Free Paper

FP1
Robotic versus laparoscopic total mesorectal excision for rectal cancer: A comparison of postoperative outcome and oncological safety
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Background: Minimally invasive surgery for rectal cancer is widely performed via either conventional laparoscopic or robotic assisted laparoscopic approach. However, recent result from the CLASICC trial raised the concern due to higher conversion rate and higher circumferential resection margin positivity rate in the laparoscopic arm. This may be attributed from the inherent limitations of laparoscopic surgery. While robots offer several advantages over laparoscopy, such as high resolution 3D images, better dexterity of movement and tremor filtering, can enhance the operation in a narrow pelvis. And the aim of this study was to compare the postoperative outcome and oncological safety of laparoscopic and robotic surgery in a single center.

Methods: From 2009 to 2014, we had performed 148 robotic rectal surgeries (R-TME). We compared the results with 148 consecutive laparoscopic rectal surgeries (L-TME) in a prospectively maintained database in our center from 2007 to 2014. Clinicopathological variables, postoperative outcomes and oncological outcome were compared between the two groups.

Results: Demographic details were comparable between the two groups. Mean operative time in R-TME group was significantly longer than L-TME group. (R-TME: 211 minutes, L-TME: 156.5 minutes, p-value: 0.00). No conversion occurred in both groups. The anastomotic leak rate after surgery did not differ between R-TME (6.08%) and L-TME (2.7%) (p: 0.156) and all can be managed conservatively. Early postoperative morbidity was also comparable. Although the mean number of harvested lymph nodes was similar between two groups, 12.4 with R-TME and 12.9 with L-TME (p: 0.4), R-TME have achieved a significantly lower positive circumferential resection margin rate than L-TME (R-TME: 1, 0.68%, L-TME: 7, 4.7%, p-value: 0.031). Within a median follow up period of 29–49 months, statistically significant higher local and systemic recurrence was observed in the L-TME group (local recurrence: R-TME: 0.68%, L-TME: 8.8%, p: 0.001, systemic recurrence: R-TME: 6.75%, L-TME: 24.3%, p-value: 0.00).

Conclusion: Robotic TME is a safe and feasible treatment for rectal cancer which can enhance surgeons to achieve a better oncological outcome than laparoscopic TME. Further larger scale randomized controlled trial with longer follow up period are warranted to draw a definite conclusion.

FP2
Laparoscopic adrenalectomy versus radiofrequency ablation for aldosterone-producing adenoma: A multicenter prospective randomized controlled trial
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Introduction: Laparoscopic adrenalectomy (LA) is the conventional treatment for primary aldosteronism (PA) due to aldosterone-producing adenoma (APA). We previously confirmed the safety and efficacy of radiofrequency ablation (RFA) in treating APA. Whether RFA can attain comparable treatment outcomes with those of LA has never been prospectively evaluated.

Methods: This was an open-labeled, multicenter, prospective randomized controlled trial aiming to compare the treatment outcomes between LA and RFA. Consecutive hypertensive subjects with unilateral APA were randomized to receive either LA or RFA.
We then compared their hospital stay as primary outcome and the other perioperative data, complication profiles and treatment success rates as secondary outcomes.

Results: Between January 2013 and March 2015, 30 patients were randomized to receive LA (n = 16) and RFA (n = 14). There were no differences between the two groups for age, gender, ASA class, hypertension duration, APA size, laterality, biochemical profile, and drug status. Hospital stay was significantly shorter in RFA than LA group (2.0 ± 0.0 vs 3.6 ± 1.1 days, P < 0.001). RFA also had significantly shorter operating time (12.9 ± 3.9 vs 105.5 ± 18.8 mins, P < 0.001), lower pain score (median visual analog scale 7 vs 50, P < 0.001), lower parenteral analgesic consumption (14.3% vs 50.0%, P = 0.03) and earlier recovery (2.2 ± 0.7 vs 5.7 ± 3.4 days, P < 0.001). Intraoperative hypertensive crisis was significantly higher in RFA than LA (71.4% vs 12.5%, P = 0.001). No significant difference was observed between RFA and LA for morbidity (28.6% vs 25.0%, P = 0.82), mortality (0 vs 0), patient satisfaction (83.4 ± 16.5 vs 88.2 ± 10.9, P = 0.65), and surgeon satisfaction (85.7 ± 7.5 vs 78.8 ± 15.2, P = 0.47). At 3 months after treatment, persistent PA was absent in LA group but was found in 3 RFA patients (treatment success 100% vs 78.6%, P = 0.09). Second RFA was performed in these 3 RFA patients who all had PA resolved at another 3 months (treatment success 100% vs 100%, P = 1.00).

