LAPAROSCOPIC AORTIC SURGERY HAS NO BRIGHT FUTURE BUT ROBOTIC AORTIC SURGERY MAY HAVE ONE

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NO FINANCIAL DISCLOSURE

FIRST STEP

After an adequate training we designed a prospective study to compare the postoperative and mid-term outcomes of total laparoscopic vs. open aortic surgery

METHODS

139 consecutive patients with AAA

- Prospective study
- 33 total laparoscopic aortic surgery
- 109 open aortic surgery
- Propensity score modelling

AAA NOT AMENABLE TO STANDARD EVAR

COMPOSITE ENDPOINT

Adverse Postoperative Events

- Any death
- Bleeding
- Graft thrombosis
- Any reoperation
- MI, respiratory failure
- Colon ischemia, evisceration
30-DAY RESULTS
PROPENSITY MATCHED GROUPS

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>OPEN REPAIR</th>
<th>LAPAROSCOPIC</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-day mortality</td>
<td>0 %</td>
<td>6 %</td>
<td>0.08</td>
</tr>
<tr>
<td>30-day composite adverse events</td>
<td>12 %</td>
<td>30 %</td>
<td>0.03</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>10 %</td>
<td>12 %</td>
<td>0.75</td>
</tr>
<tr>
<td>Any reintervention &lt;30 days</td>
<td>6 %</td>
<td>16 %</td>
<td>0.10</td>
</tr>
<tr>
<td>Operative bleeding (mL)</td>
<td>1092 ± 722</td>
<td>1604 ± 1351</td>
<td>0.02</td>
</tr>
<tr>
<td>Days in hospital (Median)</td>
<td>10 [6-14]</td>
<td>9 [4-11]</td>
<td>0.33</td>
</tr>
</tbody>
</table>

The 30-day results show that laparoscopic repair was associated with a significantly higher risk of composite adverse event.

30-DAY RESULTS - ADVERSE EVENTS

<table>
<thead>
<tr>
<th>COVARIABLES</th>
<th>ODDS RATIO</th>
<th>CONFIDENCE INTERVAL (95%)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAPAROSCOPIC SURGERY vs. OPEN</td>
<td>4.40</td>
<td>[1.70 - 11.38]</td>
<td>0.01</td>
</tr>
<tr>
<td>CORONARY ARTERY DISEASE vs. NONE</td>
<td>4.67</td>
<td>[1.21 - 18.03]</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Logistic regression shows that out of the main variables, only laparoscopic aortic surgery and preoperative CAD were independently associated with the occurrence of adverse postoperative events.

LAPAROSCOPIC SURGERY

This study suggests that total laparoscopic aortic surgery is not as safe as open aortic surgery to treat AAA not amenable to standard EVAR.

SECOND STEP...

ROBOT ASSISTED?

ROBOTIC (DA VINCI) AORTIC SURGERY

Set up of the patient and trocars placement for robotic laparoscopic aortic surgery. The robot is placed at the back of the patient to allow quick removal in case of urgent surgical conversion.
HYBRID ROBOTIC ENDOVASCULAR

With the robot you can push the limits of laparoscopic aortic repair and use the Gore Hybrid graft to treat bilateral iliac aneurysm with preservation of the hypogastric arteries in a young and healthy patient

LESSONS LEARNED

At the time of advanced endovascular aortic surgery, laparoscopic aortic surgery is a poor competitor unless you have time to learn and you have access to a robot in a center with a high volume of aortic surgery.

OUR PRACTICE

We found Robotic Aortic Surgery useful in two settings

- Juxta-renal aortic aneurysms or complex iliac aneurysms where EVAR has still some limitations
- Young healthy patients with long life expectancy, few comorbidities to avoid a laparotomy or the risk of reinterventions following EVAR