respectively. Therefore, total costs are lowest with immediate BDI repair by specialists (£27,133) and highest for late non-specialist repair (£49,109).

**Conclusion:** Major BDI is a significant burden to patients and society. Early specialist repair must be performed whenever possible to minimise cost, and long-term biliary complications. This reduces costs to society by nearly 50%.

### TP20-01

**Table 1 Average treatment costs by type of surgeon**

<table>
<thead>
<tr>
<th></th>
<th>Non-specialist surgeon (N = 34)</th>
<th>Specialist surgeon (N = 93)</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tertiary centre hospital episode</td>
<td>£5,086.35</td>
<td>£494.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Subsequent operative procedures (e.g. re-do HJ)</td>
<td>£10,392.20</td>
<td>£3,965.12</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Interventional radiology (e.g. PTC, ERCP)</td>
<td>£409.84</td>
<td>£264.26</td>
<td>0.016</td>
</tr>
<tr>
<td>Diagnostic radiology (e.g. CT, MRI)</td>
<td>£1,521.65</td>
<td>£1,041.29</td>
<td>0.010</td>
</tr>
<tr>
<td>Follow-up (e.g. outpatient appointment)</td>
<td>£25,813.63</td>
<td>£14,268.52</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Total Procedural Costs</td>
<td>£25,813.63</td>
<td>£14,268.52</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

### TP20-02

**ROBOTIC-ASSISTED COMPLETION CHOLECYSTECTOMY: A SAFE AND EFFECTIVE MINIMALLY INVASIVE APPROACH TO A CHALLENGING SURGICAL SCENARIO**

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**Background:** Subtotal cholecystectomy remains a viable and safe option when intraoperative conditions preclude visualization of the Critical View of Safety. 1.8% of these patients eventually require a reoperation. Traditionally, completion cholecystectomy following subtotal cholecystectomy required an open approach. In this study, we present our institutional experience with 16 robotic-assisted completion cholecystectomies following previous subtotal cholecystectomy.

**Methods:** Operating room logs were reviewed from 2010-2017 to identify all robotic cholecystectomies performed at our institution. Review of all operative reports identified 16 completion cholecystectomies following a previous subtotal cholecystectomy. All additional variables including demographics, operative variables, and postoperative outcomes were collected from EMR records.

**Results:** Median time from previous subtotal cholecystectomy to robotic completion cholecystectomy was 84 months (7 years). 58.3% of patients previously underwent an open subtotal cholecystectomy. The remaining patients underwent a laparoscopic subtotal cholecystectomy. Additional demographics and outcomes can be seen in Table 1. One patient required oral antibiotics for incisional site erythema. No patients required a conversion to an open procedure and average length of stay was 1.1 days.

**Conclusions:** Although traditionally performed with an open approach, we have had success in recent years at our institution with a robotic-assisted approach to completion cholecystectomy. The robotic platform offers certain advantages in a hostile, reoperative field which allows these procedures to be performed in a minimally invasive fashion with a low rate of conversion. Previously limited to case reports, this series of 16 procedures represents the largest case series of robot-assisted completion cholecystectomies to date.

### TP20-03

**CLINICAL APPLICATION OF MAGNAMOSIS (MAGNETIC ANASTOMOSIS) FOR BILIOJEJUNOSTOMY**

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**Background:** Magnetic compression anastomosis (magnamosis, MCA) has been verified safe and effective by us and others in animal bilioenteric anastomosis (BEA). Herein, we report the first clinical study on magnetic compression bilioenteric anastomosis (MC-BEA) with a unique device.

**Methods:** Patients with obstructive jaundice with an indication of BEA were prospectively enrolled from 2012 to 2015. After dissection of bile ducts, the mother ring and drainage tube were placed in the proximal bile duct and the purse-string suture was tightened over the drainage tube. The drainage tube was introduced into the jejunal lumen at the anastomotic site and used to guide the daughter ring to assemble with the mother ring. All the patients were routinely followed up for magnets discharge or any complications associated.
**Results:** 41 patients were included. 34 (82.9%) patients had a malignant primary disease, while 7 (17.1%) had benign disease. 44 MC-BEA was successfully performed in all patients. The median time for MC-BEA was 10.5 min (IQR 8.3−13.0 min). No perioperative morbidity or mortality associated to MC-BEA was observed. The median time for a patent biliary enterostomy formation was 19.0 days (IQR 14.5−23.0 days), and the magnets were discharged with a median postoperative duration of 35.0 days (IQR 28.0−43.0 days). With a median follow-up of 547.5 days (range 223−1042 days), no patients had biliary fistula, while 2 (4.9%) developed anastomotic stricture at 4 month and 14 month after surgery, and underwent reoperation for reconstruction of BEA.

