomy was a promising treatment option for patients with morbid obesity, but its exact role remained undefined. These conclusions should be treated with some caution given limitations in the review process and potential for bias in the included studies.

Authors' objectives
To assess the impact of laparoscopic sleeve gastrectomy (LSG) as a treatment for morbid obesity and to determine its operational costs and resource impacts in a definitive or staged approach.

Searching
Published or unpublished studies in English from before April 2009 were sought in several electronic databases, which included MEDLINE, EMBASE, The Cochrane Library, INAHTA using keywords documented in the report. Abstracts of conferences between 2000 and 2009 were searched.

Study selection
Eligible studies needed to be randomised controlled trials (RCTs), non-randomised clinical trials, retrospective or prospective cohort studies or case series. Studies had to include patients diagnosed with morbid obesity, defined as Body Mass Index (BMI) more than 40, or BMI between 35 and 40 with severe comorbidities. The eligible intervention was LSG for the treatment of morbid obesity only. Studies were excluded if only surgical outcomes were reported or if follow-up was not reported. Where studies had a control group, LSG was compared to laparoscopic adjustable gastric banding (LAGB) or LSG with intragastric balloon and duodenal switch. Follow-up ranged from six months to three years. Preoperative BMI ranged from 37.2 to 69 kg/m². Some 28.8% of the participants were male (range within studies 4% to 59%). Further patient details were reported.

Assessment of study quality
Study quality was assessed based on baseline comparability, description of withdrawals, blinding, allocation concealment and adequate sequence generation.

Data extraction
The authors did not state how data were extracted for the review.

Methods of synthesis
Clinical outcomes were tabulated and compared with the results of existing reviews of LAGB and laparoscopic gastric bypass (LRYGB). Results were also presented in a narrative synthesis.

Results of the review
Fifteen studies were included in the review (n=940 participants, range seven to 216): one RCT, eight prospective studies and six retrospective studies. Eleven studies did not have a control group. The RCT had moderate risk of bias; the other studies were deemed to have a high risk of bias.

Operative time ranged from 49 to 143 minutes (average 100.4 minutes). Hospital stays ranged from 1.9 to 8 days (average of 4.4 days). Percentage excessive weight loss ranged from 33% to 90% with follow-up from six to 36 months. Five studies presented data on resolution and improvement of comorbidities and these ranged from 45% to 95.3%.
Overall reported mortality rate for LSG ranged from zero to 3.3%. Complication rates ranged from zero to 29%.

Cost information
No studies provided cost data. Operational data were obtained from the authors’ institution (Royal Alexandra Hospital, Alberta). The estimated total cost of LSG was $10,317 Canadian dollars (CAD) compared with $7,536 CAD for LAGB and $11,666 CAD for LRYGB.

Authors' conclusions
Although LSG was a promising treatment option for patients with morbid obesity, its role remained undefined and it should be considered an investigational procedure that may require revision in a subset of patients.

CRD commentary
This review was based on broadly defined inclusion criteria in terms of participants, intervention, outcomes and study designs. Searching encompassed a range of databases and included unpublished material. Studies in languages other than English were excluded, so language bias was a possibility. Study quality was assessed, but it was unclear whether more than one reviewer was involved in this assessment and in the study selection and data extraction procedures; bias can be introduced if these procedures are conducted by one reviewer.

Clinical outcomes of LSG in relation to LAGB and LRYGB were not evaluated in studies that directly compared the techniques. A narrative synthesis to detail the outcomes of LSG was appropriate given the variation in study design. The results of the review should be treated with some caution given limitations in the review process and potential for bias in the included studies.

Implications of the review for practice and research
Practice: The authors stated that surgeons and patients who were considering LSG should be fully informed of the limitations of available data which did not yet include medium-term and long-term outcomes. LSG in the surgical management of obesity should remain as an investigational procedure.

Research: The authors stated that the operational impacts of LSG as a staged or definitive procedure were poorly defined and needed to be analysed further. The overall time to recoup costs for LSG as compared to LRYGB merited further analysis.

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.