Open versus laparoscopic myomectomy: a retrospective cohort study from a multi-site London university hospital

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Introduction

- Fibroids (leiomyomas) are benign smooth muscle tumours of the uterus. Myomectomy is a uterine-preserving surgical treatment for women with symptomatic fibroids. Myomectomy is done by open, laparoscopic1, or laparoscopic-assisted approaches2.
- The efficacy of laparoscopic myomectomy has been previously established3,4.
- However, there is uncertainty over which cases are suitable for a laparoscopic approach, and there is potential for longer operating times compared to open procedures.
- We aimed to compare the clinical characteristics and surgical outcomes in laparoscopic versus open myomectomies (including conversions and laparoscopic assisted procedures).

Methods

- We carried out a retrospective cohort study of all myomectomies performed at two sites within London North West University Healthcare (LNWH) NHS Trust, Ealing and Northwick Park Hospitals, between 1st January 2016 and 31st December 2018.
- The study was approved by the LNWH clinical governance department (W&C.NP.18.265).
- Data were collected on patient age, fibroid characteristics (number, largest dimension of the primary fibroids), surgical technique including use of morcellation, blood loss, length of postoperative stay, complications, blood transfusions, and histology.
- Statistical significance was calculated for continuous measures using a two-sample t-test or the Wilcoxon rank sum test (for hospital stay, as data were not normally distributed). Categorical measures were compared by using the χ² test. P values less than .05 were considered statistically significant.

Results

- Between 29th January 2016 and 15th December 2018, a total of 142 myomectomies were performed.
- Of these, 68 were open (OM), 71 laparoscopic (LM) (of which 62 were completed, 9 needed conversion to open, LCO) and three laparoscopic assisted myomectomies (LAMs).

Patient and fibroid characteristics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>OM (n=68)</th>
<th>LM (n=62)</th>
<th>LCO (n=9)</th>
<th>LAM (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>38.8 ± 5.6</td>
<td>38.3 ± 6.2</td>
<td>40.6 ± 4.9</td>
<td>36.7 ± 6.0</td>
</tr>
<tr>
<td>% Single fibroid</td>
<td>14.7%</td>
<td>54.8%</td>
<td>55.6%</td>
<td>0%</td>
</tr>
<tr>
<td>Largest dimension (mm)</td>
<td>108.3 ± 52.7</td>
<td>85.3 ± 37.8</td>
<td>110 ± 58.4</td>
<td>88.3 ± 23.6</td>
</tr>
</tbody>
</table>

1Values are mean ± standard deviation. OM = open myomectomy; LM = laparoscopic myomectomy; LCO = laparoscopic myomectomy converted to open; LAM = laparoscopic assisted myomectomy

- In LM cases compared to all other types combined (OM, LCO, LAM), there was a greater proportion of single rather than multiple fibroids (χ²=20.1, p<0.001).
- In LM cases compared to all others, the largest fibroid dimension was significantly smaller (t132=-2.8, p=0.0062).

Morcellation and histology

- All LM cases, with the exception of one case, involved morcellation. In the single case, a specimen bag was used for a suspicious mass but subsequent histology confirmed an atypical smooth muscle tumour.
- Histology from all other cases was benign (139 leiomyoma, 1 lipoleiomyoma, 1 atypical smooth muscle tumour, 1 adenomyosis).

Length of hospital stay

Histograms of length of hospital stay (days) for open myomectomy (OM) versus laparoscopic myomectomy (LAM) and LCO.

- Length of hospital stay for the four groups was 4 ± 2 days (median ± interquartile range) for OM, 2 ± 1 for LM, 4 ± 2 for LCO and 3 ± 1.5 for LAM cases.
- Hospital stay for LM cases were significantly shorter than OM cases (z=7.7, p<0.001).

Blood transfusions and complications

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>OM</th>
<th>LM</th>
<th>LCO</th>
<th>LAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated blood loss (ml)</td>
<td>761.6 ± 693.7</td>
<td>390.0 ± 371.6</td>
<td>862.5 ± 698.9</td>
<td>1384.0 ± 676.1</td>
</tr>
<tr>
<td>% Blood transfusion</td>
<td>29.4%</td>
<td>4.8%</td>
<td>22.2%</td>
<td>33.3%</td>
</tr>
<tr>
<td>% Complications</td>
<td>26.5%</td>
<td>16.3%</td>
<td>33.3%</td>
<td>0%</td>
</tr>
</tbody>
</table>

- Estimated blood loss was significantly lower in LM compared to OM cases (t13=3.0, p=0.004).
- Blood transfusion was more frequently observed in OM versus LM cases (χ²=13.5, p<0.001).
- Complication rates between OM and LM cases were not significantly different (χ²=2.1, p=0.15).
- Complications included post-operative fever, collections, re-admission, urinary tract infection and urinary retention.

Conclusions

- This study demonstrates that the laparoscopic approach is safe and associated with reductions in hospital stay and requirement for blood transfusion.
- The number and size of fibroids act as limiting factors in the decision to use the laparoscopic approach.
- Further evaluation is required of the medium and long-term outcomes of laparoscopic myomectomy, particularly recurrence, reoperation, fertility and pregnancy rates.

References