

Paediatric Day Case Surgical Practice at a Tertiary Hospital in Enugu, Nigeria

Chukwubuike Kevin Emeka^{1,*}, Ozor Ignatius Ikemefuna¹, Nduagubam Obinna Chukwuebuka²

¹Department of Surgery, Enugu State University Teaching Hospital, Enugu, Nigeria

²Department of Paediatrics, Enugu State University Teaching Hospital, Enugu, Nigeria

Email address:

chukwubuikeonline@yahoo.com (C. K. Emeka)

*Corresponding author

To cite this article:

Chukwubuike Kevin Emeka, Ozor Ignatius Ikemefuna, Nduagubam Obinna Chukwuebuka. Paediatric Day Case Surgical Practice at a Tertiary Hospital in Enugu, Nigeria. *American Journal of Pediatrics*. Vol. 5, No. 4, 2019, pp. 214-218. doi: 10.11648/j.ajp.20190504.18

Received: September 20, 2019; **Accepted:** October 17, 2019; **Published:** October 21, 2019

Abstract: Background: An increasing number of paediatric day case surgeries are being carried out in developing countries due to the benefits of day case surgery and lots of papers are being published. However, there is no published paper on paediatric day case surgery from Enugu State University Teaching Hospital (ESUTH), Enugu. Methodology: This was a prospective study of children who had surgery on day case basis at the paediatric surgery unit of a tertiary hospital in Enugu, south east Nigeria, over a period of one year. Result: Out of the 135 surgeries done during the period of the study, 81 cases were day case surgeries, accounting for 60% of the cases. There were 69 males (85.2%) and 12 females (14.8%). The mean age and weight of the patients was 44.9 months and 16.5 kilograms respectively. The mean duration of surgery was 35.1 minutes while the mean duration of stay in the hospital post-surgery before going home was 5.2 hours. The most common diagnosis was hydrocele and herniotomy/herniorrhaphy was the most common surgical procedure performed. Conclusion: Paediatric day case surgery constitutes a significant workload of the paediatric surgeon. Herniotomy/herniorrhaphy was the most common procedure performed and most parents were satisfied. The scope of paediatric day case can be improved and the practice made more effective.

Keywords: Day Case, Surgical, Tertiary, Hospital, Paediatric

1. Introduction

Day case surgery is defined as planned procedure on patients who are admitted and discharged on the same day of their procedure but requires some facilities and time to fully recover before going home. Procedures done in the outpatient clinics and accident/emergency department are not regarded as day case surgery. In United States of America (USA), the concept of day case surgery is referred to as ambulatory surgery and includes patients who spend up to 23 hours in hospital [1]. Historically, the practice of day case surgery was first reported by Nicoll in 1909. Nicoll presented, to the British Medical Association, the data of 8,988 day case operations done at Glasgow Royal Hospital for sick children over a period of ten years [2]. Several studies have alluded to the benefits of day case surgery. These benefits include reduced hospital cost, less time away from home, reduction

in waiting list and reduced incidence of nosocomial infection. Others are less disruption of family life, less psychological, behavioural and emotional stress to the patient and parents [1, 3, 4-6]. The concept of day case is becoming an increasing important aspect of elective surgery worldwide and is growing in popularity due to convenience and cost effectiveness. Sometime in the past, day case surgery constituted 60% and 50% of elective surgeries done in USA and United Kingdom respectively [1]. A wide spectrum of surgical procedures can now be performed in children and the complexity of the procedures continues to increase because of improvements in surgical and anaesthetic techniques [1, 7]. A larger number of paediatric patients are now considered suitable for day case surgery and the trend is shifting from conventional inpatient management of surgical cases to day case surgical treatment [5, 8]. Essential requirement for day case surgery is proper patient selection and planning to avoid cancellations and unnecessary admission. Essential

requirement for anaesthetic technique is rapid, smooth induction, good operating condition and prompt recovery with no postoperative problems [3, 9]. Paediatric patients booked for day case surgery should be managed by a multidisciplinary team comprising paediatric surgeon, paediatrician, paediatric anaesthetist and paediatric nurses [10].

2. Methodology

This study was a prospective study of paediatric patients that had day case surgery at paediatric surgery unit of Enugu State University Teaching Hospital, Enugu. This study covered a period of one year, January 1st to December 31st 2018.

