

## Coloproctologie

### Quadratus lumborum block versus perioperatief intraveneus lidocaine als pijnbestrijding na laparoscopische colorectale chirurgie

*Quadratus Lumborum Block Versus Perioperative Intravenous Lidocaine for Postoperative Pain Control in Patients Undergoing Laparoscopic Colorectal Surgery: A Prospective, Randomized, Double-blind Controlled Clinical Trial.* Dewinter et al; Ann Surg 2018; 268 (5); 769-775.

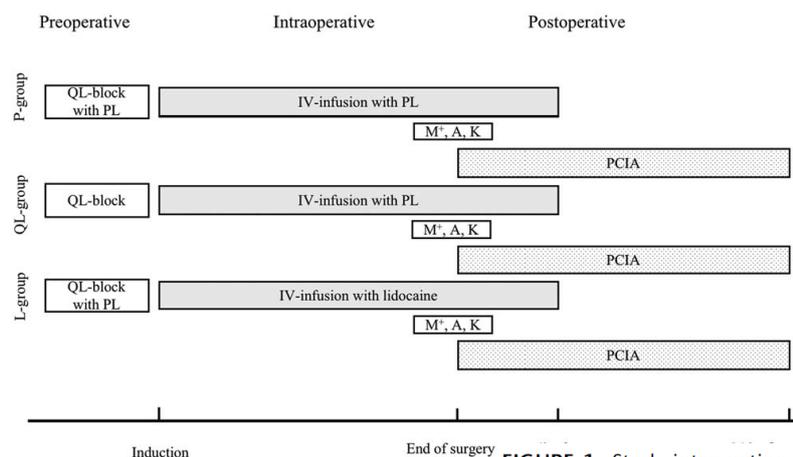
Pubmed ID: 30004914

**OBJECTIVE:** To investigate the comparative analgesic efficacy of systemic lidocaine and quadratus lumborum (QL) block in laparoscopic colorectal surgery.

**BACKGROUND:** Although epidural analgesia is the standard to control pain in patients undergoing open colorectal surgery, optimal analgesic management in laparoscopic surgery is less well-defined. There is need for effective and efficient alternatives to epidural analgesia for pain management in patients undergoing laparoscopic colorectal surgery.

**METHODS:** A total of 125 patients undergoing laparoscopic colorectal surgery were included in this randomized, double-blind controlled clinical trial. Patients randomly received an intravenous infusion with placebo plus a QL-block with placebo, a QL-block with ropivacaine 0.25% plus intravenous placebo, or intravenous lidocaine plus a QL-block with placebo. Postoperatively, all patients received patient-controlled intravenous anesthesia (PCIA) with morphine. Primary outcome parameter was the opioid consumption during the first 24 hours postoperatively. Secondary endpoints included severity of postoperative pain, time to return of intestinal function, incidence of postoperative nausea and vomiting, and length of hospital stay.

**RESULTS:** The QL-block was not superior to systemic lidocaine for the reduction of morphine requirements in the first 24 hours postoperatively {QL-group: 37.5 (28.4) mg [mean (standard deviation)] vs lidocaine group: 40.2 (25) mg,  $P = 0.15$ }. For the majority of secondary outcome parameters, no significant differences were found between the groups. Morphine consumption in the postanesthesia care unit, the number of PCIA-boli demanded by the patient, and the number of



**FIGURE 1.** Study intervention. A, acetaminophen; K, ketorolac; L, lidocaine; M+, morphine; PL, placebo.

PCIA-boli delivered by the PCIA-pump during the first 24 hours postoperatively were lower in the placebo group.

**CONCLUSION:** In our trial, the QL-block did not provide superior postoperative analgesia when compared to systemic lidocaine in laparoscopic colorectal surgery.

## 90-dagen post-operatieve mortaliteit na proctectomie voor rectumcarcinoom sterk geassocieerd met ziekenhuisvolume

*The Impact of Hospital Volume and Charlson Score on Postoperative Mortality of Proctectomy for Rectal Cancer. A Nationwide Study of 45,569 Patients.* El Amrani et al. *Ann Surg* 2018; 268 (5); 854-860.

Pubmed ID: 30063493

**OBJECTIVE:** To identify the impact of hospital volume according to Charlson Comorbidity Index (ChCI) on postoperative mortality (POM) after rectal cancer surgery.

