

AUDIT OF THE PRACTICE OF DAY CASE SURGERY IN THE DIVISION OF PAEDIATRIC SURGERY, UNIVERSITY COLLEGE HOSPITAL, IBADAN

D.I Olulana^{1,2}, O.O Ogundoyin^{1,2}, T.A Lawal^{1,2}, K.I Egbuchulem¹, J.O Akpakwu¹, S.A Adegbite¹.

1. Division of Paediatric Surgery, Department of Surgery, University College Hospital, Ibadan.
2. Department of Surgery, University of Ibadan, Ibadan.

Correspondence:

Dr. K.I. Egbuchulem

Division of Paediatric Surgery,
University College Hospital,
Ibadan.

ifeanyiegbuchulem@yahoo.com

Date of Acceptance: 31st Dec., 2022

Publication Date: June 2023

ABSTRACT

Background: Paediatric day case surgery refers to planned procedures on patients on a non-resident basis but requires some facilities and time for recovery before discharge home on the day of surgery. This study was conducted to audit paediatric day case surgery practice at our centre, and to determine the outcome of day case surgeries.

Patients and Methods: This is a retrospective study of cases seen over a period of 12 years, 2010 to 2022. These patients' data were assessed from their case notes and information obtained for each of the patients included age, gender, diagnosis, type of operation, type of anesthesia and post operative complications. The data were analyzed using SPSS version 22.0 for windows.

Results: A total of 1,211 patients were recruited, with a M: F; 6: 1. The age of patients ranged from one week to 15 years with a median age of two years.

A higher proportion of case load involved infants and toddlers compared to the other paediatric age groups. In this review, the largest volume of cases was seen in the last five years with the peak in 2018 (202). The right groin for an isolated diagnosis was operated in 381 (59 %) patients compared to the left 265 (41 %). The mean duration of surgery time was 40 minutes. Most of the patients had General Anesthesia (GA) with endotracheal tube, face mask, and laryngeal mask airway (LMA) using isoflurane, halothane and propofol at different times as anesthetic agents. There were no re admissions or mortality, however two of our patients had recurrence necessitating a re-do surgery.

Conclusion: Groin hernias are the most common day cases in children in our facility. Day case paediatric surgery is safe, and outcome is generally good, when well managed.

Keywords: Audit, Day case, Nigerian, Paediatric, Surgery

INTRODUCTION

The concept of Paediatric day case surgery is becoming an increasingly important part of elective surgery worldwide ranging from groin and genital surgeries to intermediate surgeries such as excision of masses like thyroglossal duct cysts.

Paediatric day case surgery is defined as planned investigations or procedures on patients on a non-resident basis; that is, they are admitted and discharged home on the day of their surgery but requires some facilities and time for recovery.¹⁻³

Day Case Surgery (DCS) - in the USA, is restricted to Surgeries within 23 hours whether there is an overnight stay while in the United Kingdom (UK), surgeries are done without a night stay. Ambulatory surgery, is like DCS (UK)

In the case of an office surgery, the patient returns home few hours after procedure and in outpatient

surgery, the patients are not fully investigated, and no prior admission is made.

Day case paediatric surgery has many advantages including minimal disruption of parents occupational activities with early return to work and normal activity for care givers, reduced waiting list, psychological benefits to both patient and care giver, efficient management- high volume, low risk surgery, reduced complications, Job satisfaction to the surgical team, little change in children environment and less time off school, cost benefit, risk of contracting nosocomial infection is eliminated, other siblings at home can be catered for too. It is advised that families should attend a pre-assessment visit to allow for a thorough explanation of peri-operative sequence of events with particular emphasis on pre-operative fasting and regular medications.¹⁻⁵

Patient Selection Criteria

Day case surgery is particularly appropriate for children provided, the operation is not complex or prolonged and the child is healthy with no significant co-existing medical illness.⁶

1. Patient and medical related factors; include Term baby greater than one month of age, Preterm baby greater than 60 weeks, well controlled systemic disease, the patient should not have inborn errors of metabolism, should not have complex cardiac disease requiring investigations, should not be Hemoglobin SS patient and no ongoing active infection especially respiratory tract infection.

2. Anaesthetic and Surgical factors; include Experienced surgeon or anesthetist, short procedure not greater than one hour, no opening of body cavity, pre-operative baseline PCV greater than 30 %, Minimal blood loss and no need for transfusion, post-operative pain should be relieved by oral analgesics alone, should not have difficult airway, not be susceptible to malignant hyperthermia, not a sibling of a victim of sudden infant death syndrome.

3. Social factors: Caregivers consent, and their willingness to care for the child at home post-operatively, good housing condition, should have telephone line, Journey time to hospital less than one-hour, Adequate post-operative transport arrangement.⁷⁻⁹

There has been a gradual increase in the number of patients treated as day case surgeries in our division and this informed the decision to conduct this review to audit Paediatric day case surgery practice in the Division of Paediatric surgery, University College Hospital, Ibadan.

