

Evaluation of Unanticipated Admissions Following Paediatric Day-Case Surgery in the University of Ilorin Teaching Hospital.

M.B. Adegboye, I.K. Kolawole, A.O. Abdulrahman, O.I. Uwadiae,
Department of Anaesthesia, University of Ilorin Teaching Hospital, Nigeria

Abstract

Paediatric patients scheduled for ambulatory surgery in our environment has been on the increase. These patients would undergo different surgical procedures with the intent of going home after the surgery with little or no complications. This study was a retrospective evaluation of unanticipated admission following paediatric day-case surgery.

A retrospective data of ambulatory paediatric surgeries done between 2015 and 2016 was collected; unanticipated hospital admission and the reason for admission were analysed. A total of 69(7.40%) patients out of the total number of 932 paediatric general surgery cases had day-case surgery within the period under study, 13(18.90%) of the patients were less than 1 year, while 56(81.10%) of the patients were above one-year-old. Herniotomy was the most common surgical procedure in 57(82.60%) of the day case procedures, 43(62.30%) of the cases were completed in less than one hour while 26(37.70%) of the surgical procedures were completed between one and three hours. None of the patients had a post anaesthesia discharge score (PADS) below 8. General anaesthesia with a facemask or laryngeal mask airway with or without caudal block was the most common anaesthetic technique in 58(79.60%) of cases, while general anaesthesia with relaxant technique with or without caudal block was the anaesthetic technique in 8(11.50%) of cases. There were no recorded cases of unanticipated postoperative admission. In conclusion, there was no incidence of unanticipated hospital admission following day-case surgery in our centre because of proper patient selection, team cooperation, safe anaesthetic and surgical practice with proper discharge criteria.

Keywords: ambulatory surgery, complications, admission.

Introduction

Day case or ambulatory anaesthesia is as old as the history of anaesthesia. A day case is when a patient is admitted for investigation or operation on a planned non-residential basis.¹ According to international terminology, day surgery or ambulatory surgery is the admission of selected patients to hospital for a planned, non-emergency surgical procedure, returning home on the same day.² In the last few decades, it has gained significant popularity due to its enormous cost saving.³ In ambulatory surgery, admission, anaesthetic review, surgery, recovery and discharge of the patients are carried out on the same day and this offers an advantage to both the patient and the health care provider. Paediatric ambulatory surgery has been on the increase in our environment.⁴ However, proper patient selection through perioperative screening and appropriate anaesthetic technique target at rapid onset and recovery with minimal or no postoperative complications and thus enhancing early discharge.⁵ The requirements for anaesthesia for day-care surgery are those of any anaesthetic agent having rapid, painless induction, profound analgesia and anaesthesia without depression of the cardiovascular and respiratory system and rapid smooth recovery.⁶ Different options are available e.g. general anaesthesia with newer short-acting agents e.g. propofol and sevoflurane⁷ or regional anaesthesia techniques.⁸ Advantages of regional anaesthesia over general anaesthesia include less cardiovascular or respiratory complications, less initial postoperative pain, patient's ability to communicate with the surgeon and reduced cost of drugs and equipment involved in regional anaesthesia.⁹ Unanticipated admission whatever the cause is an indicator of the quality-of-care because it negates the basic goal of preventing hospitalization and same-day discharge.¹⁰ Unanticipated admission following ambulatory surgery has been suggested as a marker for patient safety, quality of ambulatory surgery, and anaesthesia practice, as well as a way to identify patient types that are unsuitable for ambulatory surgery.^{11,12} This unanticipated admission can result in an inflated cost to an already stressed healthcare system.^{13,14} Some factors have been found associated with unanticipated admission and they include postoperative pain, ASA III or IV, emesis, male gender, long duration of surgery and ear, nose and throat surgery.¹⁵ Therefore, for efficiency, patient safety and parental satisfaction it is important that we are aware of some of these factors that may increase the likelihood of unanticipated admission.

Correspondence to:

Dr M.B. Adegboye,
Department of Anaesthesia,
University of Ilorin Teaching Hospital,
PMB 1459, Ilorin, Nigeria.
E-mail: jidodedoc2000@yahoo.com
Tel: +234 8030681607

Whippey et al¹⁵ reported an incidence of 0.97% of unanticipated admission in the paediatric population in Canada. While a tertiary centre in Ireland reported an incidence of 2.20% of unanticipated admissions from ambulatory surgery in children.¹⁶ This study was a retrospective evaluation of unanticipated admissions following paediatric day-case surgeries in our centre.

Methods

This was a retrospective observational study of the case notes and anaesthetic records of all ambulatory paediatric surgeries done between January 2015 and December 2016. This study was carried out after due ethical clearance was obtained. Data that were collected include patients' demographic characteristics, anaesthetic techniques, postoperative analgesics, the incidence of unanticipated hospital admission (defined as patients admitted postoperatively from day case surgeries for up to 24 hours from the time of surgery, including those who may have been discharged home) and the reason for admission. Data were analysed using the IBM SPSS Statistics for Windows, Version 23.0 Armonk, NY, IBM Crop software and results were presented as frequencies and percentages.