**Conclusions:** MCA is a safe, effective and time-saving modality for BEA.

**TP21 - Talking Poster Session 21 - HPB**

**TP21-01**

**EFFICACY OF PREOPERATIVE ANTIMICROBIAL PROPHYLAXIS IN PATIENTS UNDERGOING PANCREATODUODENECTOMY: A MULTICENTRE RETROSPECTIVE ANALYSIS**

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**Introduction:** Most common complications following pancreaticoduodenectomy (PD) are infectious, despite the standard use of cefazolin and metronidazole prophylaxis. Preoperative biliary drainage (PBD) is a well-known risk factor for infectious complications. The objective was to identify the most common pathogens in intraoperative bile cultures in patients undergoing PD - with and without PBD - to determine the optimal antimicrobial prophylaxis regimen.

**Methods:** Patients, who underwent PD between 2009 and 2016, were retrospectively identified in 3 major teaching hospitals in The Netherlands. The use of PBD and the type of perioperative antimicrobial prophylaxis were registered. All organisms isolated from intraoperative bile cultures including their susceptibility pattern were studied. If pathogen coverage by standard prophylaxis was incomplete, the most appropriate alternative regimen was determined.

**Results:** A large multicentre cohort of 352 patients was analyzed, of which 198 (56%) underwent PBD and 154 (44%) did not. In the PBD group 175 patients (87.9%) had positive bile cultures compared with 49 (31.8%) in the non PBD group. Most commonly isolated microorganisms were Enterobacter species (42.4% and 3.9% respectively), Strepococcus species (31.8% and 9.1%), Klebsiella species (56% and 14%) and Enterobacter species (26.3% and 5.8%). Cefazolin and metronidazole was appropriate in 71% (PBD 55.6% and non PBD 88.3%) of patients. Adding gentamicin would provide complete coverage in 99% of PBD and 100% of non PBD patients.

**Conclusion:** Our data confirm that PBD prior to PD leads to microbial colonization and antibiotic resistance. To potentially prevent infectious complications, gentamicin may be added to the standard antimicrobial prophylaxis.

**TP21-02**

**IMPLEMENTATION OF CLINICALLY MEANINGFUL LAB PROTOCOL: UTILIZING PREDICTIVE ANALYTICS TO GUIDE QUALITY IMPROVEMENT INITIATIVES FOR PANCREATICODUODENECTOMY AND HEPATECTOMY PATIENTS**

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Division of HPB Surgery, Carolinas Medical Center, United States

**TP20-04**

**WHAT IS THE EFFECTIVE SINGLE INCISION LAPAROSCOPIC BILIARY SURGERY PLATFORM: NEEDLESCOPIC GRASPER ASSISTED SINGLE INCISION LAPAROSCOPIC SURGERY**

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**Introduction:** Single incision laparoscopic surgery has confirmed its safety and validity as a treatment option. We aimed to investigate the safety and feasibility of needlescopic grasper-assisted single-incision laparoscopic cholecystectomy (nSILC) and common bile duct exploration (nSIL-CBDE) by comparing the surgical outcomes of this technique with those of conventional laparoscopic CBDE (CL-CBDE).

**Method:** We retrospectively analyzed the clinical data of patients who underwent CL-CBDE or nSIL-CBDE for the treatment of common bile duct (CBD) stones between January 2000 and December 2014. Also, we analyzed the medical records of the patients who underwent nSILC and CLC for benign gallbladder disease between January 2011 and December 2015.

**Results:** Totally 1221 patients underwent laparoscopic cholecystectomy during the period. Among them, 577 patients underwent nSILC and 644 patients underwent CLC. The critical view of safety (CVS) obtaining success rate is more higher in nSILC group. However, there was no significant difference in operation time, and postoperative hospital stay (operation time: 57.9 ± 38.0 vs. 50.7 ± 30.8 minutes; P = 0.388, postoperative hospital stay: 2.5 ± 3.8 vs. 2.5 ± 1.6 minutes; P = 0.99). Totally 40 patients underwent laparoscopic CBDE during the period. Of these patients, 20 underwent CL-CBDE and 20 underwent nSIL-CBDE. The operative time for nSIL-CBDE was significantly longer than that for CL-CBDE. Postoperatively, the nSIL-CBDE group required less intravenous analgesic and had a shorter hospital stay than the CL-CBDE group.

**Conclusion:** The results of this study suggest that nSILC and nSIL-CBDE could be safe and feasible in biliary tract disease.