Conclusion: To treat APA, RFA compares more favorably than LA for short-term perioperative outcomes. In comparing their treatment efficacy, resolution of PA is highly effective after LA but may not be guaranteed in every single RFA procedure and may necessitate repeat RFA. Hence, RFA can be regarded as an alternative treatment for APA but can never replace the gold standard role of LA.

Reference
Liu SYW, Ng EKW, Lee PSF, et al. Radiofrequency ablation for benign aldosterone-producing adenoma: a scarless technique to an old disease. Ann. Surg. 2010; 2526: 1058–1064.
FP4

Outcomes of laparoscopic colorectal resection for cancer: A comparative study between octogenarians and a younger population

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Introduction: Due to an aging population, the incidence of colorectal cancer is on the rise. Surgical resection is the basis of treatment for colorectal malignancy. The aim of this study is to evaluate whether benefits of laparoscopic surgery can be extended to the elderly population by comparing the short-term clinical and survival outcomes between young and elderly patients who received elective laparoscopic resection for colorectal cancer.

Method: From 2006–2013, the short- and long-term outcomes of two groups of patients between the ages of 40 to 60 years old, and patients aged 80 years and older undergone laparoscopic colorectal resection for cancer were analysed. Patients’ demographics, perioperative data, pathology results, postoperative mortality and morbidities, disease recurrence and patient survival are analysed.

Results: From 2006–2013, there was a total of four hundred patients who underwent elective resection for colorectal cancer. There were 198 patients between the ages of 40 to 60 years old, and 202 patients aged 80 years and older. Older patients had a higher ASA grading than the young patients (p < 0.001) and the mean length of hospital stay was longer (11 vs. 9 days, p = 0.007). Although older patients had more postoperative medical morbidities (p < 0.001), the major surgical complications were comparable with the younger patient group. The anastomotic leakage rate was 11 vs. 7 (p = 0.948) and the rate of intestinal obstruction/prolonged ileus was 14 vs. 8 (p < 0.182) for the young and old group of patients respectively. Overall 5-year survival rate was 60 percent for the elderly and 83 percent for the younger patients (p < 0.001).

Conclusion: Laparoscopic resection for colorectal cancer can be performed safely in elderly patients with a good perioperative outcome. Age should not be a limiting factor when considering laparoscopic surgical resection.

FP5

Short term results on robotic assisted versus open gastrectomy for gastric adenocarcinoma

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Background: Robotic surgical systems are increasingly adopted in various surgical specialties. However, the role robot assisted gastrectomy (RAG) is still uncertain. The aim of this study is to evaluate the early results of RAG for gastric cancers and to compare the results with patients that underwent open gastrectomies (OG).

Methods: This was a case-controlled study of patients that received RAG and OG with curative intent. They were matched on patient demographics (age, gender, ASA score), operative and tumour characteristics (tumour site, extent of gastrectomy and lymphadenectomy, histological subtype, TNM stage). Outcome measurements included blood loss, operative time, number of lymph nodes harvested, rate of R0 resections, morbidity and mortality rates.

Results: Between February 2012 and March 2015, 20 patients received RAG and the outcomes were matched with 40 patients that received OG. Amongst those that received RAG, 45% had Stage I cancer, 25% at Stage II, 20% at Stage III and 10% at Stage IV. The 30-day morbidity rate was 25%. There were no 30-day mortalities. As compared to OG, patients with RAG had a significantly longer operative time (285 min vs 230 min, p < 0.001), but similar blood loss (100 ml vs 100 ml, p = 0.664), number of lymph nodes harvested (31.6 vs 30.0, p = 0.772), R0 resection rates (80% vs 90%, p = 0.283), and morbidity rates (25% vs 12.5%, p = 0.221). The length of hospital stay, however, was significantly shorter (6.8 vs 10.0 days, p = 0.006) for RAG.

Conclusion: Robot assisted gastrectomy for gastric cancer was safe and achieved comparable oncological clearance to open gastrectomy. Furthermore, it resulted in a shorter length of hospital stay.
FP6
Evaluation of the clinical outcome of retained foreign body in gastrointestinal tract
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Background: Foreign body (FB) ingestion was common in Hong Kong. It can be managed conservatively, by endoscopy or operation. There was limited large scale study to evaluate its clinical outcome.