The patients were preoperatively evaluated and selection was based on clinical and laboratory parameters. Paediatric patients, from birth to the age of 15 years, found to be clinically fit and whose haemoglobin level is greater or equal to 10g per dl, were recruited into the study. Preterm infants that are less than 60 weeks post conception were excluded from the study. This is due to the high risk of postoperative apnoea in these preterm infants. Parents unable/reluctant to take care of the child in the postoperative period were also excluded from the study. We excluded all cases of circumcision.

The parents were counselled about the diagnosis, surgical treatment and offer of a discharge home on the day of surgery. Informed consent was obtained. The time to report to the ward and when to stop feeding the child were explained to the parents. The patients were reviewed 24 hours before surgery by the surgeon and anaesthetist who prescribed the anaesthetic drugs. This review provides for early detection of possible problems and reduction in the frequency of cancellations. The surgical procedures were performed by consultant paediatric surgeon or resident doctors, under the consultant's supervision. Postoperatively, the patients were taken to the recovery room and subsequently transferred to the ward. Before the patients are taken home by the parents, the patients were reviewed and drugs prescribed which included oral analgesics and antibiotics. The patients were reviewed on the sixth day post-surgery in the clinic. Data collected from the patients included age, gender, weight, distance from home to hospital, number of visits to the clinic before surgery, diagnosis, method of anaesthesia, surgical procedure performed, cadre of surgeon and anaesthetist, duration of surgery, post-operative complications and parents' satisfaction. The parents' satisfaction was assessed using a scale of one to ten. A score of one stands for lowest satisfaction while a score of ten stands for maximum satisfaction.

3. Results

3.1. Demography

During the period of the study, a total of 135 surgeries

were done out of which 81 cases (60%) were day case surgeries. There were 69 males (85.2%) and 12 females (14.8%), with a male to female ratio of 5.75:1. The mean age and weight of the patients was 44.9 months (range: 2 - 178) and 16.5 kilograms (range: 6 - 96) respectively. The mean duration of surgery was 35.1 minutes (range: 20 - 52) while the mean duration of stay in the hospital post-surgery before going home was 5.2 hours (range: 2 - 8). Sixty two patients (76.5%) of the patients live, with their parents, within 5 to 10 kilometers from the hospital. Eleven patients (13.6%) live less than 5 kilometers while eight patients (9.9%) live more than 10 kilometers from the hospital (Table 1).

Table 1. Demographic characteristics of the patients.

| Categories | Number | Percentage/Range |
|--------------------------------------|--------|------------------|
| Gender | | |
| Female | 12 | 14.8 |
| Male | 69 | 85.2 |
| Distance from home | | |
| Less than 5 kilometers | 11 | 13.6 |
| 5 to 10 kilometers | 62 | 76.5 |
| More than 10 kilometers | 8 | 9.9 |
| Mean | | |
| Age (in months) | 44.9 | 2 - 178 |
| Weight (in kilograms) | 16.5 | 6 - 96 |
| Duration of surgery (in minutes) | 35.1 | 20 - 52 |
| Duration of hospital stay (in hours) | 5.2 | 2 - 8 |

3.2. Diagnosis

Thirty eight patients (46.9%) had hydrocele, twenty one patients (25.9%) had inguinal hernia, eight patients (9.9%) had undescended testis and five patients (6.2%) had superficial masses such as lipoma and dermoid. Umbilical hernia and penoglanular adhesion was seen in four patients (4.9%) each. Only one patient (1.2%) had meatal stenosis, as shown in Table 2.

Table 2. Diagnosis of the patients.

| Diagnosis | Number | Percentage |
|-----------------------|--------|------------|
| Hydrocele | 38 | 46.9 |
| Inguinal hernia | 21 | 25.9 |
| Undescended testis | 8 | 9.9 |
| Superficial masses | 5 | 6.2 |
| Umbilical hernia | 4 | 4.9 |
| Penoglanular adhesion | 4 | 4.9 |
| Meatal stenosis | 1 | 1.2 |

3.3. Procedures Performed

Fifty nine patients (72.8%) had herniotomy with or without herniorrhaphy. These are patients that had hydroceles and hernias. Eight patients (9.9%) had orchidopexy which is the surgical procedure done for undescended testis. Superficial masses such as lipomas and dermoids were treated by surgical excision and this was done in five patients accounting for 6.2%. Patients that presented with penile adhesions and umbilical hernias had release of penoglanular adhesions and umbilical herniorrhaphy respectively. There were four patients (4.9%) in each group. One patient (1.2%)

had meatotomy for meatal stenosis (Table 3).

