Day Stay Tonsillectomy
Starship experience

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Starship Children’s hospital
New Zealand
Overview

- Tonsils and Tonsillectomy
- Day stay T&A and literature
- Starship data 1 (1994-2002)
- Starship data 2 (2004-2014)
What are tonsils??
Normal tonsils

Enlarged and infected tonsils
Indications for tonsillectomy

• Suspicion of malignancy

• Obstructive sleep apnea/ SDB

• Recurrent Strep throat / Rec Pharyngitis in at risk groups

• Recurrent tonsillitis
Tonsillectomy

- 0.17% US population under go T’s each year

- Most frequent procedure in Australia for 3-14 year age group (Medicare/Hospital)

- Benefit in short term and long term-QOL

- Parental satisfaction-yes
Drivers for Day Stay Concept

• Shortage of inpatient beds

• “Shorter/improved recovery at home”

• Cost effective??

• Proponents – Surgeons? Or Management?


Day surgery versus overnight stay surgery for laparoscopic cholecystectomy.

Vaughan J, Gurusamy KS, Davidson BR.
Main concerns re safety of DSU tonsils

- Patient selections- age, co morbidities...

- Complications in first 24 hours..-> 6 hours

  bleeding
  respiratory
  nausea and vomiting
  drug related reactions
In 1996, the American Academy of Otolaryngology-Head and Neck Surgery published criteria that stated that otherwise healthy children who are older than three years of age, have an American Society of Anaesthesiologists physical status classification of I or II without evidence of sleep disordered breathing, whose homes are close to a major medical centre, and who are undergoing adenotonsillectomy for routine indications are eligible for outpatient tonsillectomy.
Day stay tonsillectomy

• Mahadevan M, Bartley J.
  Paederatric day case tonsillectomy: Early greenlane experience.

• Laureyns G1, Lemkens P, Jorissen M.
  B-ENT. 2006;2(3):109-16
  Tonsillectomy as a day-case surgery: a safe procedure?

• Lalakea ML, Marquez-Biggs I, Messner AH.
  Arch. Otolaryngol. Head Neck Surg. - July 1, 1999; 125 (7); 749-52
  Safety of pediatric short-stay tonsillectomy.
Paediatric day stay tonsillectomy service: development and audit.
Stewart PC, Baines DB, Dalton C, . - Anaesth Intensive Care - October 1, 2002; 30 (5); 641-6

- Day stay concept in NSW - 125 patients
- Day stay 6 hours obs
- Post op vomiting 15.6%
- 2 overnight conversion
- No primary bleeds
- 80% parents satisfied
CONCLUSION AND SIGNIFICANCE: It is not possible to preoperatively anticipate which children will have postsurgical complications. We recommend planning an overnight admission for children younger than 36 months undergoing tonsillectomy.
When the study data were pooled, the number of ASA I/II patients undergoing either inpatient or outpatient surgeries who experienced complications within the first 24 hours was 596 of 6698 (8.9%).

Of the 596 complications, 350 (58.7%) were major overall rate 5.2% and 246 (41.3%) were minor overall rate 3.7%.
Day stay Vs Inpatient

Day-stay tonsillectomy: is hospital stay reduced at the expense of increased community care?


Mitchell, R B; Quinn, S J; Kenyon, G S. Published September 1, 1996.
Day stay tonsillectomy

EVIDENCE-BASED REVIEW

Outpatient tonsillectomy in children:
A systematic review

Matthew T. Brigger, MD, LCDR(Sel), MC, USNR, and
Scott E. Brietzke, MD, MPH, MAJ, MC, USA,
OBJECTIVE: To evaluate the level of evidence regarding the safety of outpatient pediatric tonsillectomy.

STUDY DESIGN AND SETTING: The medical literature addressing outpatient pediatric tonsillectomy was systematically reviewed. The level of evidence was assessed, and data were pooled.
232 potential articles

Abstracts reviewed
63 articles reviewed

Manual crosschecks
17 articles met inclusion criteria
-1 due to duplicate data

16 articles included in review
RESULTS: Seventeen articles met inclusion criteria. Each article suggested that outpatient tonsillectomy was safe.

The overall level of evidence was fair (grade B).

Pooled data analysis in the perioperative period showed a complication rate estimate of 8.8% (95% confidence interval [CI], 5.5%-12.1%; P  0.001) and unplanned admission rate estimate of 8.0% (95% CI, 5.3%-10.7%; P  0.001).