**BACKGROUND:** A volume–outcome relationship has been established in complex surgical procedures. However, little is known regarding the impact of hospital volume on POM according to patients’ comorbidities after rectal cancer surgery.

**METHODS:** All patients undergoing proctectomy for cancer from 2012 to 2016 were identified in the French nationwide database. Patient condition was assessed on the basis of the validated ChCI and was stratified into 3 groups according to the score (0–2, 3, and 4). Chi-square automatic interaction detector (CHAID) was used to identify the cut-off values of the annual proctectomy caseload affecting the 90-day POM. The 90-day POM was analyzed according to hospital volume (low: <10, intermediate: 10–40, and high: ≥ 41 cases/yr) and ChCI.

**RESULTS:** Among 45,569 rectal cancer resections, the 90-day POM was 3.5% and correlated to ChCI (ChCI 0–2: 1.9%, ChCI 3: 4.9%, ChCI ≥ 4: 5.8%;  $P < 0.001$ ). There was a linear decrease in POM with increasing hospital volume (low: 5.6%, intermediate: 3.5%, high: 1.9%;  $P < 0.001$ ). For low-risk patients (ChCI 0–2), 90-day POM was significantly higher in low and intermediate hospital volume compared with high hospital volume centers (3.2% and 1.8% vs 1.1%;  $P < 0.001$ ). A significant decrease in postoperative hemorrhage complication rates was observed with increasing center volume (low: 13.3%, intermediate: 11.9%, and high: 9.4%;  $P < 0.001$ ). After multivariable analysis, proctectomy in low [odds ratio (OR) 2.1, 95% confidence interval (CI) 1.71–2.58,  $P < 0.001$ ] and intermediate (OR 1.45, 95% CI 1.2–1.75,  $P < 0.001$ ) hospital volume centers were independently associated with higher risk of mortality.

**CONCLUSION:** The POM after proctectomy for rectal cancer is strongly associated with hospital volume independent of patients’ comorbidities. To improve postoperative outcomes, rectal surgery should be centralized.

## UPPER GI

# Effectiviteit multidisciplinair rehabilitatie programma na slokdarm-/maagresectie

*The RESTORE Randomized Controlled Trial Impact of a Multidisciplinary Rehabilitative Program on Cardiorespiratory Fitness in Esophagogastric cancer Survivorship.* O'Neill et al. *Ann Surg* 2018; 268(5); 747 – 755.

Pubmed ID: 30004915

**OBJECTIVE:** The Rehabilitation Strategies in Esophagogastric cancer (RESTORE) randomized controlled trial evaluated the efficacy of a 12-week multidisciplinary program to increase the cardiorespiratory fitness and health-related quality of life (HRQOL) of esophagogastric cancer survivors.

**BACKGROUND:** Patients following treatment for esophagogastric cancer are at risk of physical deconditioning, nutritional compromise, and sarcopenia. Accordingly, compelling rationale exists to target these impairments in recovery.

**METHOD:** Disease-free patients treated for esophagogastric cancer were randomized to either usual care or the 12-week RESTORE program (exercise training, dietary counseling, and multidisciplinary education). The primary outcome was cardiopulmonary exercise testing (VO<sub>2</sub>peak). Secondary outcomes included body composition (bioimpedance analysis), and HRQOL (EORTC-QLQ-C30). Outcomes were assessed at baseline (T0), postintervention (T1), and at 3-month follow-up (T2).

**TABLE 1.** The RESTORE Exercise Intervention

	Aerobic Training*				Resistance Training†			
	Frequency‡		Intensity§	Time	Frequency‡		Intensity	Sets (S/MG/W)
	Supervised Exercise Sessions	Home Exercise Sessions			Supervised Exercise Sessions	Home Exercise Sessions		
Week 1	2	1	30%–45% HRR	20	2	0	12 RM	2
Week 2	2	1	30%–45% HRR	20	2	0	12 RM	2
Week 3	2	2	35%–50% HRR	20	2	0	13 RM	3
Week 4	2	2	35%–50% HRR	25	2	0	13 RM	3
Week 5	1	2	35%–50% HRR	25	1	1	14 RM	4
Week 6	1	3	40%–55% HRR	25	1	1	14 RM	4
Week 7	1	3	40%–55% HRR	30	1	1	15 RM	5
Week 8	1	4	40%–55% HRR	30	1	1	15 RM	5
Week 9	0	4	45%–60% HRR	30	0	2	16 RM	6
Week 10	1	5	45%–60% HRR	35	1	1	16 RM	6
Week 11	0	5	45%–60% HRR	35	0	2	17 RM	6
Week 12	1	5	45%–60% HRR	35	1	1	17 RM	6

