Laparoscopy for diagnosing resectability of disease in patients with advanced ovarian cancer

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RHL summary

Findings of the review: After primary debulking surgery, a residual tumour remains in up to 60% of cases. Hence, there is a need to select patients accurately for treatment with primary debulking surgery or with neoadjuvant chemotherapy. This review sought to determine if in patients suspected of advanced ovarian cancer open laparoscopy after the diagnostic work-up is accurate in predicting the resectability of disease. Two studies (408 patients) that had performed both laparoscopy and laparotomy were included. They had a sensitivity of about 70%, a specificity of 100% and negative predictive values of 75% and 96% (due to differences in prevalence). Although diagnostic performance of laparoscopy was quite satisfactory, the low number of included studies and their heterogeneity did not allow a definite conclusion to be reached.

Implementation: From currently available data it cannot be determined whether laparoscopy can predict the resectability of ovarian cancer. Further studies are needed.

Cochrane review


Abstract

The presence of residual tumour after primary debulking surgery is the most important prognostic factor in patients with advanced ovarian cancer. In up to 60% of cases, residual tumour of more than 1 cm is left behind, stressing the necessity of accurately selecting those patients who should be treated with primary debulking surgery and those who should receive neoadjuvant chemotherapy instead.

To determine if performing an open laparoscopy after the diagnostic work-up of patients suspected of advanced ovarian cancer is accurate in predicting the resectability of disease.

We searched MEDLINE, EMBASE, The Cochrane Central Register of Controlled Trials (CENTRAL), the Cochrane Register of Diagnostic Test Accuracy Studies, MEDION and ISI Web of Science to February 2013. Furthermore, we checked references of identified primary studies and review articles.
We included studies that evaluated the diagnostic accuracy of laparoscopy to determine the resectability of disease in patients who are suspected of advanced ovarian cancer and planned to receive primary debulking surgery.

Two review authors assessed the quality of included studies using QUADAS-2 and extracted data on study and patients’ characteristics, index test, target condition and reference standard. Data for two-by-two tables were extracted and summarised graphically. Sensitivity and specificity and negative predictive values were calculated.

We included seven studies reporting on six cohorts. Between 27% to 64% of included patients per study were positive on laparoscopy (too extensive disease to warrant laparotomy) and between 36% to 73% were negative (disease suitable for debulking laparotomy). Only two studies avoided partial verification bias and provided data to calculate sensitivity and specificity, which did not justify meta-analysis. These two studies had a sensitivity of 0.70 (95% confidence interval (CI) 0.57 to 0.82) and 0.71 (95% CI 0.44 to 0.90); however, the specificity of both studies was 1.00 (95% CI 0.90 to 1.00). In these two studies there were no false positives, i.e. no patients for whom laparoscopy indicated that major surgery would not be successful and should be avoided, whereas, in reality the patient could be successfully operated upon. Negative predictive values (NPV), for those patients who were diagnosed with having not too extensive disease correctly identified were 0.75 (95% CI 0.55 to 0.86) and 0.96 (95% CI 0.56 to 0.99) due to a different prevalence. Although the studies did report sufficient data to calculate NPVs, we judged these estimates too heterogeneous to meta-analyse.

Three studies described the development or validation of a prediction model with a clear cut-off for test positivity. Sensitivity and specificity of these prediction models were 0.30 to 0.70 and 0.89 to 1.00, respectively. However, one of these studies suffered from partial verification bias.

Laparoscopy is a promising test, but the low number of studies and the differences between the included studies do not allow firm conclusions to be drawn from these data. Due to a difference in prevalence, there is a wide range in negative predictive values between studies. Two studies verified all patients. These imply a high specificity of laparoscopy in diagnosing resectability and have a good sensitivity. Both studies show that the use of criteria for unresectable disease will result in no patients inappropriately unexplored. However, there will still be patients undergoing unsuccessful primary laparotomy. Using a prediction model does not increase the sensitivity and will result in more unnecessarily explored patients, due to a lower specificity.

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