Establishing a Contextually Appropriate Laparoscopic Program in Resource Restricted Environments: Experience in Botswana

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Outline

• Background
• Methods: description & assessment
• Results
• Discussion
  • Metrics of success: Patient outcomes, Technical Independence and Program Sustainability
  • Major challenges encountered
  • Keys to success
• Questions, comments, suggestions
Background

History of Minimal Access Surgery (MAS):

2004: -Equipment purchased for both tertiary care hospitals
      -Essentially unused in the capital, Gaborone, after trained surgeon left

2005: -Senior expatriate colleague approached to assist
Background

• Formal program

  • Yearly workshops: RSA & Canada
    ➢ Cognitive & Psychomotor
    ➢ Nurses & technicians involved
  • FLS (2007)
  • Telesimulation (2009)
Background

• Informal program
  • On the ground: 3/12 & Phone and internet: 9/12
  • Karl-Storz
  • “Teaching the teachers”
  • “Mentor – mentee”
  • Part of a larger program
Methods

• Program Assessment
  • Ethics committee approval: MOH, Botswana.
  • Retrospective study: 2004 – 2012
    • Pt demographics, Procedure types, Primary surgeon & assistant, Post-op stay, Post-op complications

• Technical independence:
  ▪ Annual proportion of lap chole completed independently

• Program Sustainability:
  ▪ Annual number of lap cholecystectomies
Results

• Results

• 384 cholecystectomies (288 lap vs 96 open)
  • 270/288 operations by 12 local surgeons – all part of MAS training,
  • 18/288 by surgeons with laparoscopic experience from elsewhere.

• Most patients were women (91.5%)
• Median age 41
• 15/288 converted (5.2%)
• Median post-op stay: Lap vs Open = 1 day vs 7 days
Results: complications

• Open group
  – Death: 2/96 (2.1%) - 1 COPD & Duodenal leak
  – Wound dehiscence: 1/96 (1.04%)
  – Post op pancreatitis: 1/96 & CBD retained stone 1/96 (1.04%)
    No data

• Lap group
  – Death: 1/288 (0.3%) - MI
  – CBD injury 1/288: 0.3% noticed after converted
  – Intra-abdominal collection: 1/288
Median post-op stay: lap/open/converted
Median post-op stay: laparoscopic
Annual number of lap/open cases

![Graph showing the annual number of laparoscopic and open surgery cases from 2004 to 2012. The graph indicates a peak in 2009 for both laparoscopic and open cases, with a decline in subsequent years.](image-url)
Proportion of laparoscopic cases performed without expatriate surgeons
Discussion

• Question : 2005
• Answer: Continue with well-established open tech
• PMH & MOH: Rejected the answer
• How best to develop a program?
  – Target: Lap chole
  – Local surgeons: known clinical significance, safe, effective
  – External partners: significant expertise in the field
Discussion

- Patient outcomes & Complications
  - CR: 5.2%, Low Cx & Morbi, Short HS,

- Technical independence
  - ↑ Lap chole in the absence of expat surgeons

- Program sustainability
  - ↑ Lap Chole and ↓ Open chole

- Budget: MOH
Discussion

– Major Challenges Encountered

• New procedure
  – Time, Availability of requisite equipment & staff

• Availability of equipment and operation time
  – Competition of two surgical services

• Difference between what local stakeholders hoped to learn and what outside stakeholders wanted them to learn
Discussion

• **Keys to Success**
  
  • Dedication & hard work of all stakeholders
  
  • Trusting relationship
  
  • Annual workshops, FLS course with follow up telesimulation & opportunities for upskilling abroad
  
  • Ability to work within local budgetary framework was crucial
Thanks
Questions? Comments? Suggestions?
## Results

<table>
<thead>
<tr>
<th></th>
<th>Laparoscopic</th>
<th>Open</th>
<th>Laparoscopic</th>
<th>Open</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>(n = 288)</td>
<td>(n = 96)</td>
<td>(n = 288)</td>
<td>(n = 96)</td>
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<tr>
<td>Age, median (IQR)*</td>
<td>41 (31–50)</td>
<td>45 (34–57)</td>
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<tr>
<td>Female sex, n (%)*</td>
<td>250 (93)</td>
<td>71 (87)</td>
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<td>Preoperative ultrasound</td>
<td>235 (82)</td>
<td>93 (97)</td>
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<td>Study completed, n (%)</td>
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<tr>
<td>Preoperative ultrasound findings, n (%)</td>
<td></td>
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<tr>
<td>Cholelithiasis</td>
<td>235 (100)</td>
<td>72 (77)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choledocholithiasis</td>
<td>0 (0)</td>
<td>14 (15)</td>
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<tr>
<td>Cholecystitis</td>
<td>0 (0)</td>
<td>4 (4)</td>
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<tr>
<td>Others (gallbladder tumor, cyst, gallstone pancreatitis)</td>
<td>0 (0)</td>
<td>3 (3)</td>
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<tr>
<td>Operative time, median (IQR),* min</td>
<td>73 (55–102)</td>
<td>n/a</td>
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<tr>
<td>Conversion to open, n (%)</td>
<td>15 (5)</td>
<td>NA</td>
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<td>Postoperative days of hospitalization, median (IQR)*</td>
<td></td>
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<td>7 (6–11)</td>
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<tr>
<td>Postoperative complications, n (%)</td>
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<tr>
<td>Common bile duct injury</td>
<td>1 (0.3)</td>
<td>0 (0)</td>
<td>1 (0.3)</td>
<td>2 (2)</td>
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<tr>
<td>Death</td>
<td>1 (0.3)</td>
<td>2 (2)</td>
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<td></td>
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<tr>
<td>Intra-abdominal collection</td>
<td>1 (0.3)</td>
<td>0 (0)</td>
<td>1 (0.3)</td>
<td>0 (0)</td>
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<tr>
<td>Wound dehiscence</td>
<td>0 (0)</td>
<td>1 (1)</td>
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<td>1 (1)</td>
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<tr>
<td>Retained common bile duct stone</td>
<td>0 (0)</td>
<td>1 (1)</td>
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<tr>
<td>Postoperative pancreatitis</td>
<td>0 (0)</td>
<td>1 (1)</td>
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