\*Supervised aerobic activity consisted of treadmill walking, stationary cycling, and cross training. Home aerobic sessions consisted of mainly walking or stationary cycling.

†Supervised resistance training was performed using free weights, and a horizontal leg press. Home resistance sessions were performed using TheraBands.

‡Frequency of exercise sessions in days per week.

§The intensity of aerobic training was based on pilot data from our research group it was anticipated that baseline fitness levels would be “very poor” and “poor.” Exercise prescription was commenced at 30% to 45% heart rate reserve (HRR) and progressed gradually over the course of the intervention to 45% to 60% HRR (moderate intensity activity).

||Resistance training was prescribed per standard recommendations.

RM indicates repetition maximum; S/MG/W, sets/muscle group/week.

**RESULTS:** Twenty-two participants were randomized to the control group [mean (standard deviation) age 64.14 (10.46) yr, body mass index 25.67 (4.83) kg/m, time postsurgery 33.68 (19.56) mo], and 21 to the intervention group [age 67.19(7.49) yr, body mass index 25.69(4.02) kg/m, time postsurgery 23.52(15.23) mo]. Mean adherence to prescribed exercise sessions were 94(12)% (supervised) and 78(27)% (unsupervised). Correcting for baseline VO<sub>2</sub>peak, the intervention arm had significantly higher VO<sub>2</sub>peak at both T1, 22.20 (4.35) versus 21.41 (4.49) mL · min · kg, P < 0.001, and T2, 21.75 (4.27) versus 20.74 (4.65) mL · min · kg, P = 0.001, compared with the control group. Correcting for baseline values, no changes in body composition or HRQOL were observed.

**CONCLUSION:** The RESTORE program significantly improved cardiorespiratory fitness of disease-free patients after esophagogastric cancer surgery, without compromise to body composition. This randomized controlled trial provides proof of principle for rehabilitation programs in esophagogastric cancer.

## Kleiner risico op slokdarmkanker na anti-reflux chirurgie?

*The Influence of Antireflux Surgery on Esophageal Cancer Risk in England. National Population-based Cohort Study.* Markar et al. *Ann Surg* 2018; 268(5); 861 – 867.

Pubmed ID: 30048317

**OBJECTIVE:** To evaluate how antireflux surgery influences the risk of esophageal cancer in patients with gastroesophageal reflux disease (GERD) and Barrett esophagus.

**BACKGROUND:** GERD is a major risk factor for esophageal adenocarcinoma, and the United Kingdom has the highest incidence of esophageal adenocarcinoma globally.

**METHODS:** Hospital Episode Statistics database was used to identify all patients in England aged over 18 years diagnosed with GERD with or without Barrett Esophagus from 2000 to 2012, with antireflux surgery being the exposure investigated. The Clinical Practice Research Datalink (CPRD) was used to provide a sensitivity analysis comparing proton pump inhibitor therapy and antireflux surgery. Hazard ratios (HR) with 95% confidence intervals (CI) were calculated using Cox proportional hazards model with inverse probability weights based on the probability of having surgery to adjust for selection bias and confounding factors.

**RESULTS:** (i) Hospital Episode Statistics analysis; among 838,755 included patients with GERD and 28,372 with Barrett esophagus, 22,231 and 737 underwent antireflux surgery, respectively. In GERD patients, antireflux surgery reduced the risk of esophageal cancer (HR = 0.64; 95% CI 0.52-0.78). In Barrett esophagus patients, the corresponding HR was (HR = 0.47; 95% CI 0.12-1.90).(ii) CPRD analysis; antireflux surgery was associated with decreased point estimates of esophageal adenocarcinoma in patients with GERD (0% vs. 0.2%; P = 0.16) and Barrett esophagus (HR = 0.75; 95% CI 0.21-2.63), but these were not statistically significant.