Aim: The aim of this study was to evaluate the clinical outcome of patients after ingestion of foreign bodies in the past 10 years in cluster in Hong Kong.

Method: Patients who attended our cluster from 01/07/2004 to 30/06/2014 due to suspected FB retention after ingestion were reviewed. Variables studied include: predisposing factors, foreign bodies nature, different locations along GIT, treatment options, morbidity, mortality, hospital stay and other data were collected and analyzed.

Result: Over the 10-year period, 1032 patients were confirmed FB retention and 570 (55%) of them were successfully managed in Accident and Emergency Department (AED) without admission. There were 538 females and 494 males, with mean age 48.5. The only significant risk factor identified was psychiatric disease (18% of patients). Most foreign bodies were retained in upper GIT (oropharynx 55.7%, esophagus 25.3%, stomach and duodenum 7.8%). Patients usually presented with FB sensation 78.8% and only 2% presented with intestinal obstruction or peritonitis. Common diagnostic tools included endoscopy 70.2% and x-ray 22.7%. Majority of patients (67.8%) ingested fish bone. 12.2% patients were managed conservatively (spontaneously passage or easily removed by simple bedside procedure). Successful endoscopic FB removal rate was 94.2% with morbidity rate 2.7%. 5 FB were missed by first endoscopy. 32 patients (3.1%) required operation (more common for lower GIT, 12 and 6 for small and large bowel respectively, p < 0.001). Overall morbidity rate was 3.2%, more for chicken bone ingestion 10.7% (p < 0.001) and the operative group 18.7% (p < 0.001). There was one patient death. The mean hospital stay was 3.4 days, longer for operative group comparing with non-operative group (p < 0.001).

Conclusion: In our cohort of patients, endoscopy was a safe diagnostic and therapeutic tool for retained FB in upper GIT. FB passed to lower GIT may present with complication like perforation. Surgical treatment will then be required.

FP7
GSTP1 and GSTO1 single nucleotide polymorphisms and the response of bladder cancer patients to intravesical chemotherapy
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Aim: SNPs may restrict cell detoxification activity and be a potential risk factor for cancer chemosensitivity. We evaluated the predictive value of these polymorphisms on the sensitivity of bladder cancer patients to epirubicin and mitomycin chemotherapy instillation as well as their toxicities.

Methods: SNPs were analyzed by TaqMan genotyping assays in 130 patients treated with epirubicin and 114 patients treated with mitomycin. Recurrence-free survival (RFS) was estimated by the Kaplan–Meier method, and hazard ratios (HRs) and 95% confidence intervals (CIs) of the HRs were derived from multivariate Cox proportional hazard models.

Results: GSTP1 rs1695 and GSTO1 rs4925 were associated with RFS in the epirubicin group. Patients carrying the GSTP1 AG/GG and GSTO1 AC/AA genotypes had an unfavorable RFS. Patients with the GSTP1 AA and GSTO1 CC genotypes had a reduced risk of recurrence after the instillation of epirubicin. In addition, patients with the GSTP1 rs1695 AA genotype had an increased risk of irritative voiding symptoms; while patients with the GSTO1 rs4925 CC genotype had a decreased risk of hematuria.

Conclusion: Our results suggest that GSTP1 and GSTO1 polymorphisms are associated with epirubicin treatment outcomes as well as with epirubicin-related toxicity.

FP8
A novel classification of hepatocellular carcinoma based on combined neutrophil and platelet-to-lymphocyte ratio: Implications for prognosis following liver transplantation
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Background: There is increasing evidence that systemic inflammation markers like neutrophil (NLR) and
platelet-to-lymphocyte ratios (PLR) may play a role in the outcome of hepatocellular carcinoma (HCC). However, the predictive accuracy is still unsatisfactory. We established a novel classification of HCC based on combined NLR and PLR for the prediction of prognosis.

Methods: We analyzed the outcome of 266 HBV-associated HCC patients undergoing LT. Preoperative risk factors for tumor recurrence and overall survival were evaluated by univariate and multivariate analyses.

