Robotic Hepatobiliary and Pancreatic Surgery: initial experience from a UK centre

P Prasad, R Marudanayagam, RP Sutcliffe
Liver Unit, University Hospital Birmingham NHS Foundation Trust

INTRODUCTION AND AIMS
Robot-assisted surgery permits 3D vision with greater magnification and dexterity compared to conventional laparoscopy. It allows tissue dissection and suturing in constricted spaces, and in angles not possible with rigid instruments. However, there is limited evidence that the robotic platform is superior to laparoscopy for complex HPB procedures. The aim of this study was to evaluate our initial experience of robotic HPB surgery, including an economic evaluation of robotic (RLR) and open liver resection (OLR).

RESULTS
During the study period (November 2014 – August 2015), 13 robotic HPB procedures were completed. There were 9 male patients (69%) and median patient age was 55 years. A summary of procedures is shown in Table 1. Overall, there were 3 complications, all after RLR and were Grade IIIb (haematoma 2, bile leak 1). There were no conversions and mortality was 0%. Median hospital stay after RLR was 4 days (OLR= 6 days). Procedure costs were higher (+ £797), but hospital stay was cheaper after RLR (- £564).

Table 1. Summary of robotic HPB procedures

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
<th>N</th>
<th>Op time (h)</th>
<th>Morbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>LLS (1), NAR S4-S5 (4), NAR S8 (1), Extended chole (1)</td>
<td>7</td>
<td>04:26</td>
<td>Haematoma (2) Bile leak (1)</td>
</tr>
<tr>
<td>Pancreas</td>
<td>8cm mucinous lesion</td>
<td>1</td>
<td>06:03</td>
<td>Nil</td>
</tr>
<tr>
<td>Biliary</td>
<td>Excision of choledochal cyst + Roux-en-Y hepjej (2), cholecystectomy (3)</td>
<td>5</td>
<td>05:53*</td>
<td>Nil</td>
</tr>
</tbody>
</table>

* Excludes cholecystectomy

In our experience, the robotic platform facilitates precise dissection in selected HPB procedures. For liver resection, the added cost of robotic instruments is almost negated by the reduced cost of hospitalization. However, the morbidity after robotic liver resection is a potential concern. This may reflect the limited range of instruments for transection, and could be a potential limitation to the use of robotics in liver surgery.

METHODS
Two consultant surgeons with experience in laparoscopic HPB surgery undertook structured training supported by Intuitive Surgical®. All procedures were completed using the Da Vinci® Si system. Clinical, operative and postoperative data were collected prospectively. Procedural and hospitalization costs were compared between RLR and OLR.

CONCLUSION