Table 3. Surgical procedures performed on the patients.

| Surgical procedure | Number | Percentage |
|-----------------------------------|--------|------------|
| Herniotomy ± herniorrhaphy | 59 | 72.8 |
| Orchidopexy | 8 | 9.9 |
| Excision of masses | 5 | 6.2 |
| Umbilical herniorrhaphy | 4 | 4.9 |
| Release of penoglanular adhesions | 4 | 4.9 |
| Meatotomy | 1 | 1.2 |

3.4. Cadre of the Surgeon and Anaesthetist

Sixty two procedures (76.5%) were performed by the consultant paediatric surgeon while the resident doctors in surgery, under supervision, performed nineteen procedures (23.5%). Fifty six patients (69.1%) were anaesthetized by the consultant anaesthetist and twenty five patients (30.9%) were anaesthetized by the resident doctors in anaesthesia.

3.5. Anaesthesia and Post-operative Outcome

Seventy seven patients (95.1%) had their procedure done under general anaesthesia with endotracheal intubation while four patients (4.9%) had general anaesthesia with facemask for their procedure. No procedure was done under local anaesthesia. Two patients (2.4%) had post anaesthesia complications which included nausea, vomiting and severe pain that necessitated admission into the ward. One patient (1.2%) developed surgical site infection post-operatively while 80 patients (98.8%) did not develop any complications. There was no mortality.

3.6. Parents' Satisfaction

The mean number of visits to the clinic before surgery was done was 3 visits (range: 2 – 5). Assessing parents satisfaction, the mean score was 8 (range: 1 – 10) which meant that most of the parents were satisfied with the treatment of their children on day care basis.

4. Discussion

Children achieve better convalescence at home because of lack of separation trauma and comfort of the home environment. Paediatric day case surgery, which is also known as same day paediatric surgery, outpatient paediatric surgery, short stay paediatric surgery, one day paediatric surgery, is ideal for children as overnight admission can be distressing. Prugh et al in their study of children admitted in hospital recorded 92% incidence of behavioural disturbances at home after typical in-patient admission [11]. The benefits of day case surgery are immense. Day case surgery for children requires good planning and dedicated unit under a robust medical leadership. Since the commencement of day case surgery in Enugu State University Teaching Hospital in the 1990s, there has been a remarkable increase in the number of procedure and number of patients treated on day case basis.

Sixty percent of our patients were treated on day case basis

which is similar to the findings of other studies [3, 12, 13]. Currently, in United States and Canada, up to 70% to 80% of paediatric cases are done as day cases [14]. A survey conducted in 2006 across 19 countries showed extremely wide variations in the percentage of day cases among countries [14]. In the current study, obviously more males than females were treated on day case basis. This finding of male predominance is consistently observed in many other reports too [8, 12, 15, 16]. The mean age and weight of our patients are in line with the findings of similar studies [15, 17, 18] while it varies with the report of other studies [12, 19]. These variations in findings may be explained by differences in the patients recruited by the researchers, geographical location and the period of the study. With regards to the duration of surgery and duration of hospital stay after surgery; our findings are similar to the report of Rode et al [17]. Most of our patients live within 10 kilometers radius from the hospital. The eight patients (9.9%) that lived beyond 10 kilometers from the hospital could reach the hospital in less than 30 minutes through private or public transport. The proximity of the hospital to the patients could be explained by the location of the hospital in the centre of the town which makes it accessible.

Seventy two percent of our patients had herniotomy with or without herniorrhaphy for hydrocele and inguinal hernia. This finding is supported by reports of previous workers [12, 20, 21]. Other procedures performed include orchidopexy for undescended testis, excision of masses and umbilical herniorrhaphy. This is similar to the findings of other studies [12, 16]. However, some of the studies included other procedures such as circumcisions, rectal biopsies, Sistrunk operations, release of tongue tie and syndactyly which were not included in the current study [18, 15].

