

## Laparoscope use and surgical site infections in colon surgery, cholecystectomy, and appendectomy

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**Objectives:** To compare surgical site infections (SSI) rates following digestive operations performed by laparoscopy or open surgery.

**Methods:** Prospective study included in a multicenter surveillance programme using the Centres for Disease Control and Prevention (CDC) criteria for the diagnosis of SSI and a post-discharge follow-up at 30 days. 2092 colon surgeries (COL), 2468 appendectomies (APP), and 3096 cholecystectomies (CCY) performed in 9 hospitals between March 1998 and December 2004 were analysed. Length of stays (LOS) and SSI rates were compared for each procedure between open operations and those done with a laparoscope. Multivariate analysis (logistic regression) was used to analyse the effect of laparoscope use on SSI rates while adjusting for potential confounding factors such as the 3 components of the U.S. National Nosocomial Infection Surveillance (NNIS) index (contamination class, ASA score, duration of the operation), the age, the gender, any re-intervention done for a non infectious complication, and the hospital.

**Results:** A 30-day follow-up was available for >95% of the patients. 19% of SSI were diagnosed post-discharge in COL, 66% in APP, and 45% in CCY. The mean LOS were significantly shorter for patients operated with a laparoscope than for those who underwent open surgery (p smaller than .001): 12.5 days (standard dev. = 10.1) vs. 20.3 days (15.7) for COL, 5.5 days (11.8) vs. 6.4 days (9.5) for APP, and 5.9 days (5.1) vs. 13.1 days (8.7) for CCY. Crude SSI rates in operations done with a laparoscope and open operations were respectively 35/311 (11.3%) vs. 400/1781 (22.5%) for COL, 59/1051 (5.6%) vs. 117/1417 (8.3%) for APP, and 46/2652 (1.7%) vs. 35/444 (7.9%) for CCY. In univariate analysis, the use of a laparoscope was associated with a risk reduction of 50% for COL (crude OR: 0.5; [95%CI: 0.36-0.69]), 32% for APP (0.68 [0.50-0.92]), and 78% for CCY (0.22 [0.14-0.34]). In multivariate analysis, laparoscopy remained independently associated with lower rates of SSI in COL (adjusted OR: 0.43 [0.29-0.63]), APP (0.61 [0.43-0.87]), and CCY (0.27 [0.16-0.43]).

**Conclusion:** Irrespective of differences in the length of hospital stay, the use of a laparoscope appears independently associated with lower SSI rates in cholecystectomy, appendectomy, and colon surgery.