Subgroup analysis suggests that children under age 4 are at a higher risk of complications in the perioperative period with an odds ratio of 1.64 (95% CI, 1.16-2.31).
Meta-analysis of the timing of haemorrhage after tonsillectomy: an important factor in determining the safety of performing tonsillectomy as a day case procedure.

Bennett AM¹, Clark AB, Bath AP, Montgomery PQ.

OBJECTIVES:
To perform a meta-analysis of studies of the timing of primary tonsillectomy haemorrhage. In particular to compare the difference in risk between 0-8 and 8-24 h; that is whether overnight inpatient tonsillectomy is required.

DESIGN:
Medline search of all tonsillectomy studies to perform a meta-analysis of the timing of primary haemorrhages.

MAIN OUTCOME MEASURES:
The overall incidence of haemorrhage occurring between 0-8 and 8-24 h. The overall incidence of haemorrhage for each of the first 24 h after operation. Compare risk of a bleed occurring 0-8, 8-24 and >24 h where data were available.

RESULTS:
From a 1.4% overall risk of a primary haemorrhage only one in 14 occur after 8 h, i.e. 0.1% (95% CI=0.08-0.16%). A total of 833 patients would require to be kept overnight in order to identify one case of bleeding after 8 h.

CONCLUSIONS:
Little benefit was conferred from overnight admission from the point of view of monitoring for primary haemorrhage. A case can be made for either day-case tonsillectomy (hospital stay over the period in which 93% of primary haemorrhages would occur) or the 'belt-and-braces' approach of a 1-week stay (during which all haemorrhages would occur) but current 24-h admission appears illogical.
Issues related to Day stay tonsillectomy

- Appropriate facility - dedicated day stay!!
- Paediatric expertise and staff
- Guidelines and protocols*
- Patient selection *
- Parental and care giver attitudes
- Post operative care of complications*
Facility

- Dedicated paediatric facility (i.e.: used to service routine paediatric cases)

- Stage 1 (PACU) and Stage 2 recovery appropriate

- Ideally attached to main hospital

- Offsite will require easy and immediate access to main hospital
Staff

- Medical and Surgical staff with paediatric experience - routinely perform “Paediatric surgery” + play therapist
- Surgeon experienced in performing large volume paediatric surgery plus
- Surgeon and anaesthetist immediately available during post op 4 hour period...
- Anaesthetist amenable to paediatric protocol
- Experienced recovery and day stay staff
Protocol - Starship DSU tonsils

- Age- 4yrs (>3 years?)
- No significant Co morbidities
- Not OSA or obese
- No history of bleeding disorder
- Live less that 60 mins from hospital
- Access to phone/ car
- Parents capable and amenable to Day surgery
CPAC for Tonsillectomy/Adenoidectomy

PROPOSED OPERATION:

Urgent       Semi-urgent       Routine

Available at short notice? Yes/No

Contact Phone Number: ..............................................................

Est Theatre Time: Routine or Allow extra time (total): ........ Hours ........ Mins

Admission Type: Inpatient: admit to ward post op: Est days in ward: .......... PICU/HDU Bed

Day stay: Suitable for Greenlane / Starship (refer to flow-chart for criteria)

Details below must be completed. Incomplete forms will be sent back to referrer.

Patient Clinical Details:

Any known bleeding disorder? Yes / No If yes, details: ..............................................................

Any known sig medical problems? Yes / No If yes, list: ..............................................................

..............................................................

Asthma? Yes / No If yes: Mild/Stable or Unstable/Mod Severe

Weight: ......................... kg

BMI = weight in kg

Height: ......................... m

BMI GUIDE FOR CHILDREN BY AGE

BMI >95th%  BMI <5th%
Patient Clinical Details:

Any known bleeding disorder? Yes / No If yes, details: ...........................................................

Any known sig medical problems? Yes / No If yes, list: ....................................................................

Asthma? Yes / No If yes: Mld/Stable or Unstable/Mod Severe

Weight: ....................... kg

Height: ....................... m

BMI: ................................

