Comparing clinical outcomes and effectiveness of surgical treatments for haemorrhoids: Systematic review and network meta-analysis

Miss Sarah Nohelia Thoukididou
Chelsea and Westminster Hospital & Royal Marsden Hospital
Background

- Found during 40% of colonoscopies
- There are 9000 operations per year in the UK
- Amongst numerous techniques there is no gold-standard and practice is widely varied
- More than a hundred head-to-head comparisons
Aims of the study

- Perform a systematic review of the literature to identify the surgical treatments available for haemorrhoids

- Perform a network meta-analysis to compare the clinical outcomes and effectiveness of these treatments
Network Meta-Analysis

- A tool for combining data from multiple RCTs with common outcomes
- Can compare techniques even when they have not been directly trialled against each other
Network plot showing direct comparisons between treatments
Methods

- Literature search of MEDLINE, Embase, Science Citation Index Expanded, and Cochrane Library
- Randomized clinical trials were included comparing surgical treatments for grade III and IV haemorrhoids
- A Bayesian network meta-analysis was conducted using the Markov chain Monte Carlo method in WinBUGS
Methods

- Outcomes
  - Combined postoperative complications
  - Postoperative bleeding, emergency re-operation
  - Duration of surgery and operative blood loss
  - Length of hospital stay
  - Time to first bowel movement and to normal activities
  - Pain
  - Recurrence of haemorrhoids and haemorrhoidal symptoms
Results

- 98 trials were included in the analysis with 7827 participants
- 11 surgical treatments were compared:
  - Open (Milligan Morgan)
  - Closed (Ferguson)
  - Submucosal (Park’s)
  - Stapled (PPH)
  - THD or HALO
  - LigaSure
  - Harmonic
  - Laser
  - Starion
  - Radiofrequency
  - Bipolar scissors
Postoperative complications

- Closed and radiofrequency haemorrhoidectomies had significantly more postoperative complications than the open, stapled, LigaSure, Harmonic and THD groups.

- Open haemorrhoidectomy had significantly more postoperative complications than the LigaSure, Harmonic and THD groups.
Postoperative bleeding

- Significantly fewer people had postoperative bleeding after THD compared with open or stapled.

Emergency reoperation

- THD had significantly fewer reoperations than open, closed, stapled and LigaSure, and had a high probability of being the best treatment for this outcome ($P=0.710$).
Duration of surgery

- Open, closed, submucosal and laser groups had a significantly longer duration of surgery than the stapled, LigaSure, Harmonic, THD, Starion and radiofrequency groups

Operative blood loss

- Open, closed and THD had significantly more operative blood loss than the stapled, LigaSure, Harmonic, Starion and bipolar scissors groups
Pain

- Open and closed haemorrhoidectomies resulted in significantly more pain on postoperative day 1 than stapled, LigaSure, Harmonic, THD and Starion.

- Open haemorrhoidectomy had significantly more pain on day 7 compared with the stapled group.

- Open and closed haemorrhoidectomy groups had significantly more pain on postoperative day 14 compared with the stapled and LigaSure groups.
Hospital stay

- Stapled and THD groups had significantly shorter length of hospital stay than open, closed and Harmonic groups

Time to bowel movement

- THD and Harmonic groups had significantly shorter time to first bowel movement compared with open, closed and bipolar scissors haemorrhoidectomies

Time to normal activities

- Stapled, LigaSure and Harmonic groups needed a significantly shorter time to return to normal activities than the open and closed haemorrhoidectomy groups
Recurrence of haemorrhoids

- Stapled and THD had significantly higher recurrence of haemorrhoids compared with open, closed and LigaSure.
- THD ranked as worst with high probability (P=0.785).

Recurrence of haemorrhoidal symptoms

- Stapled haemorrhoidectomy had significantly higher recurrence of haemorrhoidal symptoms compared to open and LigaSure haemorrhoidectomies.
<table>
<thead>
<tr>
<th>Outcome</th>
<th>Best</th>
<th>Worst</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating time</td>
<td>Radiofrequency (P=0.54)</td>
<td>Laser (P=0.91)</td>
</tr>
<tr>
<td>Operative blood loss</td>
<td>Bipolar scissors (P=0.71)</td>
<td>Open (P=0.42)</td>
</tr>
<tr>
<td>Postop complications</td>
<td>Harmonic (P=0.45)</td>
<td>Radiofrequency (P=0.48)</td>
</tr>
<tr>
<td>Length of hospital stay</td>
<td>Radiofrequency (P=0.62)</td>
<td>Laser (P=0.39)</td>
</tr>
<tr>
<td>Time to bowel movement</td>
<td>THD (P=0.85)</td>
<td>Bipolar scissors (P=0.57)</td>
</tr>
<tr>
<td>Time to normal activities</td>
<td>THD (P=0.48)</td>
<td>Radiofrequency (P=0.32)</td>
</tr>
<tr>
<td>Pain on day 1</td>
<td>THD (P=0.58)</td>
<td>Submucosal (P=0.48)</td>
</tr>
<tr>
<td>Recurrent haemorrhoids</td>
<td>Submucosal (P=0.38)</td>
<td>THD (P=0.79)</td>
</tr>
<tr>
<td>Recurrent symptoms</td>
<td>Laser (P=0.53)</td>
<td>Harmonic (P=0.47)</td>
</tr>
</tbody>
</table>
Conclusions

- Open and closed haemorrhoidectomies resulted in more postoperative complications and slower recovery, but fewer haemorrhoid recurrences
- THD and stapled haemorrhoidectomies were associated with decreased postoperative pain and faster recovery, but higher recurrence rates
- We hope these data can help to inform your decision making around choice of technique for haemorrhoidectomy
Acknowledgements

- Chelsea and Westminster Hospital & Royal Marsden Hospital
  - Prof Paris Tekkis
  - Shahnawaz Rasheed
  - Constantinos Simillis


Thank you