Multi-society State-of-the-Art Consensus Conference on Prevention of Bile Duct Injury During Cholecystectomy

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Work Group Five

• PICO #15-17

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  • Byron Fernando-Santos, MD, Dartmouth-Hitchcock Medical Center
  • Ryan Campagna, MD, Northwestern University
  • Romeo Ignacio, MD, Naval Medical Center San Diego
PICO #15

• PICO 15: Should CVS coaching of surgeon vs no coaching be used for mitigating the risk of BDI associated with laparoscopic cholecystectomy?

  • Primary Outcome – BDI
  • Secondary Outcome – CVS Quality
PICO #15

- 6 studies identified from original search
- 3 shortlisted for full-text analysis
- 2 best-evidence studies included in final data synthesis
PICO #15

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>BDI</td>
<td>Surgeons in a 2016 single-centre Swedish study completed 2 sessions of education and coaching. Within limits of the small sample size (n=229 cholecystectomies) there was no difference in biliary injury (2% pre intervention, 3% following 1st session, 5% following 2nd session, p=0.87).</td>
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<tr>
<td>CVS quality</td>
<td>In the Swedish study, there was no significant difference in the percentage of cases which were deemed to achieve CVS (68.5% pre intervention, 73.3% following 1st session, 82% following 2nd session, p=0.141). A 2017 US study(^2) assessed the effects of offering coaching across multiple centres. Five surgeons completed the training and had pre- and post-intervention video assessment. Mean CVS scores improved from 1.75/6 to 3.75/6 (p&lt;0.05).</td>
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</tbody>
</table>
PICO #15

• Recommendation A
  • We suggest continued education of surgeons regarding the critical view of safety during laparoscopic cholecystectomy that may include coaching. (Conditional recommendation, very low certainty of evidence)

• References
Vote on PICO 15 Recommendation
PICO #16

• PICO 16: Should training by simulation or video-based education vs alternative surgeon training be used for mitigating the risk of BDI associated with laparoscopic cholecystectomy?

• Primary Outcome – BDI
PICO #16

8 studies identified from original search

1 shortlisted for full-text analysis

0 best-evidence studies included in final data synthesis
PICO #16

• Current evidence is insufficient to determine the benefit of simulation vs video-based vs alternative surgeon training modalities on limiting/avoiding bile duct injury.

• Recommendations for future study/ type B:
  • We suggest the conduct of prospective large-scale multi-center studies to determine the role of simulation vs video-based vs alternative surgeon training modalities on limiting/avoiding bile duct injury.
Vote on PICO 16B Recommendation
PICO #17

• PICO 17: Should more vs less surgeon experience be used for mitigating the risk of BDI associated with laparoscopic cholecystectomy?

• Primary Outcome – BDI

• Secondary Outcomes – Mortality, Morbidity, Conversion
PICO #17

39 studies identified from original search → 20 shortlisted for full-text analysis → 4 best-evidence studies included in final data synthesis
## PICO #17

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary outcome</strong></td>
<td></td>
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<tr>
<td>BDI</td>
<td>Two large cohort studies were included which were assessed. A 2001 WA state database cohort study (n=30,630) reported increased risk OR 1.8 (1.1-2.8) of BDI for surgeons with &lt;20 cases experience.¹</td>
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<tr>
<td></td>
<td>A 2014 study examined 53,632 LCs from a US billing database and linked surgeon codes to the Fundamentals of Laparoscopic Surgery (FLS) database.²</td>
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<td></td>
<td>Authors reported that surgeons with FLS certification had a higher (unadjusted) rate of BDI (0.47% vs. 0.14%, p=0.0013), with less experience (mean 6.1 vs 20.7 years in practice, p=0.0012).</td>
</tr>
</tbody>
</table>

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¹ [Reference 1]  
² [Reference 2]
### Secondary outcomes

<table>
<thead>
<tr>
<th>Mortality</th>
<th>No data</th>
</tr>
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<tbody>
<tr>
<td>Morbidity</td>
<td>Koulas et al., a 2006 moderate quality single-centre Greek cohort study (n=1370) assessed morbidity for resident (2.9%) vs. attending (3.8%) surgeons, reporting no difference in unadjusted morbidity.³</td>
</tr>
</tbody>
</table>
| Conversion | A 2006 national English cohort study (n=43,821) identified significantly higher rates of conversion in less experienced surgeons (3% for >35/yr vs. 8.6% for <5/yr).⁴  
Koulas et al also assessed resident vs. attending surgeons and reported no difference in conversion rates (0.2% vs. 0.4%).³ |

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Prevent Bile Duct Injury Consensus Conference
• **Recommendation A:**
  • We suggest that surgeons have a low threshold for calling for help from another surgeon when practical in difficult cases or when there is uncertain of anatomy (conditional recommendation, low certainty of evidence).

• **References**
  • Schwitzeberg SD, Scott DJ, Jones DB, McKinley SK, Castrillion J, Hunter TD, Brunt LM. Threefold increased bile duct injury rate is associated with less experience in an insurance claims database. Surg Endosc. 2014. 28:3068-3073.
Vote on PICO 17A
Recommendation
PICO #17

• Recommendation for future studies/Type B Recommendation:
  • We suggest the conduct of prospective research studies to develop evidence-based guidelines for physicians who are in transition in practice/from residency/fellowship to independent practice, in order to mitigate the risk of BDI associated with laparoscopic cholecystectomy.

• References
  • Schwitzberg SD, Scott DJ, Jones DB, McKinley SK, Castrillion J, Hunter TD, Brunt LM. Threefold increased bile duct injury rate is associated with less experience in an insurance claims database. Surg Endosc. 2014. 28:3068-3073.
Vote on PICO 17B Recommendation
Recommendation 19

• Additional Panel Recommendation: Type B Recommendation
• **19.** We suggest the development of national quality improvement initiatives for the prevention of bile duct injuries following cholecystectomy. The initiatives(s) should be capable of identifying and characterizing bile duct injuries in the population under study.
Vote on PICO 19 Recommendation