BMI >95th or <5th percentile for age? Yes / No

Lives > 1 hour from Starship? Yes / No

Needs Anaesthetic Chart review?: Yes / No

BMI GUIDE FOR CHILDREN BY AGE

<table>
<thead>
<tr>
<th>AGE</th>
<th>BMI &gt;95th%</th>
<th>BMI &lt;5th%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-6 years</td>
<td>&gt;19</td>
<td>&lt; 13</td>
</tr>
<tr>
<td>6-8 years</td>
<td>&gt;22</td>
<td>&lt; 13</td>
</tr>
<tr>
<td>8-12 year</td>
<td>&gt;26</td>
<td>&lt; 14</td>
</tr>
<tr>
<td>12-14 years</td>
<td>&gt;30</td>
<td>&lt; 15</td>
</tr>
</tbody>
</table>

Comments:

Referring Consultant:  

Date:  

Booking & Administration Comments:
Starship Paediatric Day Stay Unit

The Day Stay Unit at Starship is a small, busy unit providing comprehensive medical and surgical care on a short term basis. This includes:

- **minor surgery such as tonsillectomy, dental procedures or the insertion of grommets**
- **pre-admission for surgical procedures that require a stay in hospital**
- **investigative procedures such as MRI or CT**
- **medical services such as treatments for gastrointestinal and autoimmune diseases**
- **check-ups following surgery**
- **monitoring of some chronic health conditions**
- **infusions of medication**.

If your child is being admitted to the Day Stay Unit, in most cases that means your child comes to the hospital, has their treatment/operation/procedure and goes home on the same day. If your child will require a stay in hospital, you will be advised when you receive your admission letter.

**Hours**
Monday to Friday 7am to 7pm
Welcome to the Starship Day Stay Unit

Information for Parents, families and children
Welcome to Starship Day Stay Unit

Starship Children’s Hospital
Level 2

Queries:
phone 09 307 4949
extension 25620

- We encourage family-centered care and therefore ask you to stay with your child and participate in their care.

- Due to space restraints we ask that no more than two adults and no other children accompany each child.

- A parent(s) or your child’s legal guardian is required to be present to provide consent for the procedure.

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Preparation

Eating and drinking

Please do not give your child anything to eat or dink after the time listed on the admission letter. *If your child does eat or drink after the specified time the operation will have to be delayed or postponed.*

What to bring

- Nappies
- Clean pyjamas
- Favourite toy or cuddly
- Baby’s bottle or feeder cup with favourite drink for after the operation
- Light snack for after the operation

Timing

On the day of admission to the Day Stay Unit, please keep the whole day free.

We are unable to give you a precise time for your child’s surgery. Emergency cases may need to take priority, but we will always keep you informed of any changes.

The time shown on the letter is the time of arrival not the operation time.
Preparation for your child for hospital

To prepare your child for Day Stay, be honest. Explain why your child is coming to hospital in simple language that is meaningful to the child. Encourage your child to choose pyjamas and a favourite toy to bring to hospital.

You are welcome to visit prior to your admission date. This will give you and your child the opportunity to meet the nurses, see the unit and ask any questions.

Day Stay has a play specialist who is available to help you prepare your child for theatre and other procedures. The booklet “When Your Child goes to Hospital” is available from the Play Specialist Department.

For an appointment to view the unit and meet with the play specialist please phone 09 307 4949 and ask for extension 25620.

NOTE: If your child has had an illness in the week before surgery, please contact your GP.

Care at home

Depending upon the procedure, your child may require extra care at home and may need time off school.

Parking and how to find us

Parking at the hospital is available at your expense – closest public parking to Starship is in Car Park B - sign posted from the main entrance on Park Road.

- From Car Park B, enter via main entrance opposite car park B.
- Follow signs and the blue line on floor into Starship Hospital.
- Once in Starship follow the signs in the corridor past theatres and you will find Day Stay at the end of the corridor.

Other Information

Tea and coffee are available in the unit.

A small selection of food is available for purchase from coffee shops in Starship and Auckland City Hospital.
DSU - Discharge of Children from the Day Surgical Unit

Overview

<table>
<thead>
<tr>
<th>Document Type</th>
<th>Guideline</th>
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<tr>
<td>Function(s)</td>
<td>Clinical Service Delivery</td>
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<tr>
<td>Health Service Group (HSG)</td>
<td>Children’s Health</td>
</tr>
<tr>
<td>Departments affected</td>
<td>Day Stay Unit (DSU)</td>
</tr>
<tr>
<td>Staff members affected</td>
<td>Nurses within Day Stay Unit (DSU)</td>
</tr>
<tr>
<td>Key words</td>
<td>Discharge,</td>
</tr>
<tr>
<td>Author – role only</td>
<td>Charge Nurse Manager, DSU</td>
</tr>
<tr>
<td>Owner (see ownership structure)</td>
<td>Charge Nurse Manager, DSU, on behalf of Nurse Advisor, Children’s Health</td>
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<tr>
<td>Edited by</td>
<td>Clinical Policy Advisor</td>
</tr>
<tr>
<td>Date first published</td>
<td>September 2006</td>
</tr>
<tr>
<td>Date this version published</td>
<td>February 2012</td>
</tr>
<tr>
<td>Date of next scheduled review</td>
<td>February 2015</td>
</tr>
<tr>
<td>Unique Identifier</td>
<td>PP3030/RBP/010</td>
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Objective

To ensure that patients are discharged effectively and safely from the Day Stay Unit.

