

NOTES-cholecystectomy may be a viable alternative to conventional laparoscopic cholecystectomy: a systematic review and meta-analysis of the published comparative studies



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Introduction

- Conventional laparoscopic cholecystectomy (CLC): gold standard operative intervention to remove the gallbladder.
- Natural orifice transluminal endoscopic surgery (NOTES): another innovative approach for gallbladder surgery, but its widespread use is limited for unknown reasons.
- NOTES-cholecystectomy has been reported with promising results in many animal studies using hybrid transvaginal approach, transgastric approach and trans-sigmoid approach.

Objective

To systematically analyse the published studies comparing the effectiveness of NOTES-cholecystectomy against CLC.

Methods

- A search of standard electronic databases such as MEDLINE, EMBASE, and Cochrane Library for all types of comparative trials was conducted.
- Two independent reviewers (MSS and LC) using a predefined meta-analysis form extracted data from each study which resulted in high and satisfactory agreement.
- The software package RevMan 5.2, provided by the Cochrane Collaboration, was used for the statistical analysis to achieve a combined outcome.
- The odds ratio (OR) with a 95 per cent confidence interval (CI) was calculated for binary data, and the standardised mean difference (SMD) with a 95 per cent CI was calculated for continuous data variables.

Results

- Ten prospective and retrospective comparative cohort studies evaluating 792 patients undergoing either CLC or NOTES-cholecystectomy were retrieved from the medical literature.

Postoperative complications

- The risk of postoperative complications was lower following NOTES-cholecystectomy compared to CLC.

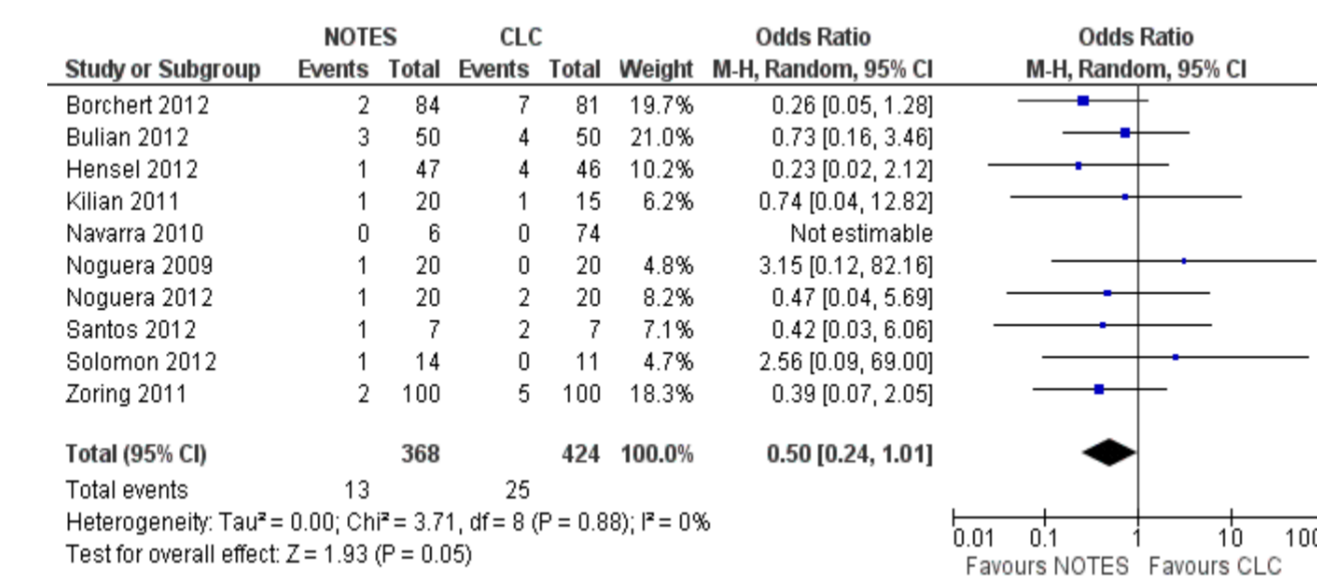


Figure 1: Forest plot for postoperative complications following NOTES-cholecystectomy versus CLC.

Duration of operation

- NOTES-cholecystectomy was associated with longer duration of operation.