PATIENTS AND METHODS

This is a retrospective study over a period of 12 years of our surgical records of paediatric day case surgeries between May 2010 and May 2022.

Data were collated and presented as descriptive statistics such as charts and bi variate analysis done as necessary.

The patients scheduled for surgeries were assessed in the Paediatric surgical outpatient clinic. Information obtained in pre defined data sheets or protocol sheets included age, gender, diagnosis and type of operation, type of anaesthesia, cadre of surgeon and post operative complications.

Assent was received from patients above 12 years of age and consent was obtained from the parents and their willingness and ability to offer post operative care at home were ensured.

Patients were included if their baseline hematocrits were 30% or above such that when they undergo a short surgical procedure, minimal blood loss and post operative pain is recorded.

All patients with co-morbidities, such as bleeding disorders, haemoglobinopathies, asthma, cardiac anomalies and respiratory tract infections were exempted.

Also, upper, and lower GI endoscopic procedures, urological endoscopies, outpatient procedures such as neonatal circumcisions and ward procedures such as biopsies and drainage of abscess, minor surgeries done as adjunct to major surgeries, day case surgeries with poor recovery from anaesthesia requiring overnight stay, ASA III and beyond, preterm babies less than three months and surgery time lasting greater than one hour were all excluded.

The data were analyzed using SPSS version 22.0 for windows (SPSS Inc, Chicago, IL).

RESULTS

The age of patients ranged from one week to 15 years with a median age of two years. [Figure 1].

A total of 1,211 patients were recruited, Males 1,038 (86%) while Females 173 (14 %) giving a M: F; 6: 1. A higher proportion of case load involved infants and toddlers compared to other Paediatric age groups. [Figure 2].

In this review, the largest volume of cases was seen in the last five years with the peak in 2018 (202). The monthly average is highest in May and September.

The right groin for an isolated diagnosis was operated in 381 (59%) patients compared to the left 265 (41%). Right sided inguinal hernia was most operated condition across cadres of surgeons. [Figure 3].

Over 70 % of cases were carried out by the Residents. Residents were more likely to operate more of groin hernia than other conditions. [Figure 4]. The cadre of Surgeons did not statistically influence the type of Surgery performed ($X^2 = 0.62$).

There was no re-admission from home. Two patients had procedure related morbidity of recurrence of

inguinal hernia necessitating re-operation. The length of follow up ranged from one week to two years and the mean duration of surgery time is 40 minutes. The choice of anaesthesia was based on the type of procedure and the age of the patient with most patients having General Anaesthesia (GA): GA - Endo Tracheal Tube - 15%, Facemask - 60%, LMA - 20% using inhalational agents like Isoflurane, Halothane, and intravenous agents such as Propofol; Spinal Anaesthesia less than 5%, Caudal block - variable.

Teaching Hospital Complex (OAUTHc), Ile-Ife, Jos University Teaching Hospital, Jos.^{1,7}

A significant number of our patients have been treated as day cases since the inception of the unit.^{10,11} This has allowed for the treatment of a large volume of patients even though there is no dedicated paediatric surgical Day Case Unit (DSU), with only fourteen inpatient beds available for admission of children with surgical conditions. DSU can be classified in terms of their physical and organizational link with the hospitals into:



Figure 4: Intra operative demonstration of the right testis in a day case surgery-orchidopexy for right undescended testis.

The patients were observed on C1 Ist ward designated as the post anesthesia care unit for day cases for at most eight hours with median of four hours.

Two (1.1%) patients who had herniotomy developed superficial surgical site infections which were managed as outpatients, two had recurrence necessitating a redo surgery. There were no re admissions or mortality.

DISCUSSION

Historically, in the mid twentieth century, Walter Reed set up the first free-standing Day Surgery Unit (DSU) in America and DSU became established in most UK hospitals in the 70's.³

The care of Paediatric surgery in this institution started as early as 1978 and metamorphosed to a division in 2002 with increasing case load of unmet surgical needs. Paediatric day case surgery is still evolving in our institution, and we do not have a dedicated day care unit, theatre, or ward. However, Paediatric day case surgery is an established practice in some centres in Nigeria such as Obafemi Awolowo University

Integrated units: (Type I and Type II); Autonomous units; Satellite units and Free-standing units.^{7,8,9}

We were able to demonstrate male preponderance like what was found in other studies.^{1,8,9} This will not be unrelated to the fact that most congenital groin swellings are commoner in boys than girls and a large proportion of patients had circumcision related conditions.

