

levels before liver surgery. In patients with CRLM we advocate both CEA monitoring and imaging in the follow-up after liver surgery.

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POSTER

A Combined Volume and Quality Threshold to Reliably Assess Hospital Performance

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Background: Recent studies have shown that a high procedural volume is associated with a better quality of care, resulting in volume thresholds set for hospitals. However, hospital-specific outcomes that may be better or worse than average, are ignored in these thresholds. We aimed to develop a combined volume and (risk-adjusted) outcome threshold that identifies hospitals that deliver adequate care.

Methods: We illustrate our methods on the Dutch Surgical Colorectal Audit database of 2009. Outcome was measured by postoperative mortality and morbidity. The minimal volume needed to detect a difference between the population average outcome and twice this average, regardless of hospital-specific outcomes, was calculated. Then, for each hospital, an Observed/Expected (O/E) outcome was calculated. Expected outcome was based on hospitals' case-mix. When the 95% confidence interval around the hospitals' O/E outcome was below 2 and not above 1, the hospital met the combined volume and quality threshold.

Results: We included 6416 patients, treated in 81 hospitals. Average mortality was 4%, average morbidity was 24%. A minimum volume of 247 patients was needed for mortality, and 45 for morbidity. No hospitals met this volume threshold for mortality; 68 (81%) hospitals had sufficient volume for morbidity. For mortality, 73 (90%) hospitals had an O/E outcome less than 2, but only 16 (20%) also had a sufficient volume to prove their results to be reliable. For morbidity, all hospitals had an O/E outcome less than 2, while 61 (75%) hospitals also had sufficient volume to meet the combined volume and quality threshold.

Conclusion: Using the combined volume and outcome threshold we can identify those hospitals that deliver adequate care, and increase transparency and trust in quality of care.

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POSTER

Non Elective Colon Cancer Resections in the Dutch Surgical Colorectal Audit, a Scoring System to Identify High Risk Patients

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Background: Although outcome after non-elective colon cancer resections is worse than after elective resections, there may be elective patients with a high risk of postoperative mortality, and non-elective patients with a lower risk. The aim of this study was to develop a prediction score for postoperative mortality after elective and non-elective resections, which enables to identify and compare high- and low-risk elective and non-elective patients in clinical practice.

Patients and Methods: In the Dutch Surgical Colorectal Audit (DSCA) detailed clinical data on case-mix, treatment and outcome variables were registered of patients operated for a colon carcinoma in the Netherlands. All factors predicting mortality were identified for elective and non-elective patients separately, by means of multivariate logistic regression. Every 100% rise in odds ratio was translated into one point in the scoring system. Patients were divided into risk-categories based on their score.

Results: A total of 3547 elective, and 968 non-elective patients operated for a colon carcinoma in 2009 were included. Postoperative mortality ranged from 1% in the low-risk elective patients to 27% in the high-risk non-elective patients. Low-risk non-elective patients had a similar mortality rate as medium-risk elective patients (4% and 3% respectively, $p=0.24$). Of all non-elective patients, 26% were diagnosed 1 week or longer before surgery. When all of these patients could have been treated electively, mortality might be reduced.

Conclusion: Using a simple scoring system, physicians can identify high-risk patients during their preoperative visit. Only a select group of non-elective patients were classified as high-risk patients with a postoperative

mortality risk of 27%. Maximum effort should be made to treat these patients in an elective setting.

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POSTER

Quality of Life of Older Rectal Cancer Patients is Not Impaired by a Permanent Stoma

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Background: The association between age at treatment and health-related quality of life (HRQL) of older rectal cancer patients is poorly understood. The aim of this study was to investigate whether HRQL of older rectal cancer patients (≥ 70 years) treated for a tumour in the lower two-third of the rectum differs from younger patients (< 70 years). Furthermore the influence of a permanent stoma was taken into account.

Materials and Methods: Patients with rectal cancer from 4 hospitals diagnosed in 1998–2007 were identified from the Eindhoven Cancer Registry. All patients were treated with either abdominoperineal or low anterior resections. Survivors completed the Short-Form-36 (SF-36) health survey and the EORTC Quality of Life Questionnaire-Colorectal 38 (QLQ-CR38). HRQL scores were compared after dividing the patients in four groups, stratified by stoma status and age at time of operation (< 70 and ≥ 70). The SF-36 and the QLQ-CR38 sexuality subscale scores of the survivors were compared with a normal age- and sex-matched Dutch population.

Results: 143 patients were included. Median follow-up was 3.4 years. Older patients had significantly worse physical function ($p=0.0003$) compared to younger patients on the SF-36 subscales. On the QLQ-CR38 domains, older patients ($p=0.005$) and patients without a stoma ($p=0.009$) had worse sexual functioning compared to younger patients and patients with a stoma, respectively. There was a significant age effect ($p=0.01$) for male sexual dysfunction, where older males had more sexual dysfunction compared to younger males. Older patients with a stoma had worse physical function ($p<0.01$), but slightly better mental health ($p<0.05$) compared to the Dutch normative population. Older patients without a stoma had better emotional role function ($p<0.01$) compared to the normative population. However younger patients had a worse sexual functioning and enjoyment compared to the normative population (both $p<0.0001$).

Conclusions: This study shows that older patients with a stoma have comparable HRQL to older patients without a stoma or the normative population. Patients who are sexually active after treatment could benefit from receiving psychosocial and clinical support in the management of potential sexual dysfunction following treatment.

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POSTER

Postoperative Morbidity After Hypertherm Intraperitoneal Chemotherapy Related to Perfusion Temperature

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Background: Hypertherm intraperitoneal chemoperfusion (HIPEC) is a treatment given to patients with peritoneal carcinomatosis of different primary origin. Hyperthermia is supposed to enhance the tumoricide effects of chemotherapy. In this study, the clinical effects of temperature during a HIPEC were investigated.

Material and Methods: All patients treated in one tertiary with oxaliplatin based HIPEC (460 mg/m^2) were included. In addition to intraperitoneal oxaliplatin, 5-fluorouracil was administered intravenously. The temperature of the perfusion was adjusted to the clinical condition of the patient. During the 30 minute perfusion, temperature was continuously recorded at 3 sites. The maximal temperature and the area under the temperature curve (AUC) were recorded. Data on age, sex, anaesthesia time, BMI, blood counts and biochemistry, number of anastomosis, postoperative complications, time in the intensive care (IC) department, total hospitalisation time and time to removal of the stomach tube were extracted from patient files. The latter was considered a measure of postoperative ileus. A stepwise multiple linear regression analysis was performed to predict time in the IC department and time to removal of stomach tube.

Results: Between July 2005 and February 2011, 138 patients with peritoneal carcinomatosis of different origin were eligible for inclusion. Data on time to removal of stomach tube of 131 patients were available. The mean age was 57 years (range 17–82) and the sex ratio was 60 males to 78 females. Mean operation time was 579 minutes. Adequate temperature data of 102 patients were available. Maximal temperature was not related to the time to removal of stomach tube, occurrence of anastomotic leaks