Author's response to reviews

Title: Cholecystectomy in Sweden 2000 - 2003: a nationwide study on procedures, patient characteristics, and mortality

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Background Although it is of great importance for the development of gallbladder surgery, discussion regarding the characteristics of patients undergoing open or laparoscopic cholecystectomy is seldom held. In this register study we examined the characteristics and mortality of all patients undergoing cholecystectomy as an inpatient in Sweden 2000 - 2003.

Methods Hospital discharge and death certificate data were linked for all patients undergoing cholecystectomy in Sweden from January 1st 2000 through December 31st 2003. Mortality risk was calculated as standardised mortality ratio (SMR i.e. observed over expected deaths considering age and gender of the background population).

Results During the four years of the study 43072 patients underwent inpatient cholecystectomy for benign biliary disease, 31144 (72%) using a laparoscopic technique and 11928 patients (28%) an open procedure (including conversion from laparoscopy). Patients with open cholecystectomy were older (59 vs 49 years, p<0.001), more likely to have been admitted to hospital during the year preceding cholecystectomy than patients with laparoscopic cholecystectomy, and they had more frequently been admitted acutely (57% Vs 21%, p<0.001). The proportion of women was lower in the open compared to the laparoscopic cholecystectomy group (57% vs 73%, p<0.001). Hospital stay was longer for patients with open cholecystectomy than for patients with laparoscopic cholecystectomy (median 6 vs 2 days, p<0.001). SMR within 90 days of index admission was 3.89 (3.41-4.41) (mean and 95% CI), for patients with open cholecystectomy and 0.73 (0.52-1.01) for patients with laparoscopic cholecystectomy. During this period biliary disease accounted for one third of all deaths in both groups. From 91 to 365 days after index admission, the SMR for patients in the open group was 1.01 (0.87-1.16) and for patients in the laparoscopic group 0.56 (0.44-0.69).

Conclusions Laparoscopic cholecystectomy is performed on patients having a lower mortality risk than the general Swedish population, whereas open cholecystectomy is done on elderly and fragile patients with a mortality risk within 90 days of admission for cholecystectomy, which is four times that of general population. Further efforts to reduce surgical trauma in open biliary surgery are motivated.