Responsibility

All nurses working in the Day Stay Unit, and all outreach venues

Frequency

Whenever a patient is discharged.
DSU - Discharge of Children from the Day Surgical Unit

Recommended Best Practice

Follow the steps below to ensure that patients are safely and effectively discharged from the Day Stay Unit:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
</table>
| 1.   | • That the patient’s level of consciousness is the same as on admission.  
      • There is minimal wound ooze.  
      • Respiratory and cardiovascular status is stable.  
      • That the patient’s pain is relieved by prescribed oral medication and the child has not received I.V pain relief during 1 hr preceding discharge  
      • That the patient is tolerating fluids and the child has not received an anti emetic (IV or oral) 1 hr preceding discharge  
      • Children at significant risk of urinary retention shall have passed urine, with the following exception:  
        – Patients receiving a caudal may not pass urine for up to 8 hours post placement of caudal. Such patients may be discharged home without passing urine but should be instructed to call the surgeon if they have not passed urine 6 hours after returning home.  
      • Children not meeting the above criteria should be assessed by a member of the surgical or anaesthetic team (as appropriate) prior to discharge.  
      • That, if requested by the surgical team, the patient is assessed by a medical/allied health staff prior to discharge.  
      • That the patient’s family have adequate social support (e.g. transport, responsible caregiver, accommodation) and if not arrange social worker referral  
      • Post-operative telephone follow-up is documented if required.  
      • If the patient has a child protection alert, the nurse will consult with senior clinician/nurse before a child/young person is discharged. |
Recommended Best Practice, Continued

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>• Ensure that patients who are assessed as being unfit for discharge are reviewed by the appropriate team and if necessary, arrangements made to transfer the child to an inpatient ward.</td>
</tr>
</tbody>
</table>
| 2.   | **Patient and family understand post-operative care needed at home.**  
• Explain post discharge care needed including:  
  - Wound care.  
  - Time off school/pre-school.  
  - Diet/fluids.  
  - Pain relief.  
  - Activity Restrictions  
• Ensure that family have appropriate post-operative written information sheet, including clear written instructions on suitable analgesia.  
• Ensure patient have prescriptions if needed, and interim report.  
• Ensure families are aware of follow-up arrangements.  
• Ensure family have Day Stay Unit and Children's Emergency Department phone numbers. |
| 3.   | **All documentation is complete:**  
• The nurse will document assessment, referrals and discharge information in the clinical record, and the computerised discharge is done. |
POST DISCHARGE FOLLOW UP:

Any problems on the way home? (please circle) YES / NO

Is your child comfortable? YES / NO

What pain relief are you giving? YES / NO

Any problems with the wound? YES / NO

Is he/she eating and drinking? YES / NO

Any further advice given:

Signature of Nurse: ______________________ Date: ______________________

DISCHARGE INFORMATION

Transport arrangements: ______________________ GP Letter given: Y N
Follow-up appointment: ______________________ Prescription given: Y N
District Nurse Referral: Y N Faxed Name of Drugs:
Parent Information Sheet given: Y N
Advice given: For telephone follow-up Y N Documented
Discharged into care of: ______________________ Address and phone if differs from label:

Nursing notes:

OBSERVATIONS

FLUID BALANCE

IV Fluids recorded on Fluid Balance Chart

<table>
<thead>
<tr>
<th>Time</th>
<th>Pulse</th>
<th>Heart</th>
<th>Wound</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Output</td>
<td></td>
<td></td>
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</table>

<table>
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PAGE 2
Starship data
Day stay Pediatric tonsillectomy—a safe procedure


a Department of Pediatric Otolaryngology, Auckland Children’s Hospital, Park Road, Auckland, New Zealand
b Department of Anaesthesiology, University of Auckland, Park Road, Auckland, New Zealand

• There were 4850 paediatric tonsillectomies performed with (4041) 80% day stay procedures over a 9-year study period (1993—2002)

• The primary postoperative hemorrhage rate (within 24 h of surgery) was 0.9% (CI 0.68—1.22%) and 83% occurred within the mandatory 4 h postoperative observation period.