**CONCLUSION:** Antireflux surgery may be associated with a reduced risk of esophageal cancer risk, however it remains primarily an operation for symptomatic relief.

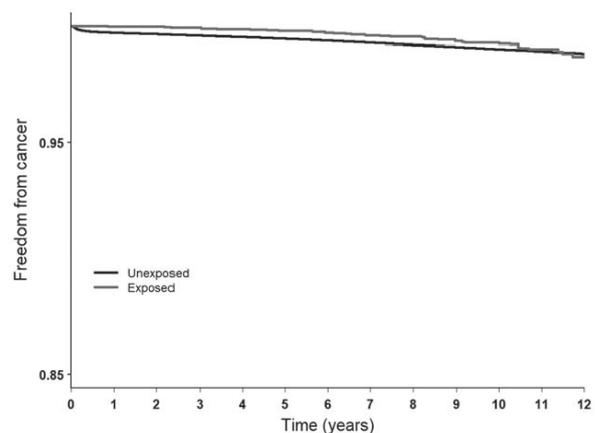


FIGURE 1. Kaplan-Meier plot showing a reduction in freedom from esophageal cancer in GERD patients receiving no surgery (unexposed) compared with those receiving antireflux surgery (exposed) from HES database (HR = 0.64; 95% CI 0.52-0.78; P value: < 0.01).

## HPB

### Betere uitkomsten na pancreatoduodenectomie langer dan 4 weken na biliare drainage dan binnen 4 weken

*Preoperative Biliary Stenting and Major Morbidity After Pancreatoduodenectomy: Does Elapsed Time Matter? The FRAGERITA Study Group.* Sandini et al; *Ann Surg* 2018; 268 (5); 808-814.

Pubmed ID: 30303874

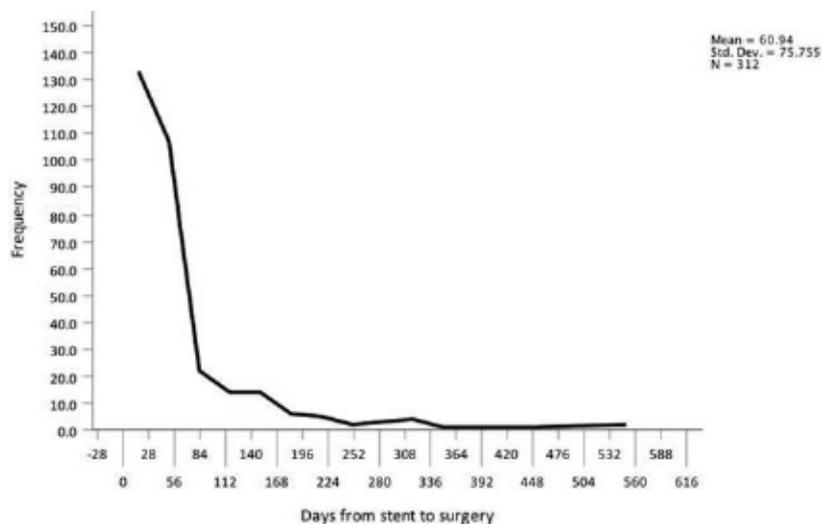
**OBJECTIVES:** To analyze possible associations between the duration of stent placement before surgery and the occurrence and severity of postoperative complications after pancreatoduodenectomy (PD).

**BACKGROUND:** The effect of preoperative stent duration on postoperative outcomes after PD has not been investigated.

**METHODS:** From 2013 to 2016, patients who underwent PD for any reasons after biliary stent placement at 5 European academic centers were analyzed from prospectively maintained databases. The primary aim was to investigate the association between the duration of preoperative biliary stenting and postoperative morbidity. Patients were stratified by stent duration into 3 groups: short (<4 weeks), intermediate (4-8 weeks), and long (≥8 weeks).