Result

A total of 69 (7.40%) patients out of the total number of 932 paediatric general surgery cases had day case surgery within the period under study. Out of these, 65 were males and 4 were females; 13 (18.90%) of the patients were less than 1 year, while 56 (81.10%) were above 1 year of age. The mean age was 3.0 ± 0.9 years. All patients were ASA 1 or II. Table 1: Herniotomy 57 (82.60%) was the commonest surgical procedure, while hydrocelectomy 1 (1.45%) and laparoscopic herniotomy 1 (1.45%) were the least surgical procedures performed. Table 2: General anaesthesia with facemask was the most common anaesthetic technique, used in 30 (43.48%) of cases. General anaesthesia with laryngeal mask airway (LMA) in 28 (40.58%) of the cases. General anaesthesia with relaxant technique was the anaesthetic technique in 8 (11.59%) of cases. Local anaesthesia with sedation was used in 2 (2.90%) cases while 1 (1.45%) case was done under subarachnoid block. Forty-three (62.30%) of the surgical procedures were completed in less than 1 hour while 24 (34.80%) were completed between 1-2 hours and 2 (2.90%) were completed between 2-3 hours. None of the patients had a post anaesthesia discharge score (PADS) below 8 at the time of discharge from the post anaesthesia care unit. Thirty-five (50.72%) of the patients were discharged home on paracetamol and ibuprofen. Twenty-nine (42.03%) on paracetamol alone. Four (5.80%) on ibuprofen alone. One patient had only caudal anaesthesia (1.45%). None of the patients that had post-operative

complication met our definition of unanticipated post-operative admission after day-case surgery. The 4 (5.80%) patients that had post-operative complication presented after 24 hours postoperatively and all were surgically related (surgical site infection) but only 1 (1.45%) was eventually admitted who was managed and eventually discharged home 6 days after admission.

Table 1: Various surgical procedures used for paediatric day case surgeries

Surgical procedures	Frequency	Percent%
Herniotomy	57	82.60
Orchidopexy	3	4.35
Rectal biopsy	3	4.35
Release of tongue tie	2	2.90
Herniorrhaphy	2	2.90
Hydrocelectomy	1	1.45
Laparoscopic herniotomy	1	1.45
Total N(%)	69	100

Table 2: Different types of anaesthetic techniques used for paediatric day case surgeries

Anaesthetic techniques	Frequency	Percent%
GA with face masks	21	30.43
GA with LMA	25	36.23
GA with facemask and caudal block	9	13.05
GART	7	10.14
GA with LMA and caudal block	3	4.35
LA with sedation	2	2.90
GART with caudal block	1	1.45
Spinal anaesthesia	1	1.45
Total N (%)	69	100

LMA- Laryngeal masks airway, GA-General anaesthesia, GART-General anaesthesia with relaxant technique

Discussion

There was no incidence of unanticipated postoperative admission for paediatric day-case surgical cases in our centre, which was lower than that reported by Imerengiaye (5%) et al.¹⁷ In the study mentioned above the common complication that led to unanticipated admission was pain which significantly led to delayed discharge. However, Alagbe-Briggs and Onajin-Obembe¹⁸ also reported no case of unanticipated postoperative admission after paediatric ambulatory surgery which was similar to our findings. Jacob¹⁹ concluded that the higher the surgical risk categories and the ASA status the higher the incidence

of perioperative complication, this explains why we had a no incidence of unanticipated postoperative admission because all the cases were either ASA I or II. Various anaesthetic options are available for the care of the ambulatory paediatric patient. General anaesthesia was the major anaesthetic technique for patients in this study. A previous study had shown more anaesthesia related complications and longer recovery times after general anaesthesia than regional technique.²⁰ This study 95.65% of the surgical cases performed were amendable to regional technique such as spinal or caudal epidural but only 20.30% had regional anaesthesia with 18.85% of them performed with general anaesthesia plus caudal block. Kokki and colleagues demonstrated the safety and effectiveness of spinal anaesthesia in 195 children aged six months to 10 years undergoing herniotomy.²¹ It may have been expedient to use more of regional techniques such as caudal block with the general anaesthesia as against its occasional use in this study because augments intraoperative anaesthesia and provides good analgesia in the postoperative period. Caudal analgesia is the most useful and popular paediatric regional block in current use.²² Only 50.72% of our patients had paracetamol and ibuprofen with or without caudal anaesthesia for postoperative pain. There was no documentation of unanticipated admission due to pain in this study but it has been documented that for day-case surgery it is better to have a multimodal approach to pain management using a combination of opioids, non-steroidal anti-inflammatory drugs and regional techniques would accelerate postoperative recovery and reduce overnight admission due to pain.^{23,24}

One of the frequently used anaesthetic technique was GA with LMA (40.58%) with limited use of general anaesthesia with relaxant technique in only (11.59%) of the patients. Endotracheal intubation and use of suxamethonium are best avoided in day-case surgery to prevent airway complication and 'suxamethonium pains' that may delay discharge.²⁵ Eyelade²⁶ concluded that laryngeal mask airway (LMA) has beneficial use in spontaneously breathing paediatric patients who presented for day case surgery under general anaesthesia. In our centre, paediatric anaesthesia is usually conducted by using a safe anaesthetic technique and with proper patient selection. Medical causes of unplanned admission are mostly due to preoperative medical disease 'which can be avoided by proper patient selection and adherence to strict criteria of patient's suitability for day-case surgery.'¹⁶ Furthermore, good anaesthetic techniques and strict discharge criteria contributed to how most of our patients were successfully managed.

The main limitation of our study is that it was a retrospective study and some information may have been missed or inaccurate. We relied on the documentation in the case note which in the majority of

the case provided adequate documentation on the factors associated with unanticipated admissions. We conclude that there was no incidence of unanticipated hospital admission following day-case paediatric surgery in our hospital because of team cooperation, proper patient selection, safe anaesthesia and surgical practice with proper discharge criteria.

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