ORIGINAL ARTICLE

Modifying and increasing day-case procedures to solve local problems: Experience of a urology unit

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ABSTRACT

Background: Surgical ward congestion continues to be a problem across rural Africa. Day-case surgery has helped minimize this problem in most developed countries but remains underdeveloped across Africa. The objective of this study was to carefully expand day-case services within the framework of already existing hospital infrastructure. **Materials and Methods:** Seventy-one consecutive patients out of 149 mostly urologic patients that met the study criteria were treated and followed up on a daycase basis over a 15-month period. In the absence of a day surgery unit, these patients were prioritized and operated on urologic theater days while adequately utilizing the equipped preoperative holding area for patient recovery. Patients were all nonemergent, of American Society of Anesthesiologists' physical status (ASA-PS) classes 1 and 11 and accepting to undergo day-case procedure among other selection criteria. The main outcome measures were to determine the percentage reduction in admission rate and encountered complications. **Results:** Forty-nine (69%) of these 71 patients were treated using local anesthesia. The day-case surgery rate for the urology service was increased to 47.65% from a previous rate of 21.6%. Six patients (8.4%) felt that their postoperative pain was more significant than they had anticipated. Postoperative nausea and vomiting occurred in two patients (2.8%). There was one case of scrotal hematoma that resolved on observation. There was no mortality. **Conclusions:** In the absence of a dedicated day-case service, individual specialists should develop or increase safe lists of cases in their respective fields that can be done on a day-case basis in order to reduce demand for in-patient beds.

Key words: Day-case surgery, hospital congestion, rural Africa, urology

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INTRODUCTION

Surgical services in many areas of rural Africa, where most of the population reside, are mostly provided by government and mission hospitals in contrast to urban areas where private hospitals play a more substantial role in fulfilling surgical needs of the involved population. Furthermore for a variety of reasons, the majority of the medical workforce practice in the urban settings further compounding the provision of surgical care to the mostly needy rural populace. Hence it is not unusual for the surgical wards to be frequently filled to an "overflowing" situation and the medical staff stretched to the limit. In many hospitals it is not uncommon to see patients share beds or be placed on extra beds placed in between regular beds, hindering movement in the wards.

Access this article online	
Quick Response Code:	Website: www.nigeriamedj.com
	DOI: 10.4103/0300-1652.99828

A complex problem of surgical ward congestion in a low resource economy certainly does not have an easy solution as there are not enough infrastructures, well-trained professionals, and supportive services to tackle the problem head on. Paradoxically in many areas, the structural buildings are not the problem but the lack of professionals in combination with lack of basic supplies and appropriate working incentives. Day-case surgery has been developed in many countries as an important approach in reducing inpatient admissions. Ideally day-case surgery demands a dedicated ward and a dedicated day-case theater or variations of above.[1] Hence day-case surgery should ideally function as a "system" demanding initial capital investment but more importantly incorporating: Surgeons, anesthesiologists, nurses, and other supporting staff dedicated to make the system function. The shortage of a trained workforce and a functioning health network system, in most of the African countries, remain hindering factors to full development of day-case procedures. Hence different options or modifications are needed to help

solve the problem of inpatient congestion with an option being for individual specialists to develop lists of very safe procedures that can be done on a day-case basis but without further demand on the limited workforce in their respective services.

Many minor and major procedures that can be done on a day-case basis abound in the rural areas and many of the patients harboring these pathologies detest the congested wards and more especially the thought of possible "bed sharing." Many urological cases can be done on an outpatient basis. In our hospital, several procedures like circumcision, diagnostic cystoscopy, prostate biopsy, suprapubic cystostomy for urine retention, and dorsal slits for phimosis have commonly been done on an outpatient basis at a reduced admission rate of 21.6% over the period of January to November 2009. The urology service since September 2009 has both a theater and outpatient clinic slots separate from general surgery assigned to it. The purpose of this study was to further increase the number of urology procedures done on a day-case basis using the allocated slots.

