Thyroid surgery for Graves’ disease - total or subtotal thyroidectomy?

Total thyroidectomy is more effective than subtotal thyroidectomy in preventing recurrence of hyperthyroidism in Graves' disease

Objective:
To find out the optimal surgical technique for Graves' disease and Graves' ophthalmopathy. From all published randomized controlled trials, five trials that involved a total of 886 adults qualified for analysis.

Grave's disease and treatment options
What are the issues with surgical options?

Graves' disease is a common autoimmune condition affecting the thyroid gland, clinically manifesting as hyperthyroidism. This can lead to increased risk of heart attacks and strokes if left untreated for a long period of time. Graves' ophthalmopathy resulting in protrusion of the eyes and limited eye movements is a common complication.

Graves' disease is generally treated by medication, while radiation or surgery are offered when indicated. There is controversy over which surgical technique is best. Total thyroidectomy is believed to provide better disease control long term, when compared to subtotal thyroidectomy. Also, total thyroidectomy is believed to carry a greater risk of postoperative complications, such as vocal cord dysfunction from damage to the recurrent laryngeal nerve, and hypocalcemia due to hypoparathyroidism. This review was performed to find out the truth about such beliefs.

What does this latest research evidence say?

- Total thyroidectomy resulted in
  - better long-term control of hyperthyroidism
  - higher proportion of permanent hypocalcaemia.
- Control of eye symptoms and risk of permanent damage to the recurrent laryngeal nerve were not different with either surgical technique.

What is the quality of this evidence?

All studies included in the review were rated as having a high risk of bias. The overall evidence was graded as moderate to low quality.

Can this evidence be applied in my setting?

The main conclusions from the meta-analysis can be extrapolated to general clinical practice. However, it has to be noted that all surgeries were performed by experienced surgeons, in European countries and Taiwan. User discretion is suggested while generalizing these results to other settings.
Surgical intervention for management of Grave's disease

This table provides more details about the effectiveness of surgery on control of hyperthyroidism symptoms. These data are based on the Summary of Findings table from the Cochrane systematic review. The quality of evidence is rated as high, moderate, low or very low. The higher the quality, the more confidence we can have on the interpretation of the results.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Subtotal thyroidectomy</th>
<th>Total thyroidectomy (95% CI)</th>
<th>No. of participants</th>
<th>Inference</th>
<th>GRADE Quality of evidence*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of recurrent hyperthyroidism: Total thyroidectomy versus subtotal thyroidectomy (Follow-up: 6 months to 6 years)</td>
<td>55 per 1000</td>
<td>8 per 1000 (2 – 26)</td>
<td>350 (2 studies)</td>
<td>Lower rates of recurrence were noted with total thyroidectomy</td>
<td>Moderate</td>
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<tr>
<td>Regression of Grave's ophthalmopathy: Total thyroidectomy versus subtotal thyroidectomy (Follow-up: 6 months to 6 years)</td>
<td>782 per 1000</td>
<td>805 per 1000 (697-882)</td>
<td>229 (2 studies)</td>
<td>Regression of ophthalmopathy did not differ between total and subtotal thyroidectomy</td>
<td>Low</td>
</tr>
<tr>
<td>Permanent recurrent laryngeal nerve palsy (confirmed by laryngoscopy): Total thyroidectomy versus subtotal thyroidectomy (Follow-up: 6 months to 6 years)</td>
<td>18 per 1000</td>
<td>26 per 1000 (7 – 93)</td>
<td>393 (3 studies)</td>
<td>Risk of permanent palsy of recurrent laryngeal nerve did not differ between the two surgical techniques</td>
<td>Low</td>
</tr>
<tr>
<td>Permanent hypocalcaemia/hypoparathyroidism [measured by serum calcium levels]: Total thyroidectomy versus subtotal thyroidectomy (Follow-up: 6 months to 6 years)</td>
<td>14 per 1000</td>
<td>59 per 1000 (16-190)</td>
<td>393 (3 studies)</td>
<td>Total thyroidectomy resulted in higher proportion of permanent hypocalcaemia</td>
<td>Low</td>
</tr>
</tbody>
</table>

*What does the GRADE quality of evidence mean?*

**High:** Further research is very unlikely to change our confidence in the estimate of effect.

**Moderate:** Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

**Low:** Further research is very likely to have an important impact on our estimate of effect, and may change the estimate.

**Very low:** We are very uncertain about the estimate.

More information

This summary is based on the following Cochrane systematic review:

What is a systematic review?
A systematic review seeks to answer a well formulated and specific question by identifying, critically appraising, and summarising the results of all relevant trials, published and unpublished, according to pre-stated and transparent methods.

What is Cochrane?
Cochrane is an international network of more than 28,000 people from over 100 countries. Cochrane is one of the biggest producers of systematic reviews on the effects of healthcare interventions. Cochrane Systematic Reviews are recognized internationally as the benchmark for high quality information. The Cochrane Database of Systematic Reviews is available from www.thecochranelibrary.com

How has the quality of evidence been assessed?
Methods developed by the GRADE working group (www.gradeworkinggroup.org). The GRADE system considers 'quality' to be a judgment of the extent to which we can be confident that the estimates of effect are correct. The quality of evidence is graded after full consideration of the risk of bias of the studies, the directness (or applicability) of the evidence, the consistency and the precision of the results.