The most common indication for day surgery in our centre was herniotomy for groin hernia, followed closely by Circumcisions in infants and older children of which over half of them were completion of Circumcision following a successful previous hypospadias repair and the third being hydroceles. This is like studies done in other parts of Nigeria, where hernias and hydroceles were found to be the most common indications for Paediatric day case surgery.^{1,8-10} However, one report found circumcision to be the most common outpatient procedure in children which is like our practice here however, outpatient surgeries with no planned admission and investigations were excluded in this review.¹¹

Over two third of all day cases were carried out by the Residents. Residents were more likely to operate more of groin hernias than other conditions. This is like other reviews.⁹⁻¹¹

Most of our patients had their surgery done under General Anaesthesia as was reported in other studies involving paediatric day case surgeries.^{1,10,12} We found a complication rate of two percent, with no re admissions and no mortality, and this is generally comparable with findings in most other reports and has been attributed to careful patient selection and stratification. Majority of our paediatric day cases were operated on earlier in the day and this improves the safety of practice in our setting. Those who were operated on at about mid-day were observed for atleast six hours post-surgery and was allowed home same day.

Those who had perioperative morbidity requiring overnight admission were excluded from this review.^{1,7-10}

Cancellation of surgeries were observed in few of our patients 50 (4.1%) due to clinical findings in keeping with upper respiratory tract infection, theatre logistics, unrealistic theatre list, industrial actions among workers. This is in variance to a cancellation rate of 25.4% noted in eighteen patients planned for Orthopaedic day case procedure.¹³ A dedicated day case unit with staff will eliminate day case and in patient competition for theatre space.

There appear to be a steady rise in the case load per year and its peak around 2018 - 2019 with steady decline after wards. This is likely related to the Covid-19 era where we had a reduction in the patient load in the hospital. The other periods of troughs in the preceding years were periods of industrial actions in the hospital and is similar to reports by Lawal and colleagues.¹⁰

CONCLUSION

Groin hernias are the most common day case in children presenting in our facility and is associated with low morbidity and no mortality.

Day case Paediatric surgery is safe with generally good outcome.

RECOMMENDATIONS

1. With the rise in the patient load for day case surgery over this time and the increasingly need for majority of elective Paediatric surgery to be done on a day basis, a well-Staffed children hospital in this region will be necessary.

2. Development and strengthening of transport Medicine to meet this need.
3. The OAUTHc Ile-Ife experience (the First Paediatric DCU in Nigeria) can be replicated in our training institution, the University College Hospital, Ibadan where satellite theatres like Geriatric Centre theatre can be re designated for Day case surgeries.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. **Elebute O**, Ademuyiwa A, Bode C, Idiodi Thomas H. Pediatric day case surgical practice at a tertiary hospital in Lagos: How have we fared? *Ann Med Health Sci Res* 2014; 4:559-561.
2. **Abdulkareem_IH**. Day case surgery in Nigeria. *Niger J Clin Pract* 2011; 14:383-389.
3. **Upadhyaya M**, Lander A. Day case surgery in children. *Surgery (Oxford)* 2013; 31:140-144.
4. **Gangadhar S**, Gopal T, Sathyabhama, Paramesh K. Rapid emergence of day care anaesthesia: A review. *Indian J Anaesth* 2012; 56:336-341.
5. **Kakande I**, Nassali G, Kituuka O. Day care surgery: The norm for elective surgery. *East Cent Afr J Surg* 2005; 10:1 4.
6. **Erden IA**, Pamuk AG, Ocal T, Aypar U. Parental satisfaction with pediatric day case surgery. *Middle East J Anaesthesiol* 2006; 18:1113-1121.
7. **Adejuyigbe O**, Abubakar AM, Sowande OA, Olasinde AA. Day case surgery in children in Ile Ife, Nigeria-An audit. *Niger J Surg* 1998; 5:60-63.
8. **Abdur Rahman LO**, Kolawole IK, Adeniran JO, *et al*. Pediatric day case surgery: Experience from a tertiary health institution in Nigeria. *Ann Afr Med* 2009; 8:163-167.
9. **Usang UE**, Sowande OA, Adejuyigbe O, *et al*. Day case inguinal hernia surgery in Nigerian children: Prospective study. *Afr J Paediatr Surg* 2008; 5:76-78.
10. **Lawal TA**, Olulana DI and Ogundoyin OO. Day case groin surgeries in Ibadan, Nigeria: Spectrum of cases, trends over time and role of residents. *Afr. J. Med. Sci.* (2017) 46, 175-180.
11. **Takure AO**, Shittu OB, Okeke LI, Olapade *et al*. Day case urology at Ibadan, Nigeria: A ten-year review. *Pan Afr Med J* 2010; 6:13.
12. **Kache SA**, Sale D, Ajah JL, Makama JG. Paediatric day-case surgery in a new paediatric surgical unit in Northwestern Nigeria. *Afr J Paediatr Surg* 2018; 15:97-99.
13. **Malizu EV**, Lasebikan OA, Omoke NI. Orthopaedic Day-Case Surgery in Nigeria: A Single-center Experience. *Ann. Afr. Surg.* 2021; 18 (1):52-58