# Prospective Audit of Unanticipated Hospital Admission following Paediatric Ambulatory Surgery in Paediatric Institute, Hospital Kuala Lumpur, Malaysia

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## Abstract

**Background and Aims**: Paediatric ambulatory surgery is becoming popular as it has various benefits. Although unplanned admision following paediatric ambulatory surgery is uncommon, its impact on the child, parents and overall the health care setting is significant. The rate of unplanned admission is an indicator of outcome and quality of care. The aim of this study was to audit the rate of unplanned admission following paediatric ambulatory surgery in our centre.

**Methods:** This is a 12 months prospective audit of factors affecting unplanned admission folowing paediatric day care surgery for the year 2017. Data were recorded in the data collection sheet

**Results:** 12 patients out of 500 patients were admitted. Mean age of the patients was 4.2 years, with the youngest being 5 months old. The commonest procedures performed are inguinal herniotomy, orchidopexy, circumcision, and hydrocele repair. The commonest causes of admission were unable to pass urine with 7 patients followed by 2 patients with postoperative fever, 2 patients with numbness over the limbs and 1 patient for unexpected complicated surgery. The unplanned admission rate was 2.4% for the period of study.

**Conclusion:** The rate of unplanned admission in our centre is low and comparable with other parts of the world. Hopefully, this audit can be used as a benchmark for quality of patient care and to benefit the entire healthcare system.

**Keywords: Paediatric Ambulatory Surgery, Unplanned admission.**

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## Introduction & Literature Review

Ambulatory surgery is becoming popular in paediatric practice. Among its benefits are improvement of patient satisfaction, avoidance of hospital admissions and risk of hospital acquired infections, early recovery, early ambulation and cost effectiveness [1]. Improvement in surgical and anaesthetic techniques, patients demand and its cost effectiveness has led to dramatic increases in the number of surgeries performed as day care basis. Paediatric patients are excellent candidates for ambulatory day care surgery as they are generally healthy and their common surgical procedures are usually short in duration and uncomplicated. Although, unplanned admision following paediatric ambulatory surgery is uncommon, its impact on the child, parents and overall the health care setting is significant [2]. The rate of unplanned admission is an indicator of outcome and quality of care. Effective audit has been found as an important component in ambulatory surgery [3]. Elucidating information regarding unplaned admission serves to highlight trends and areas for improvement in services. Identifying the common causes of unplanned admission, and specific groups of patients at high risk is an important step to improve the quality of ambulatory service [4]. However , it is difficult to predict which patients will experience complications requiring admission. In an adult population , Age >80 years old , ASA class 3 or 4 , duration of surgery more than 3 hours and BMI more than 30 are independent predictors of unanticipated admission in adults [4]. In this study, we prospectively evaluate risk factors for unanticipated admission following ambulatory surgery in children.

## Methods

Data was collected prospectively from the ambulatory care surgery staffs notes and the patients case notes were revieved for the details regarding the unplanned admission following day care surgery. Data fields collected were patients demographic data , type of surgery, duration of surgery, reasons for admission ( surgical related , anasethetic related), type of anaesthesia given, type of nerve blocks performed, and usage of opioids. These data are recorded in the data collection sheet. A complete breakdown of collected fields is shown in the appendix. The study period was between January 2017 to Disember 2017.

## Results

Over the period of 12 months, 500 patients attended for day care surgery. The mean age of the patients was 4.2 years, with the youngest being 5 months old (Table 1).

The commonest procedures performed were inguinal herniotomy, orchidopexy, circumcision, and hydrocele repair (Table 2).

A total of twelve patients were admitted to ward following day care surgery throughout the period of study. Commonest cause of admission were unable to pass urine with 6 patients followed by postoperative fever, numbness over the limbs and unexpected complicated surgery with 2 patients each (Table 3). The unplanned admission rate was 2.4% for the period of study.

**Table 1** Distribution of patients by age, race and gender.

| | Number | % |
|---|---|---|
| **Age** | | |
| Less than 1 year | 30 | 6.0 |
| 1-4 Years | 220 | 44.0 |
| 5-7 Years | 240 | 48.0 |
| Greater than 7 years | 10 | 2.0 |
| **Race** | | |
| Malay | 424 | 84.8 |
| Chinese | 36 | 7.2 |
| Indian | 30 | 6.0 |
| Other | 10 | 2.0 |
| **Gender** | | |
| Male | 230 | 46.0 |
| Female | 270 | 54.0 |

