Preoperative functional status is not associated with postoperative surgical complications in low risk patients undergoing esophagectomy

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Publication date
2017

Document Version
Final published version

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Citation for published version (APA):
http://www.abstractstosubmit.com/wcpt2017/abstracts/main.php?do=YToyOntzOjU6Im1vZHVsljtzOjY6ImRldGFpbCI7czo4OiJkb2N1bWVudCI7aToyOTE7fQ==&
Preoperative functional status is not associated with postoperative surgical complications in low risk patients undergoing esophagectomy

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Introduction

- Esophagectomy is associated with 60% of postoperative complications (POC).1
- Preoperative physical activity and training decrease postoperative pulmonary or cardiac complications in major thoracic surgery.
- This has hardly been evaluated in patients undergoing esophagectomy.
- If there is an association with postoperative complications, patients could benefit from a tailored physiotherapeutic intervention.

Methods

**Measurements:** Patients were measured 1 day before surgery on aspects of functional status and compared to predictive values (figure 2).

**Figure 2:** Aspects of functional status measured.

**Outcome:** POC were measured according to the Clavien-Dindo classification for postoperative complications, where complications > grade 2 require surgical or radiological interventions.2

**Statistical analysis:** Univariate and multivariate backward regression analysis was used to determine the association between functional status and POC.

**Results**

- Preoperative functional status was on average higher than predicted (table 1).

**Table 1:** Preoperative functional status.

```
<table>
<thead>
<tr>
<th>Indicator of functional status</th>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMS, mean (s.d.)</td>
<td>80.2 (8.5)</td>
</tr>
<tr>
<td>Percentage of predicted IMS, mean (s.d.)</td>
<td>123.5 (14.2)</td>
</tr>
<tr>
<td>HGS (kilograms), median (IQR)</td>
<td>45.1 (14.4)</td>
</tr>
<tr>
<td>Percentage of predicted HGS, mean (s.d.)</td>
<td>111.0 (20.3)</td>
</tr>
<tr>
<td>Physical activities (kcal/day), median (IQR)</td>
<td>145.5 (197.5)</td>
</tr>
<tr>
<td>G6M, median (IQR)</td>
<td>83.3 (19.7)</td>
</tr>
</tbody>
</table>
```

- Despite high preoperative functional status, 55 patients developed a POC (61.1%) of which 32.2% were gastrointestinal and 19.1% pulmonary.
- 28 patients with POC developed more than one complication.
- 26 patients suffered from a grade 3a complication or worse (figure 3).

**Figure 3:** Clavien-Dindo classification.

```
<table>
<thead>
<tr>
<th>Complication rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
</tr>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
<tr>
<td>5</td>
</tr>
</tbody>
</table>
```

- Preoperative functional status was not independently associated with POC: IMS (OR 1.00; P = 0.779), HGS (OR 0.99; P = 0.250), physical activities (OR 1.00; P = 0.174) and QoL (OR 1.02; P = 0.222) (table 2).

**Table 2:** Results after multivariate analysis.

```
<table>
<thead>
<tr>
<th>Univariate analysis</th>
<th>Multivariate analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odds Ratio</td>
<td>P-value</td>
</tr>
<tr>
<td>Conventional risk factors</td>
<td></td>
</tr>
<tr>
<td>ASA II vs. I</td>
<td>0.43 (0.14, 1.26)</td>
</tr>
<tr>
<td>Smoking</td>
<td>2.80 (0.94, 8.79)</td>
</tr>
<tr>
<td>Physical Activities (kcal/day)</td>
<td>1.00 (1.00, 1.01)</td>
</tr>
</tbody>
</table>
```

Discussion & Conclusions

IMs, HGS, physical activities and QoL were not associated with POC, because:
- A high preoperative functional status
- A high rate of gastrointestinal complications, obviously unrelated to functional status.
- A relatively low percentage of pulmonary complications.

Recommendations

- Carefully assess the association between preoperative functional status and POC and relate this to patient- and surgery specific characteristics, before indicating a preoperative physiotherapy intervention.
- Risk stratification should be applied to determine who might benefit from a preoperative physiotherapy intervention.

References


Acknowledgements

- The medical ethics committee waived the need for informed consent.
- The first author received an NWO Doctoral Grant for Teachers in 2016.
- This poster is based on a peer reviewed article (PMID26918788).
- Presented at the WCPT Congress 2017, Cape Town.

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Powerpoint presentation