**RESULTS:** In all, 312 patients were analyzed. The median time from stent placement to surgery was 37 days (2-559 days), and most operations were performed for pancreatic cancer (67.6%). Morbidity and mortality rates were 56.0% and 2.6%, respectively. Patients in the short group (n = 106) experienced a higher rate of major morbidity (43.4% vs 20.0% vs 24.2%;  $P < 0.001$ ), biliary fistulae (13.2% vs 4.3% vs 5.5%;  $P = 0.031$ ), and length of hospital stay [16 (10-52) days vs 12 (8-35) days vs 12 (8-43) days;  $P = 0.025$ ]. A multivariate adjusted model identified the short stent duration as an independent risk factor for major complications (odds ratio 2.64, 95% confidence interval 1.23-5.67,  $P = 0.013$ ).

**CONCLUSION:** When jaundice treatment cannot be avoided, delaying surgery up to 1 month after biliary stenting may reduce major morbidity, procedure-related complications, and length of hospital stay.



**FIGURE 1.** Distribution of patients according to the elapsed time from stent to surgery.

## Geen verschil in aantal pancreas fistels tussen ‘closed-suction’ of ‘passieve’ drains

*Results of a randomized controlled trial comparing closed-suction drains versus passive gravity drains after pancreatic resection.* Čečka et al; *Surgery* 2018; 164 (5); 1057-1063.

Pubmed ID: 30082139

**BACKGROUND:** This dual-center, randomized controlled trial aimed to compare 2 types of intra-abdominal drains after pancreatic resection and their effect on the development of pancreatic fistulae and postoperative complications.

**METHODS:** Patients undergoing pancreatic resection were randomized to receive either a closed-suction drain or a closed, passive gravity drain. The primary endpoint was the rate of postoperative pancreatic fistula. A secondary endpoint was postoperative morbidity during follow-up of 3 months. The planned sample size was 223 patients.

**RESULTS:** A total of 294 patients were assessed for eligibility, 223 of whom were randomly allocated. One patient was lost during follow-up, and 111 patients in each group were analyzed. The rate of postoperative pancreatic fistula (closed-suction 43.2%, passive 36.9%,  $P = .47$ ) and overall morbidity (closed-suction 51.4%, passive 40.5%,  $P = .43$ ) were not different between the groups. We did not find any differences between the groups in reoperation rate ( $P = .45$ ), readmission rate ( $P = .27$ ), hospital stay ( $P = .68$ ), or postoperative hemorrhage ( $P = .11$ ). We found a significantly lesser amount of drain fluid in the passive gravity drains between the second and fifth postoperative days and also on the day of drain removal compared with closed-suction drains.

**CONCLUSION:** The type of drain (passive versus closed suction) had no influence on the rate of postoperative pancreatic fistulae. The closed-suction drains did not increase the rate of postoperative complications. We found that the passive gravity drains are more at risk for obstruction, whereas the closed-suction drains kept their patency for greater duration.

## LEVERCHIRURGIE

### Helpt van de mortaliteit na hepatectomie te voorkomen?

*Half of Postoperative Deaths After Hepatectomy may be Preventable: A Root-cause Analysis of a Prospective Multicenter Cohort Study.* Iman et al; *Ann Surg* 2018; 268 (5); 792-798.

Pubmed ID: 30080731

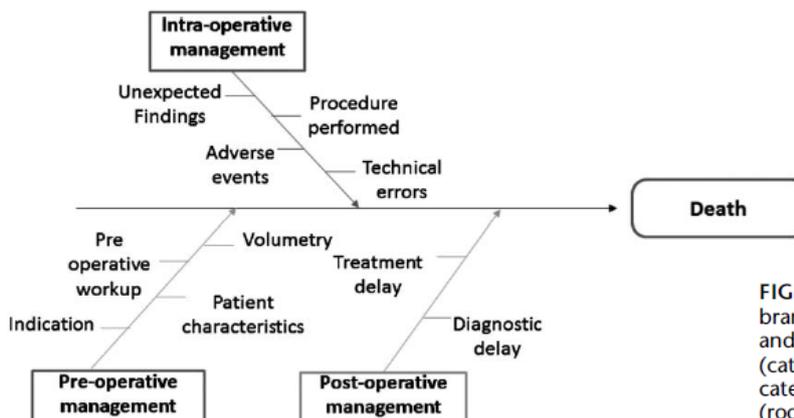
**OBJECTIVES:** To perform a retrospective root-cause analysis of the causes of postoperative mortality after hepatectomy.