• Primary hemorrhage requiring re-operation to achieve hemostasis occurred in 18 children (0.37%, CI 0.2—0.54%).
Day stay pediatric tonsillectomy—a safe procedure

• No child with a primary hemorrhage who presented after discharge following day stay surgery required reoperation or blood transfusion.

• Day stay surgery was planned in 4041 children and 4.7% (CI 4.1—5.4%) required conversion to hospital admission.

• Postoperative vomiting was the most common indication for conversion (2.65%, CI 2.2—3.1%),

• primary hemorrhage contributed only 0.95% (CI 0.64—1.24%).
Planned in-patient exclusion
4850-4038= 812 pts

**Day stay pediatric tonsillectomy—a safe procedure**

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**Table 2** Reasons for planned admission (n = 812)

<table>
<thead>
<tr>
<th>Number (%)</th>
<th>Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>246 (30.3)</td>
<td>Living greater than 1 h drive from the hospital</td>
</tr>
<tr>
<td>158 (19.5)</td>
<td>Obstructive sleep apnoea</td>
</tr>
<tr>
<td>189 (23.3)</td>
<td>Significant medical co-morbidities</td>
</tr>
<tr>
<td>103 (12.7)</td>
<td>Booked on afternoon lists (insufficient recovery time before DSU closure)</td>
</tr>
<tr>
<td>48 (5.9)</td>
<td>Under the age of 2 years old</td>
</tr>
<tr>
<td>41 (5.0)</td>
<td>Having a significant secondary procedure under the same anesthetic</td>
</tr>
<tr>
<td>20 (2.5)</td>
<td>Social reasons requiring admission</td>
</tr>
<tr>
<td>7 (0.9)</td>
<td>Children who were already inpatients, requiring acute tonsillectomy</td>
</tr>
</tbody>
</table>
Reasons for DSU conversion

• Post operative Nausea and vomiting
• Primary tonsillectomy bleed
• Pain
• Dehydration
• Respiratory complications
• Post GA drowsiness, other rash, fever,
Bleeding

Fig. 4 The incidence of primary and secondary hemorrhage.
Fig. 3  Probability of requiring conversion to inpatient status with increasing perioperative morphine dose. Observations are shown as triangles. From Anderson et al. [10], with permission.

The dose-effect relationship for morphine and vomiting after day-stay tonsillectomy in children.

Anaesthesia and intensive care.

Anderson, B J; Ralph, C J; Stewart, A W... Show all.; Barber, C; Holford, N H. Published April 2, 2000.
Timing of secondary bleeding

Fig. 5 The timing of secondary hemorrhage.
Conversion from DSU to inpatient

Fig. 1 The reasons for conversion from day stay to inpatient status.
Tonsillectomy 2004-2014
<table>
<thead>
<tr>
<th>Level</th>
<th>Count</th>
<th>Prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Patient (Intended)</td>
<td>4168</td>
<td>0.77185</td>
</tr>
<tr>
<td>Inpatient</td>
<td>1232</td>
<td>0.22815</td>
</tr>
<tr>
<td>Total</td>
<td>5400</td>
<td>1.00000</td>
</tr>
</tbody>
</table>
Starship data - 2004-2014

• 2004-2014 - 10 years

• 5250 pts
  – 1412 inpatients 27%,
  – 3838 DSU 73%

• Readmissions
  – 269 (74%) from DSU
  – 92 (26%) from inpatients
Complications

Bleeds 237 (4.51%)

**Major bleeds**: 38 in total, 6 in the first 24hrs of which 5 went to theatre.

**Minor bleeds**: 199 in total, 10 in the first 24hrs of which 2 went to theatre.

6 patients had 2 minor bleeds over the course of their recovery.
3 patients had 1 major and 1 minor bleed over the course of their recovery.

55 patients had to be taken back to theatre for control of bleeding.

4 patients needed a blood transfusion. (All went back to theatre)
Conversion for other reasons

Pain/Decreased oral intake/Dehydration:

68 patients admitted, of which 7 were within the first 24 hrs.

Other reasons rash, transport, late run: 23 patients admitted, 1 within the first 24 hours.
Summary

• Careful selection of DSU patients

• Appropriate protocols, staff and resources

• Robust plan for complications

• Start with older kids and smaller nos