Introduction
Tonsillectomy is one of the most frequently performed paediatric surgical procedures. Its leading indication is to treat obstructive sleep apnoea (OSA) with evidence showing it significantly improves a child’s quality of life. However, there have been questions raised about the safety of tonsillectomy in paediatric patients with comorbidities including obesity, Down Syndrome, craniofacial abnormalities, hemophilia and prematurity, with some studies suggesting higher rates of postoperative (PO) complications. The aim of this study was to identify patient factors including age, BMI and comorbidities that were associated with a greater risk of complication following tonsillectomy.

Methods
A retrospective chart review was performed for all qualifying patients who presented to the Children’s Hospital at Westmead, NSW, Australia for routine tonsillectomy between July 2010 and July 2014. A comprehensive existing patient database was used for the review. Inclusion criteria: <17 years old, standard tonsillectomy +/- adenoidectomy, sufficient data

Data collected included:
1. Demographics
2. Comorbidities stratified into 8 groups:
- Coagulopathy, Down Syndrome, Second Airway Lesion, Neurological, Obesity, Respiratory Disease, Craniofacial Anomalies, Syndromal, Miscellaneous
3. Preoperative, Intra and post operative data
4. Complications include:
   a) Post operative bleeding (primary and secondary)
   b) Airway related complication: Desaturation requiring supplemental oxygen+/CPAP and monitoring
   c) Fever, nausea and vomiting or poor oral intake causing a prolonged hospital stay (>1night)
   d) Readmission

Statistical analysis:
SAS v 9.3: Categorical outcomes were compared between groups using chi squared tests and described by odds ratios with statistical significance set at 95% CI. Cochran Armitage test was used for analysing trends in the data. P<0.05

Key findings

1. Children under 24 months old have significantly increased risk in developing complications immediately after tonsillectomy
2. Obesity was associated with increased airway complication rate after routine tonsillectomy
3. Children with a comorbidity other than obesity were not associated with a greater complication rate but were more likely to have a prolonged hospital admission

Results
- 500 patients analysed. 420 met inclusion criteria.
- Indications for surgery - airway symptoms (n=253, 60.2%) followed by tonsillitis (n=166, 39.5%)

Complications
- 84 patients (20%) experienced a PO complication. No returns to theatre, No mortality
- 11 patients had primary PO bleeding
- 24 had desaturation requiring intervention and CPAP
- 50 had a prolonged admission complicated by febrile illness (22), poor oral intake (14) or nausea and vomiting (14)

Age
- The median age was 5.5 years (range 5 months to 17 years).
- There was a greater proportion of complications in children <24months Fig 1.

Comorbidities
- 155 (37%) patients had a comorbidity, 265 did not
- 85 (20.2%) patients had a comorbidity other than obesity
- 13 patients (3.09%) had both
- There were over 39 types of comorbidities (fig 2)

No individual comorbidity had a significantly higher rate of complications or hospital stay other than obesity.
There was a significant difference in length of hospital stay between the comorbid and healthy groups but not in total number of complications (Table 1)

Table 1.

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Patients with comorbidities (37%)</th>
<th>Patients without comorbidities (63%)</th>
<th>p.value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complication no.</td>
<td>21% (32/155)</td>
<td>15% (40/265)</td>
<td>0.193</td>
</tr>
<tr>
<td>&gt;= 2 day admission</td>
<td>16% (25/155)</td>
<td>7.5% (20/265)</td>
<td>0.00607</td>
</tr>
<tr>
<td>&gt;= 3 day admission</td>
<td>9% (14/155)</td>
<td>2% (6/265)</td>
<td>0.00167</td>
</tr>
</tbody>
</table>

Obesity
70/420 patients were obese. More obese patients experienced a desaturation complication compared to non-obese patients (p=0.00480). There was no difference in overall complication rate (p>0.05) or in any subgroup.

AHI
129 (30.7%) patients received a polysomnogram. No statistical relationship between AHI and complication rate P>0.05. (Fig 2)

Future implications
We hope this information will help to guide surgeons in identifying and managing patients at higher risk of complications and provide reassurance to parents of patients where there is no evidence to suggest concern

References
1. Joubert’s syndrome
2. Goldenhaar
3. Fréauquency, # of patients
4. Age
5. Preoperative
6. Intra
7. Postoperative
8. Complications
9. Complication rate
10. Infection
11. Hospital stay
12. Duration
13. Readmission
14. Bleeding
15. Desaturation
16. Airway symptoms
17. PO complication
18. Primary PO bleeding
19. Secondary PO bleeding
20. Prolonged hospital stay
21. Length of hospital stay
22. Cochran Armitage test
23. Statistical analysis
24. Odds ratio
25. Confidence interval
26. Statistical significance
27. Categorical outcome
28. Chi squared test
29. SAS statistical software
30. Neurological disorders
31. Sleep apnoea
32. Obstructive sleep apnoea
33. Down Syndrome
34. Second Airway Lesion
35. Neurological disorders
36. Craniofacial Anomalies
37. Syndromal disorders
38. Miscellaneous disorders
39. Preoperative complications
40. Intraoperative complications
41. Postoperative complications
42. Complication rate
43. Infection rate
44. Hospital stay rate
45. Duration of hospital stay
46. Readmission rate
47. Bleeding rate
48. Desaturation rate
49. Airway symptoms rate
50. PO complication rate
51. Primary PO bleeding rate
52. Secondary PO bleeding rate
53. Prolonged hospital stay rate
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