**BACKGROUND:** Mortality after liver resection has not decreased over the past decade.

**METHODS:** The study population was a prospective cohort of hepatectomies performed at hepatic, pancreatic, and biliary (HPB) centers between October 2012 and December 2014. Of the 1906 included patients, 90 (5%) died within 90 days of surgery. Perioperative data were retrieved from the original medical records. The root-cause analysis was performed independently by a senior HBP-surgeon and a surgical HBP-fellow. The objectives were to record the cause of death and then assess whether (1) the attending surgeon had identified the cause of death and what was it?, (2) the intra- and postoperative management had been appropriate, (3) the patient had been managed according to international guidelines, and (4) death was preventable. A typical root cause of death was defined.

**RESULTS:** The cause of death was identified by the index surgeon and by the root-cause analysis in 84% and 88% of cases, respectively. Intra- and postoperative management procedures were inadequate in 33% and 23% of the cases, respectively. Guidelines were not followed in 57% of cases. Overall, 47% of the deaths were preventable. The typical root cause of death was insufficient evaluation of the tumor stage or tumor progression in a patient with malignant disease resulting in a more invasive procedure than expected.

**CONCLUSION:** Measures to ensure compliance with guidelines and (in the event of unexpected operative findings) better within-team communication should be implemented systematically.



**FIGURE 1.** Cause-and-effect diagram: Each branch of the fishbone represents pre-, intra-, and postoperative management procedures (categories). Each of these categories has sub-categories for which the cause is preventable (root causes).

# Regio A, B en C lymfeklierresectie bij galblaascarcinoom

*Extent of lymph node dissection in patients with gallbladder cancer.* Kishi et al.; Br J Surg 2018; 105 (12); 1658-1664.

Pubmed ID: 29993120

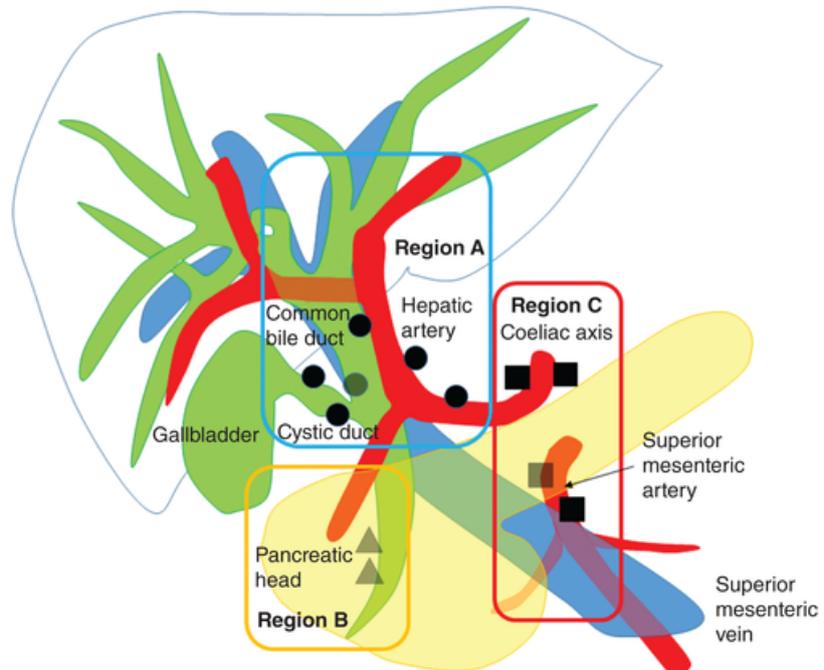
**BACKGROUND:** Definitions of regional lymph nodes for gallbladder cancer differ according to staging system. Hence, the appropriate extent of lymph node dissection has not yet been standardized.

**METHOD:** Pathological stages and disease-specific survival (DSS) of patients who had undergone surgical resection of gallbladder cancer between 1990 and 2016 were reviewed. Patients with nodal metastases limited to the hepatoduodenal ligament or common hepatic artery, extending to the posterosuperior pancreatic head lymph nodes (PSPLNs), or in nodes along the coeliac axis or superior mesenteric vessels were grouped as having Na, Nb and Nc disease respectively. Metastases beyond these regions were defined as distant metastases (M1). Absence of distant metastasis was expressed as M0.