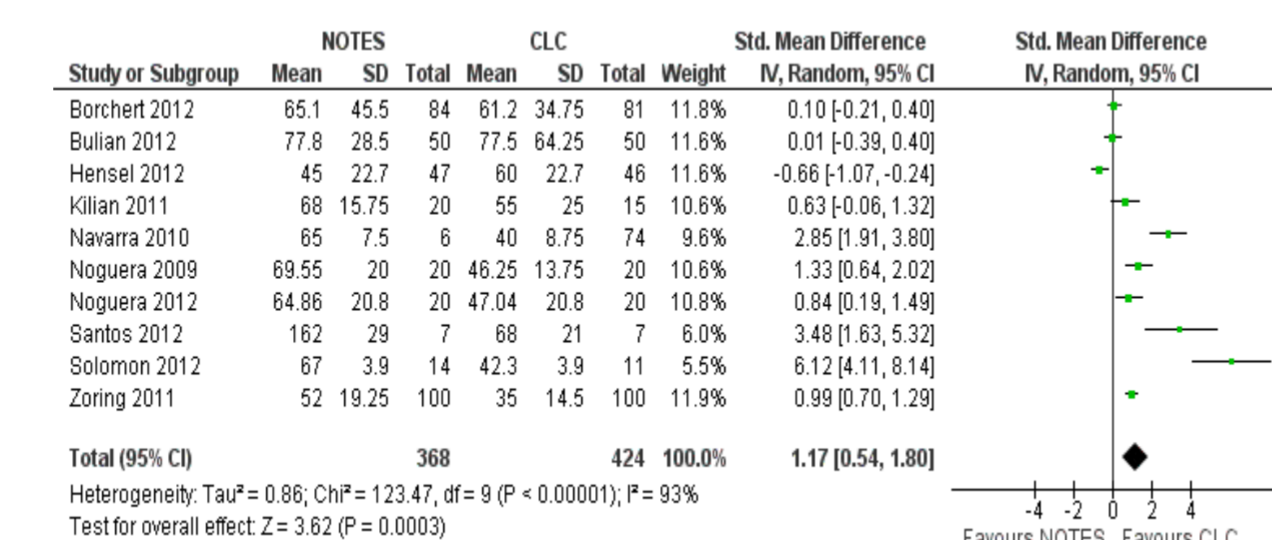


Figure 2: Forest plot for duration of operation in case of NOTES-cholecystectomy versus CLC.

Results

Postoperative pain

- NOTES-cholecystectomy was associated with lower score of postoperative pain.

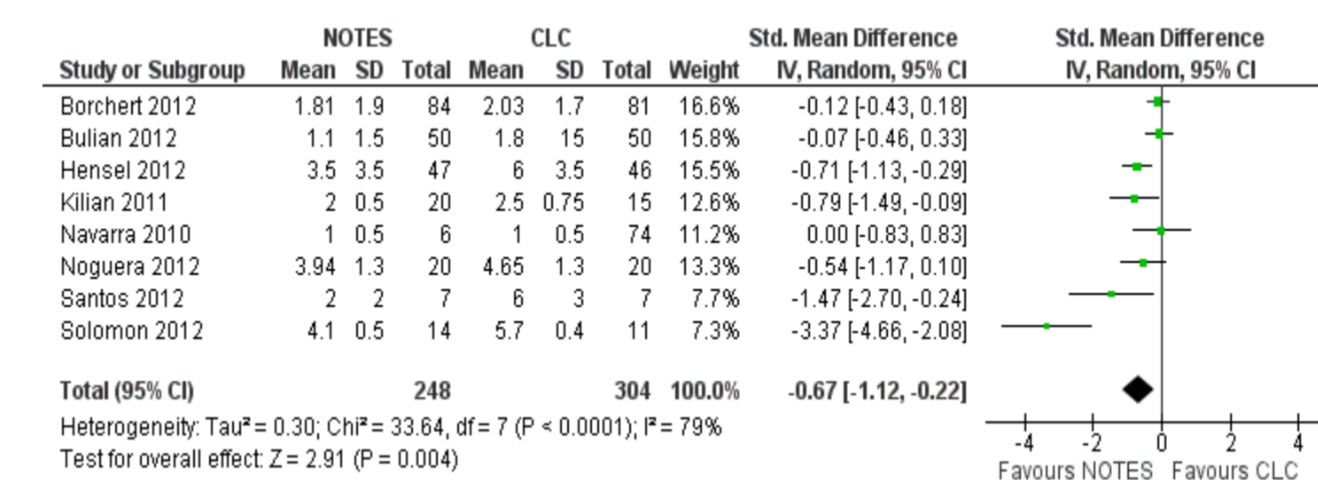


Figure 3: Forest plot for postoperative pain following NOTES-cholecystectomy versus CLC.

