Bleeding after tonsillectomy

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Definitions

• Primary bleeding – within 24h
• Secondary bleeding – after 24h
• Early bleeding – During care
• Late bleeding – After discharge/ hospital visit
Evolution of Tonsil surgery

1900

Tonsilotomy
"guillotine"

1950

Cold steel

1980

Monopolar diathermy

1990

Bipolar diathermy
Ultrasound
Coblation
Anatomy of the arteries

Thumfart et al 1998
Post-tonsillectomy haemorrhage rates are related to technique for dissection and for haemostasis. An analysis of 15734 patients in the National Tonsil Surgery Register in Sweden

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Representative data?

- The National Tonsil Surgery Register in Sweden
- A total of 15,734 patients operated 2009-2013
- Completeness 2014 83.3%
- Patient-reported re-admission due to bleeding, answering rate 61% in questionnaire sent 30 days post-op.
- In part validated: no difference in bleeding rates between those who had/ had not answered the 30 days survey
Demography an type of surgery and heamostasis

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>Cold steel + cold haemostasis</th>
<th>Cold steel + hot haemostasis</th>
<th>Bipolar scissors</th>
<th>Ultrascission</th>
<th>Coblation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=15734</td>
<td>n=1169 (7.4%)</td>
<td>n=10278 (65.3%)</td>
<td>n=2472 (15.7%)</td>
<td>n=391 (2.5%)</td>
<td>n=1424 (9.1%)</td>
</tr>
<tr>
<td>AGE</td>
<td>19 (1-91)</td>
<td>19 (1-75)</td>
<td>19 (1-91)</td>
<td>20 (1-83)</td>
<td>18 (2-77)</td>
<td>19 (1-77)</td>
</tr>
<tr>
<td>SEX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>6489 (41.2%)</td>
<td>496 (42.4%)</td>
<td>4226 (41.1%)</td>
<td>1023 (41.4%)</td>
<td>160 (40.9%)</td>
<td>584 (41.0%)</td>
</tr>
<tr>
<td>F</td>
<td>9245 (58.8%)</td>
<td>673 (57.6%)</td>
<td>6051 (58.9%)</td>
<td>1449 (58.6%)</td>
<td>231 (59.1%)</td>
<td>840 (59.0%)</td>
</tr>
</tbody>
</table>
### Early posttonsillectomy haemorrhage

<table>
<thead>
<tr>
<th>Method</th>
<th>Unjusted ratio</th>
<th>p-value</th>
<th>Adjusted* odds ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold steel + cold hemostasis</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cold steel + hot hemostasis</td>
<td>1.16 (0.81-1.64)</td>
<td>0.4212</td>
<td>1.13 (0.79-1.61)</td>
<td>0.4998</td>
</tr>
<tr>
<td>Bipolar scissors</td>
<td>0.78 (0.51-1.19)</td>
<td>0.2486</td>
<td>0.74 (0.48-1.14)</td>
<td>0.1717</td>
</tr>
<tr>
<td>Coblation</td>
<td>1.30 (0.85-2.00)</td>
<td>0.2306</td>
<td>1.29 (0.84-1.99)</td>
<td>0.2417</td>
</tr>
<tr>
<td>Ultrascission</td>
<td>0.33 (0.12-0.95)</td>
<td>0.0394</td>
<td>0.33 (0.12-0.92)</td>
<td>0.0351</td>
</tr>
</tbody>
</table>

*The analysis is adjusted for sex and age.*
# The analysis is adjusted for sex, age and indication.

<table>
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<tr>
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<th>Adjusted odds ratio</th>
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<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Cold steel + hot hemostasis</td>
<td>2.84 (1.82-4.42)</td>
<td>&lt;.0001</td>
<td>2.80 (1.80-4.36)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Bipolar scissors</td>
<td>4.53 (2.85-7.20)</td>
<td>&lt;.0001</td>
<td>4.28 (2.69-6.82)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Coblation</td>
<td>3.21 (1.97-5.22)</td>
<td>&lt;.0001</td>
<td>3.20 (1.97-5.22)</td>
<td>&lt;.0001</td>
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<tr>
<td>Ultrascission</td>
<td>5.67 (3.28-9.79)</td>
<td>&lt;.0001</td>
<td>5.63 (3.25-9.73)</td>
<td>&lt;.0001</td>
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</tbody>
</table>
Publications


How much of the bleeding risk depends on surgical and hemostasis risk?

In the distribution between units 31% can be explained by the degree of cold/cold techniques.

"Our data suggest that experience of the surgeon may have greater bearing on post-tonsillectomy bleed rates than the technology used."

Take home message

• The risk for post-tonsillectomy haemorrhage is related to surgical technique.
• All hot techniques resulted in a significant higher risk compared with cold steel for dissection + cold haemostatis
• There is also unknown factors affecting risk of bleeding, probably surgical performance/experience.