**RESULTS:** A total of 259 patients were evaluated. There were 74, 31 and nine patients respectively in the Na, Nb and Nc groups. Twenty-five, nine and four patients in the respective groups had M1 disease (P = 0.682). The 5-year DSS rate was comparable between patients with

Na M0 and those with Nb M0 disease (36 versus 34 per cent respectively; P = 0.950), whereas the rate in patients with Nc M0 status (0 per cent) was worse than that of patients with Nb M0 (P = 0.017) and comparable to that of patients with M1 disease (14 per cent; P = 0.590). Among 22 patients with Nb M0 disease, the 5-year DSS rate did not differ between those who had undergone pancreatoduodenectomy and those who had had dissection of PSPLNs without pancreatoduodenectomy (50 versus 30 per cent respectively; P = 0.499).

**CONCLUSION:** PSPLNs and nodes along the hepatoduodenal ligament and hepatic artery should be considered regional nodes for gallbladder cancer, and should be resected.



**Figure 1**

Regional lymph nodes defined by the AJCC (region A), Japanese Society of Hepato-Biliary-Pancreatic Surgery (regions A and B) and UICC (regions A, B and C)

## BARIATRISCHE CHIRURGIE

### Een gerandomiseerde studie naar gebruik fibrine sealant bij sleeve gastrectomie om naad-complicaties te voorkomen

*Effectiveness of Fibrin Sealant Application on the Development of Staple Line Complications After Sleeve Gastrectomy: A Prospective Randomized Trial.* Rebibo et al.; Ann Surg 2018; 268 (5); 762-768.

Pubmed ID: 30080735

**OBJECTIVES:** Evaluate the effectiveness of the use of fibrin sealant (FS) for preventing the development of staple line complications (SLCs) after sleeve gastrectomy (SG).

**BACKGROUND:** There is no consensus on the best means of preventing SLCs after SG.

**METHOD:** This was a prospective, intention-to-treat, randomized, 2 center study of a group of 586 patients undergoing primary SG (ClinicalTrials.gov identifier: NCT01613664) between March 2014 and June 2017. The 1:1 randomization was stratified by center, age, sex, gender, and body mass index, giving 293 patients in the FS group and 293 in the control group (without FS). The primary endpoint (composite criteria) was the incidence of SLCs in each of the 2 groups. The secondary criteria were the mortality rate, morbidity rate, reoperation rate, length of hospital stay, readmission rate, and risk factors for SLC.

**RESULTS:** There were no intergroup differences in demographic variables. In an intention-to-treat analysis, the incidence of SLCs was similar in the FS and control groups (1.3% vs 2%, respectively;  $P = 0.52$ ). All secondary endpoints were similar: complication rate (5.4% vs 5.1%, respectively;  $P = 0.85$ ), mortality rate (0.3% vs 0%, respectively;  $P = 0.99$ ), GL rate (0.3% vs 1.3%, respectively;  $P = 0.18$ ), postoperative hemorrhage/hematoma rate (1% vs 0.7%, respectively;  $P = 0.68$ ), reoperation rate (1% vs 0.3%, respectively;  $P = 0.32$ ). Length of stay was 1 day in both groups ( $P = 0.89$ ), and the readmission rate was similar (5.1% vs 3.4%, respectively;  $P = 0.32$ ). No risk factors for SLCs were found.

**CONCLUSION:** The incidence of postoperative SLCs did not appear to depend on the presence or absence of FS.

**TABLE 3. Outcomes of Patients Undergoing SG With and Without Application of FS**

	FS group (n = 293)	Control group (n = 293)	P
Outcomes			
Mortality, n (%)	1 (0.3)	0 (0)	—
Overall complications, n (%)	16 (5.4)	15 (5.1)	—
Major complications, n (%)	6 (2)	4 (1.3)	—
Gastric leak, n (%)	1 (0.3)	4 (1.3)	—
Postoperative bleeding, n (%)	2 (0.7)	0 (0)	—
Postoperative hematoma, n (%)	1 (0.3)	2 (0.7)	—
Gastric stenosis, n (%)	2 (0.7)	0 (0)	—
Reoperation, n (%)	3 (1)	1 (0.3)	—
Complications relative to primary endpoint, n (%)	4 (1.3)	6 (2)	—
Lost to follow-up n (%)	2 (0.7)	2 (0.7)	—
Total complications relative to primary endpoint, n (%)	6 (2)	8 (2.7)	—

# Centralisatie bariatrische chirurgie in Frankrijk

*Impact of Centralized Management of Bariatric Surgery Complications on 90-day Mortality.*

Caiazza et al.; Ann Surg 2018; 268 (5); 831-837.