Results: By using ROC analysis, NLR ≥ 3 and PLR ≥ 100 were considered elevated. The disease-free survival (DFS) and overall survival (OS) for patients with high NLR and PLR were significantly worse than that for patients with normal NLR and PLR. By combination of the two parameters, the patients with NLRhigh/PLRhigh showed a significantly shorter cumulative OS and DFS rates after LT, compared with NLRnormal/PLRnormal group (the 5-year DFS and OS were of 36.6% and 35.7% vs. 60.5% and 67.2%, respectively; \( P = 0.001 \)). Cox regression analysis shows NLR/PLR combination was an independent prognostic factor. The ROC analysis revealed that the area under the curve of combined NLR and PLR was larger than single NLR and PLR, thus had better predictive power. In addition, of 23 patients with tumor recurrence after LT and received radical therapy, 7/12 patients with NLRhigh/PLRhigh subsequently had better predictive power. In addition, of 23 patients with tumor recurrence after LT and received radical therapy, 7/12 patients with NLRhigh/PLRhigh subsequently had better predictive power.

Conclusions: Combination of preoperative NLR and PLR could serve as a novel biomarker in predicting the prognosis of HCC after LT, in addition, patients with NLR ≤ 3 and PLR ≤ 100 could achieve favorable outcome after receiving radical resection for tumor recurrence following LT.

FP9
Liver graft protection in an era of organ shortage: What is the new wine for the old bottle?
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Background: In vitro liver graft preservation injury and in vivo reperfusion injury after transplantation dramatically induces postoperative liver dysfunction and subsequently affects the outcome of the patients undergoing transplantation. They were considered as the Achilles heels of liver transplantation in the past decades, especially for the increasing used “extended criteria donor” (ECD) grafts in an era of the donor liver shortage. In this study we tried to explore the different type of protection strategies for the liver graft according to the in vitro and in vivo key time point of liver transplantation process.

Methods: The systemic studies were done using the in vitro liver preservation platform and the in vivo orthotopic Liver Transplantation (OLT) model we developed previously. Adult male Sprague Dawley rats were used as the experimental animals. During the in vitro preservation process, the liver grafts were preserved by cold storage (CS) in HTK solution as static preservation control. The machine perfusion (MP) grafts were subsequently subjected to machine perfusion with different perfusates (HTK or UW); and different perfusate flow rate (12.5%, 25%, 50%, 100%, 150% of normal flow, gradually gradient perfusion. During the in vivo transplantation process, the grafts were subjected to the post conditioning (PostC) or remote conditioning (RIC) protocol. The sham operated control (N), standard rat liver transplantation were used as control. Serum transaminases (ALT, AST), histopathologic changes, reactive oxygen species (malondialdehyde, MDA), neutrophil infiltration (MPO) and tissue damage marker (LDH), D/W ratio, levels of ATP and portal vein resistance (VR) and also the related protein expressions were evaluated.

Results:
1) The in vitro protective strategy indicated 1) the grafts subjected to machine perfusion showed significant reduction of morphological damage and improved the graft function. Also, production of MDA, and LDH were markedly depressed when compared with the static preservation group. 2) Among different perfusates, HTK showed less portal vein resistance (VR) than UW and saline; UW reduced edema most efficiency while HTK maintained ATP level best. 3) The gradient perfusion protocol showed more protection effect with improved graft function and lower MDA and LDH levels. Recovered levels of ATP appear to be a good indicator of mitochondrial respiratory function. Improvement of mitochondrial condition, reflected here by augmentation of tissue ATP content during MP, may result in the improved tolerance to I/R injury.
2) The in vivo manual conditioning protective strategy indicated the grafts subjected to PostC algorithm (10" × 6) and the RIC algorithm (5 min * 3) showed significant reduction of morphological damage and
improved the graft function. Also, production of MDA and MPO were markedly depressed by PostC or RIC algorithm compared to the standard OLT group. p-Akt was upregulated in ischemic hepatic graft after postconditioning.

**Conclusion:**

1) MP is the promising in vitro liver grafts protective strategy, the innovative and improved perfusates are an important part in the future for liver MP. We established a stable system for MP which could be used for optimizing MP settings and proved MP is superior to SCS in both architecture and function of liver. Among different perfusates, HTK seems to be the optimized MPS. Machine perfusion with gradient perfusion showed to be more effective against rat liver graft preservation injury. These beneficial effects may be associated with its antioxidant and anti-inflammatory activities. The gradient perfusion by machine perfusion for the liver graft may represent a promising strategy for graft protection in the clinical settings.

2) We successfully established the novel model of manual conditioning strategy (PostC and RIC) in rat OLT. PostC and RIC algorithm showed to be more effective against rat liver graft I/R injury in both functional and morphological categories, which due to its antioxidative, anti-inflammation activities and activating PI3K Akt pathway. The manual conditioning (PostC and RIC) for the liver graft may represent a promising therapeutic strategy for graft protection in the clinical settings.