Length of hospital stay

- NOTES-cholecystectomy was associated with shorter length of hospital stay.

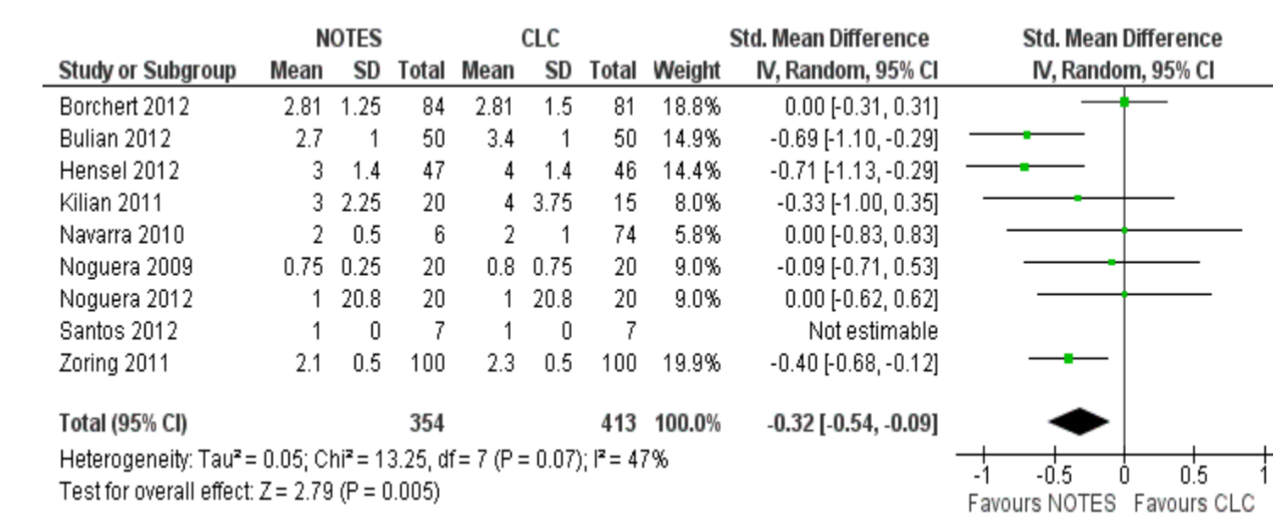


Figure 4: Forest plot for length of hospital stay following NOTES-cholecystectomy versus CLC.

Results

Time to return to work

- The time to return to work was shorter following NOTES-cholecystectomy compared to CLC but statistically it was not significant.

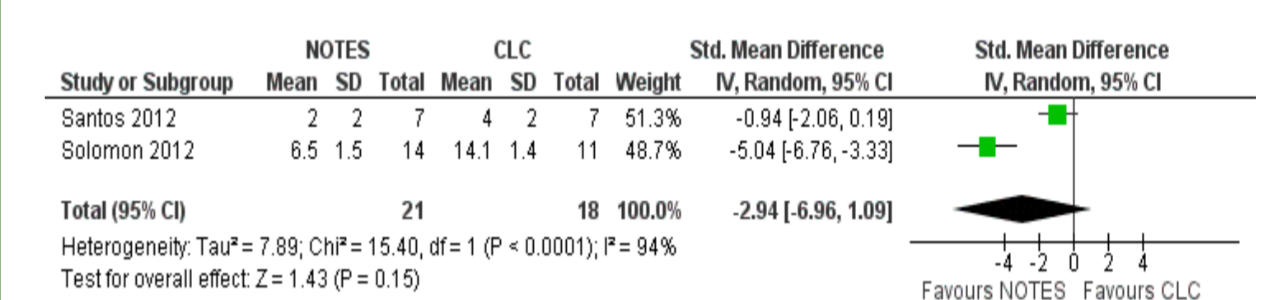


Figure 5: Forest plot for time to return to work following NOTES-cholecystectomy versus CLC.

Discussion

- Due to several limitations to the present review this conclusion may be considered weaker and biased.
- This evidence is extrapolated from the summated analysis of nine prospective or retrospective studies and one randomized, controlled trial.
- There were significant differences in inclusion and exclusion criteria among the included studies.

Conclusion

- NOTES-cholecystectomy may be a safe and technically feasible approach to treat gallstones with potential advantages of shorter hospital stay, lesser postoperative pain, lower complications and comparable in terms of return to normal activity time.