Can we predict wound breakdown in open Laryngotracheal Reconstruction?

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Conclusion:

• Careful preoperative planning, intraoperative technique and postoperative care do not eliminate the risk of post-operative wound infection.
• Appropriate and timely treatment of wound complications does not affect the overall outcome of open LTR surgery.

Introduction
Wound dehiscence following open Laryngotracheal Reconstruction (LTR) is associated with significant morbidity and may potentially result in loss of the graft(s) and surgical failure. We retrospectively reviewed our institutions’ 10-year experience in open LTR surgery with the aim of identifying possible factors associated with wound complications. To our knowledge there is no existing literature specifically focussing on this topic.

Hypothesis
1) Patients with wound breakdown have lower levels of total protein, albumin and haemoglobin post-operatively
2) Younger patients, patients who had previous tracheostomy, patients undergoing revision LTR and patients who had higher grade of stenosis would have higher risk of wound breakdown.

Methodology
Approval was obtained from the Institutional Review Board for retrospective review of medical records. Data collected from patients’ charts, surgical reports and outpatient notes. SAS V9.3 was used for statistical analysis. Logistic regression was used for analysis of continuous variables. Categorical variables were analysed using chi-squared test to calculate odds ratio and 95% confidence interval.

Results
Results of LTR
• 39 open LTR surgeries were performed for 35 patients from June 2007 to May 2017
• Overall extubation/decannulation rate was 89.7% (n=35)
• 2 commonest indications for surgery: subglottic stenosis in 66.7% (n=26) followed by bilateral vocal cord palsy in 25.6% (n=10)

<table>
<thead>
<tr>
<th>Type of LTR procedure performed</th>
<th>No. (%)</th>
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<tbody>
<tr>
<td>Only anterior graft</td>
<td>10 (26)</td>
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<tr>
<td>Anterior graft and posterior split</td>
<td>6 (15)</td>
</tr>
<tr>
<td>Anterior and posterior graft</td>
<td>13 (33)</td>
</tr>
<tr>
<td>Only posterior graft</td>
<td>10 (26)</td>
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Complications
• 20% of patients (n=8) experienced wound breakdown which included anterior neck wound dehiscence and presence of subcutaneous emphysema
• The median of age of the patients was 18 months (13 weeks to 4 years old).
• All patients had a post-operative downward trend of haemoglobin, albumin and total protein, reaching a trough by post-operative day 2 or 4 and rising back to baseline values by post-operative day 8.
• Logistic regression analysis of haemoglobin, total protein and albumin levels did not detect any trend in relation of lower levels of these biomarkers to higher rates of wound breakdown.
• Pre-operative tracheostomy (OR 0.81, 95% CI +/- 0.04), age at surgery < 12 months (OR 0.41, 95% CI +/-0.04 ), and the patient undergoing revision LTR surgery (OR 0.74, 95% CI +/-0.07) were all not predictors of wound infection.
• All 8 patients with wound complications were extubated/decannulated successfully.

How we do it – step by step

Reference:

Research interests: Treatment of OSA beyond adenotonsillectomy, plasma-mediated radiofrequency ablation

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