MATERIALS AND METHODS

This was a prospective and descriptive study of consecutive series of 71 patients that were treated and followed-up on a day-case basis between December 2009 and February 2011. These patients were treated for urological pathologies that prior to this study were usually admitted to the ward for surgical interventions as well as five cases of unilateral inguinal hernia and three cases of epigastric/umbilical hernia all treated by the lead author on a day-case basis. All other cases that were already commonly done on a outpatient basis; cases of emergency admissions; cases with concomitant medical problems that were assessed as needing in hospital observation; cases whereby patients preferred to be admitted to the hospital; and cases of long-distance travel to the hospital and patients of ASA-PS classes III, IV, and V were excluded from this series.

Several factors including preoperative evaluation with detailed history of symptoms that prompted patient's presentation, medical history with emphasis on patient's fitness for the outpatient procedure, and information on the distance of travel to the hospital were considered when evaluating patients for outpatient day cases. Patients received detailed explanation indicating that they will go back home on the day of surgery and should therefore present with a care giver that will accompany them at home. Laboratory and other investigations were tailored to presenting pathology and symptoms but in all cases hemoglobin count was a basic laboratory work-up. Patients were scheduled for surgery during the outpatient clinic after eligibility was determined. Patients present to the preoperative holding area the morning of surgery where they are prepared for surgery. There is a nurse assigned to the preoperative holding area and this area is equipped with basic equipment for monitoring vital signs. In our hospital, there is no dedicated day-case ward or theater. Surgery is done in one of the main theater rooms allocated to urology. After surgery the patients are again observed at this same preoperative holding area or occasionally in the main recovery room with the participation of their caregivers who then gets introduced to the process of patient monitoring.

Emphasis was placed on using local anesthesia whenever possible. For inguinal hernia, after blind ilioinguinal-iliohypogastric (II-IH) block at 3 cm medial to the anterior superior iliac spine, the method for local anesthesia as reported by Amid *et al*.[2] was utilized with the difference that 1% lidocaine with epinephrine at 1:100,000 was used at a reduced volume of 2-4 ml from the various steps to compensate for the 7-10 ml used for the II-IH block and also for any additional local infiltration along the course of surgery with the aim of not exceeding therapeutic maximum. For scrotal procedures, spermatic cord block using 1% lidocaine was utilized with the additional inclusion of step by step infiltration of the scrotal subdermic, intradermic, and deep subcutaneous layers circumferentially and toward the external inguinal ring and as such copying the step by step local anesthetic approach of Amid *et al*.[2] For patients that were operated on using local anesthesia, adequacy of anesthesia was assessed on the table by continuous communication with the patient. A simplified method of assessing adequacy of intraoperative anesthesia was used; if the patient was comfortable with no pain or at a point during the surgery, had moderate transient pain (per patients description) that was completely alleviated with additional lidocaine infiltration at the surgical site, then the anesthesia was assessed as good; if the patient had significant pain but responded to additional local infiltration, the anesthesia was assessed as fair; and if a patient had any degree of pain that could not be alleviated with local anesthesia but instead needed supplementary intravenous sedation/analgesia, then the anesthesia was assessed as poor. For other procedures where local anesthesia was not possible, sedation/analgesia or general anesthesia as determined by the anesthetist was utilized.