Most of our day surgery cases were performed by consultant paediatric surgeon and consultant anaesthetist. Calder et al in their study reported that 80% of the paediatric day cases were performed by consultant paediatric surgeon which is similar to our finding [22]. Resident doctors can be allowed to perform day case surgeries but under strict supervision of the consultant.

All the day cases were done under general anaesthesia. Majority of the patients had endotracheal intubation. This finding on the technique of anaesthesia, is not in agreement with some other studies. Imarengiaye et al and Sadler et al in their separate studies on day case surgeries reported that facemask anaesthetic technique was used more than endotracheal intubation [15, 23]. However, Moore et al in his report stated that there is no general agreement on the most appropriate choice of anaesthetic technique with regards to paediatric day case surgery [24].

A few of our patients had post-anaesthesia complications. Ojo et al and Brennan et al documented that the most common post-anaesthetic complications are nausea, vomiting, dizziness and intractable pain [9, 25]. These were also the complications we recorded in 2.4% of our patients which is close to 1% to 2% quoted by Brennan et al [25]. Only one of our patients (1.2%) developed surgical site

infection. This finding is consistent with the report of Kache *et al* [18]. However, Kekre *et al* reported a surgical site infection incidence of 0.41% [26]. Other studies have reported incidences as high as 8-10% in developing countries [27, 28]. These differences in the incidence of surgical site infection following paediatric day case surgery are difficult to explain.

Assessing the parents' satisfaction using a scale of one to ten, the mean score was 8. Two parents (2.5%), out of the 81, were not happy with the day case surgery service. One parent explained that she visited the clinic severally (mean number of visits of 3) before her child was booked for surgery and the other parent was the one whose child had surgical site infection. The parent felt that the wound infection would have been avoided if the child was admitted in the hospital after surgery. Elebute *et al* in their study reported parental dissatisfaction with nursing care and waiting room environment during day care surgery service [8].

5. Conclusion

Sixty percent of the surgeries performed in the paediatric surgery unit of our hospital were day case surgeries. Hydrocele was the most common diagnosis and herniotomy/herniorrhaphy was the most common procedure performed. Most procedures were performed by consultants and most parents were satisfied with the paediatric surgical services. It is important to establish a day case surgery unit as this will help the hospital in providing more efficient and effective day care surgery services. We suggest that day case surgery should be incorporated into the National healthcare policy designs because it reduces hospital stay and cost. Audits and continuous surveillance of the practice of day case surgery will allow response to the need of children/parents and prevent untoward perioperative outcomes.