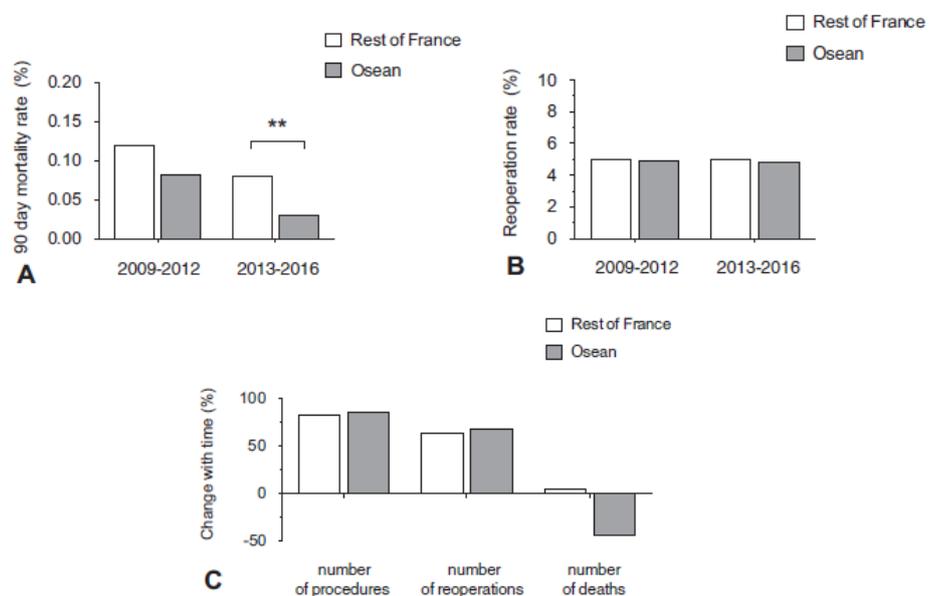
Pubmed ID: 30080724

**BACKGROUND AND AIMS:** The potential benefit of the centralization of Bariatric surgery (BS) remains debated. The aim of this study was to evaluate the impact on 90-day mortality of an innovative organization aiming at centralizing the care of severe postoperative complications of BS.

**STUDY DESIGN:** The centralization of care for postoperative complication after BS was implemented by French Authorities in 2013 in the Nord-Pas-de-Calais Region, France. This unique formalized network (OSEAN), coordinated by 1 tertiary referral center, enrolled all regional institutions performing bariatric surgery. Data were extracted from the medico-administrative database providing information on all patients undergoing BS between 2009 and 2016 in OSEAN (n = 22,928) and in Rest of France (n = 288,942). The primary outcome was the evolution of 90-day mortality before and after the implementation of this policy. Rest of France was used as a control group to adjust the results to improvement with time of BS outcomes.

**RESULTS:** The numbers of primary procedure and reoperations increased similarly before and after 2013 within OSEAN and in Rest of France. The 90-day mortality rate became significantly lower within OSEAN than in the rest of France after 2013 (0.03% vs 0.08%,  $P < 0.01$ ). This difference was confirmed in multivariate analysis after adjustment to the procedure specific mortality ( $P < 0.04$ ). The reduction of 90-day mortality was most visible for sleeve gastrectomy.

**CONCLUSION:** The implementation of centralized care for early postoperative complications after BS in OSEAN was associated with reduced 90-day mortality. Our results indicate that this reduction was not due to a lower incidence of complications but to the improvement of their management.



**FIGURE 1.** Bariatric surgery outcomes in the OSEAN network or in the rest of France before (2009–2012) and after (2013–2016) the implementation of a regional policy favoring the centralized management of postoperative complications. A, Ninety-day mortality rate. B, Ninety-day reoperation rate. C, Change in percentage of the total numbers of procedures, reoperations, and deaths, before and after 2013.