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Role of prophylactic antibiotics in elective laparoscopic cholecystectomy: A systematic review and meta-analysis

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Purpose: The role of prophylactic antibiotics for laparoscopic cholecystectomy in low-risk patients is still unclear. This study aimed to verify the conclusion of previous meta-analyses concerning the effectiveness of antibiotic prophylaxis for elective laparoscopic cholecystectomy in low-risk patients.

Methods: Comprehensive literature searches were performed on electric databases and manual searches. Randomized controlled trials (RCTs), prospective studies, and retrospective studies comparing antibiotic prophylaxis to placebo or no antibiotics in low-risk elective laparoscopic cholecystectomy were included.

Results: This study included 28 RCTs, three prospective studies, and three retrospective studies. In RCTs, prophylactic antibiotics did not prevent deep surgical site infections (SSI) (RR 1.10, 95% confidence interval [CI] [0.45–2.69], $P=0.84$) but reduced SSI (RR 0.70, 95% CI [0.53–0.94], $P=0.02$), and superficial SSI (RR 0.58, 95% CI [0.42–0.82], $P=0.01$). Prospective studies showed prophylactic antibiotics did not reduce superficial SSI (RR 0.35, 95% CI [0.01–8.40], $P=0.52$) but reduced SSI (RR 0.12, 95% CI [0.04–0.35], $P=0.0001$). In retrospective studies, antibiotic prophylaxis did not reduce SSI (RR 1.59, 95% CI [0.30–8.32], $P=0.58$). The pooled data (12121 patients) including RCTs and prospective and retrospective studies showed that prophylactic antibiotics were not effective in preventing deep SSI (RR 1.01 95% CI [0.46–2.21], $P=0.98$) but effective in reducing SSI (RR 0.67, 95% CI [0.51–0.88], $P=0.003$) and superficial SSI (RR 0.61, 95% CI [0.45–0.83], $P=0.002$).

Conclusion: The use of prophylactic antibiotics is effective for reducing the incidence of SSI and superficial SSI but is not effective for preventing deep SSI in low-risk patients who underwent elective laparoscopic cholecystectomy.