References

- [1] Abdulkareem IH. Day case surgery in Nigeria. *Niger J Clin Pract.* 2011; 14: 383-9.
- [2] Chari P, Indu S. Paediatric Ambulatory Surgery. *Indian J Anaesth.* 2004; 387-93.
- [3] Upadhyaya M, Lander A. Day-case surgery in children. *Surgery.* 2013; 31 (3): 140-44.
- [4] Lowri Bowen, Mark Thomas. Paediatric day case surgery. *Anaesthesia and Intensive Care Medicine.* 2016; 17 (6): 274-9.
- [5] Meakin GH. Measle relaxants in paediatric day case surgery. *European Journal of Anaesthesiology.* 2001; 18: 47-52.
- [6] Johnson GG. Day care surgery for infants and children. *Canadian Anaesthesia Society Journal.* 1983; 30: 553.
- [7] Bailey CR, Ahuja M, Bartholomew K, Bew S, Forbes L, Lipp A, Montgomery J, Russon K, Potparic O, Stocker M. *Anaesthesia.* 2019; 74 (6): 778-92.
- [8] Elebute OA, Ademuyiwa AO, Seyi-olajide JO, Bode CO. An audit of parental satisfaction of pediatric day case surgery at Lagos University Teaching Hospital. *J Clin Sci.* 2014; 11: 44-6.
- [9] Ojo EO. Day case surgery and developing countries- A review. *Niger J Clin Pract.* 2010; 13: 459-66.
- [10] Stiff G, Haray PN, Chilcott M, Williams I, Watkins G, Foster ME. Day- Case surgery in children under 2 years of age: Experience in a district general hospital and survey of parental satisfaction. *J R Coll Surg Edinb.* 1996; 41 (6): 408-11.
- [11] Prugh DG, Staub KM, Sands HH, Kirshbaun RM, Lenihan EA. A study of the emotional reactions of children and families to hospitalization and illness. *Am J Orthop.* 1953; 23: 70.
- [12] Abdul-Rahman LO, Kolawole IK, Adeniran JO, Nasir AA, Taiwo JO, Odi T. Pediatric day case surgery: experience from a tertiary health institution in Nigeria. *Ann Afr Med.* 2009; 8 (3): 167-7. doi: 10.4103/1596-3519-57238.
- [13] Postuma R, Ferguson CC, Stanwick RS, Horne JM. Paediatric daycare surgery: a 30 year hospital experience. *J Ped Surg.* 1987; 22: 304-7.
- [14] Kala SK, Sharma SK. Day Care Surgery in Tertiary Level Hospital. *Int. J. Life. Sci. Scienti. Res.,* 2018; 4 (5): 1960-68.
- [15] Imarengiaye C, Osifo D, Tudjegbe S, Evbuomwan I. *West African journal of medicine.* 2009; 28 (5): 304-7. doi: 10.4314/wajm.v28i5.55006.
- [16] Bittmann S, Ulus H. Parent satisfaction with paediatric day-surgery: a questionnaire-based study. *Journal of Ambulatory Surgery.* 2004; 11: 3-5.
- [17] Rode H, Millar AJW, McCormack D, Prescott CAJ, O'Leary P, Cywes S. *S Afr Med J.* 1994; 84: 829-833.
- [18] 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: 97-9.
- [19] Adenekan AT. Perioperative blood glucose in a paediatric daycare facility: Effect of fasting and maintenance fluid. *Afr J Paediatr Surg.* 2014; 11: 317-22.
- [20] Akpoduado DD, Imarengiaye C, Edomwonyi NP. Caudal analgesia for herniotomy: Comparative evaluation of two dose schemes of bupivacaine. *Niger J Clin Pract.* 2016; 20 (2): 205-10. doi: 10.4103/1119.183250.
- [21] Elebute OA, Ademuyiwa AO, Bode CO, Idiodi-Thomas HO. Pediatric Day Case Surgical Practice at a Tertiary Hospital in Lagos: How far Have we fared? *Ann Med Health Sci Res.* 2014; 4 (4): 559-61. doi: 10.4103/2141-9248.139316.
- [22] Calder F, Hurley P, Fernandez C. Paediatric day-case surgery in a district general: a safe option in a dedicated unit. *Ann R Coll Surg Engl.* 2001; 83 (1): 54-57.
- [23] Sadler GP, Richards H, Watkins G, Foster ME. Day-case paediatric surgery: the only choice. *Ann R Surg Engl.* 1992; 74 (2): 130-33.
- [24] Moore EW, Pollard BJ, Elliott RE. Anaesthetic agents in paediatric day case surgery: do they affect outcome? *European Journal of Anaesthesiology.* 2002; 19 (1): 9-17.
- [25] Brennan LJ, Prabhu AJ. Paediatric day-case anaesthesia. *British Journal of Anaesthesia.* 2003; 8 (5): 134-38. DOI: 10.1093/bjacepd/mkg134.

- [26] Kekre G, Dikshit V, Kothari P, Mudkhedkar K, Gupta A, Patil P. Incidence of wound infection in common paediatric day care surgeries following a no-antibiotic protocol: a viable recommendation for a public hospital in India. *Int Surg J*. 2018; 5 (5): 1729-32. Doi: 10.18203/2349-2902.isj20181417.
- [27] Zamkowski MT, Makarewicz W, Ropel J, Bobowicz M, Kakol M, Smietanski M. Antibiotics prophylaxis in open inguinal repair: a literature review and summary of current knowledge. *Videosurgery and other Miniinvasive Techniques*. 2016; 11 (3): 127-36. doi: 10.5114/wiitm.2016.62800.
- [28] Allegranzi B, Nejad SB, Combescure C, Graafmans W, Attar H, Donaldson L et al. Burden of endemic healthcare associated infection in developing countries: systemic review and metaanalysis. *Lancet*. 2010; 377 (9761); 228-41.