**Table 2** Surgical procedure done as day care surgery.

| Surgical procedure | Number | % |
|---|---|---|
| Herniotomy | 224 | 45 |
| Circumcision | 60 | 12 |
| Orchidopexy | 160 | 32 |
| Hydrocele Repair | 50 | 10 |
| Lymph Node Biopsy | 6 | 1 |
| **Total** | **500** | **100** |

**Table 3** Reasons for unplanned admission.

| Reason | Number |
|---|---|
| Unable to pass urine | 7 |
| Postoperative pyrexia | 2 |
| Numbness of limb | 2 |
| Unexpected complicated surgery | 1 |
| **Total** | **12** |

## Discussion

Ambulatory surgery comprises of less than 50% of the total cases that are being operated for the year. Various figures of overall admission rates have been reported by different authors: Blacoe[5] 2.5% , Dornhoffer[6] 2.2%, Ahlgren[7] 1.7%, Davenport[8] 5.3% , Jones and Smith[9] 8%. Our figure of 2.4% is comparable to published data.

Unplanned admission following day care surgery is an indicator of quality of health care. It comprises patient selection, preoperative assessment, nursing care, medical care, facilities, logistical and geographical aspects. This is the first audit that has been done in this centre, thus this can used as a baseline in looking at the trends of admission rates following day care surgery for paediatrics.

The commonest reason for readmission in this centre is inability to pass urine. Among the 7 patients that were unable to pass urine, 3 patients were given caudal analgesia and remaining 4 patients were given ilioinguinal block. There were no long acting opiods administered perioperatively. There was no dense or residual block noted on examination, and surgery was uneventful. They were admitted to ward and encouraged orally. All of them were able to pass urine within 6 hours admission and discharged well. One of the reasons of unable to pass urine is probably due to dehydration and prolonged fasting. We would like to suggest that any child who has prolonged fasting for more than 6 hours or operative time more than 1 hour, to be given fluid boluses or put on a maintainance drip during the perioperative period. This is to ensure adequate intravascular volume with good perfusion and to maintain diuresis.

Both patients experiencing numbness of the limbs were given ilioinguinal block for herniotomy. Possible explanation for this is probably due to local anaesthetic spread to the lateral femoral cutaneous nerve of the thigh following ilioinguinal block. There was no weakness reported and both of the patients recovered well and discharged the following day.

There were 2 children admitted for fever that were noted in the daycare ward postoperatively following herniotomy. Surgery was uncomplicated and both of them were well preoperatively. There were no further spike of temperature noted during admission and both of them were discharged the following day. This is probably due to SIRS (Systemic Inflammatory Response Syndrome ) following surgery.

Another patient admitted was due to unexpected complicated surgery. This patient was planned for orchidopexy following undescended testes. Intraoperatively, noted testes was not identified and surgical incision was extended. Subsequently, it was converted to laparoscopic surgery to localise the testes and confirm the diagnosis. It was then confirmed that this child has absent testes over one side. This child was admitted for observation and discharged well the following day.

## Conclusion

The rate of unplanned admission in our centre is low and comparable with other parts of the world. Hopefully, this audit can be used as a benchmark for quality of patient care and to benefit the entire healthcare system.

## References


1. The Association of Anaesthetists of Great Britain and Ireland. ***Day Surgery, Revised Edition***. February 2015.

1. Collins CE, Everett LL. Challenges in Pediatric Ambulatory Anesthesia: Kids are Different. ***Anesthesiology Clinics*** 2010;**28**:315-28.
2. Awad IT, Moore M, Rushe C et al. Unplanned hospital admission in children undergoing day-case surgery. ***European Journal of Anaesthesiology*** 2004;**21.5**:379–83.
3. Whippey A, Kostandoff G, Ma HK et al. Predictors of unanticipated admission following ambulatory surgery in the pediatric population: a retrospective case–control study. ***Pediatric Anaesthesia*** 2016;**26**.8:831-7.
4. Blacoe DA, Cunning E, Bell G. Paediatric day-case surgery: an audit of unplanned hospital admission Royal Hospital for Sick Children, Glasgow. ***Anaesthesia*** 2008;**63**:610–5.
5. Dornhoffer J, Manning L. Unplanned admission following outpatient otologic surgery: University of Arkansas experience. ***Ear Nose & Throat Journal*** 2000;**79**:713-7.
6. Ahlgren EW, Bennett J, Stephen CR.Outpatient pediatric anaesthesiology; A case series. ***Anesthesia & Analgesia*** 1971;**50**:402-8.
7. Davenport HT, Shah CP, Robson GC. Day surgery for children. ***Canadian Medical Association Journal*** 1973;**105**:498-500.
8. Jones SEE, Smith BSC. Anaesthesia for pediatric day surgery. ***Journal of Pediatric Surgery*** 1980;**15**:31-3.