The patients scheduled for day-case procedures were given priority start times over inpatient procedures in order to have adequate time for postoperative monitoring before been discharged home. Subcuticular absorbable stitching was utilized in all cases to avoid need of suture removal. Postoperative care consisted of detailed instruction to the patient on not driving himself home, having the care-giver close-by for at least the first 24 hours, removing the wound dressings after 2 days. Further instructions were also given to both the patient and care-giver on what should prompt calling a contact person at the hospital or possibly returning to the hospital and included uncontrollable pain, excessive

and progressive swelling at area of surgery, large amount of drainage from incision or disruption of an incision and also for any unusual behavior or confusion, otherwise analgesics; combination of NSAID and Acetaminophen was prescribed. Further follow-up depended on individual diagnosis and further plan of treatment; however all patients were to be seen at least 1 month from surgery. In addition patients were encouraged to call the mobile phone number of the lead author or the "surgical emergency number" in the case of any emergency situation after discharge. Mobile phone has been shown to be an effective means of monitoring postoperative patients.[3]

RESULTS

The mean age in our patients was 56.3 years (range of 1-86 years). Over the study period, 149 patients met the inclusion criteria and were seen through the urology service. Seventy-eight patients needing more invasive surgeries were admitted for their surgical procedures while 71 (47.65%) received surgical intervention on a day-case basis [Table 1]. On these 71 patients, a total of 93 procedures were done accounting for bilateral pathologies. All the advanced prostate cancer patients on presentation had indwelling catheters inserted for urinary retention. Forty-nine of our patients were operated on using local anesthesia and included hydrocelectomy; bilateral orchiectomy for hormonal treatment of advanced prostate cancer and unilateral orchiectomy for testicular abscesses; unilateral inguinal herniorrhaphy; epigastric/umbilical herniorrhaphy; spematocelectomy; epididymal cystectomy; and orchiopexy for retractile testes. In 16 patients intravenous sedation/analgesia was used. The choice of intravenous sedation depended on the anesthetist assigned to the urology room on the day of surgery and included varying combinations of Midazolam/Fentanyl/propofol; Propofol/Fentanyl; Midazolam/Fentanyl/ketamine; Midazolam/pethidine/ketamine. Sedation/analgesia was used for the endoscopic urethrotomies. Two cases of orchiopexy were done under a combination of local anesthesia and sedation/analgesia while four other cases of orchiopexy were done under general anesthesia with additional local anesthesia for better postoperative pain control. On adequacy of pain control, 44 of the 49 patients that were operated using local anesthesia had good anesthetic effect while 4 and 1 patients respectively had fair and poor anesthetic effect. The one patient that had poor anesthetic effect had a very large hydrocele with adherent subcutaneous tissues for unknown reasons. Immediate postoperative recovery for all the patients was uneventful with all the patients leaving recovery area between 15 minutes and 2 hours 30 minutes postsurgery with none needing admission. On further follow-up at the outpatient clinic two of the patients (2.8%) that had intravenous sedation/analgesia reported episode of nausea and vomiting at home. Six patients (8.4%) felt that their pain was more significant than they had anticipated but responded to analgesia. There was one case of scrotal hematoma that resolved on observation. There was no mortality. When participants were asked if they would consider and opt for outpatient surgery again; all the patients felt that they would still prefer outpatient procedure over admission to the hospital if they were to make a choice again.

Table 1: Types and number of surgeries done on a day-case basis

Procedure	Number of patients	Laterality	
		Unilateral	Bilateral
Hydrocelectomy	15	11	4
Orchiopexy	8	5	3
Orchiectomy	21	6	15
Inguinal herniorrhaphy	5	5	
DVIU*	16		
Epigastric/umbilical herniorrhaphy	3		
Spermatocelectomy	1		
Epididymal cystectomy	2		
Total	71		

*DVIU=Direct visual internal urethrotomy

DISCUSSION

In this series, we treated 71 patients with mostly urological pathologies on a day-case basis thereby decreasing the number of inpatient admissions to the lead author's service by 47.65% with associated low complication rate. With the allocation of specific theater days to the urology service, we were able to prioritize day-case procedures with these cases done first on the list before in-patient procedures. Furthermore an equipped preoperative holding area was adequately utilized to receive, observe and discharge these patients avoiding admission to the main ward. Across Africa and in institutions where day surgery is practiced, probably all the different models of day-case surgery setup are practiced including separate day-case ward and day-case theater,[4-6] day-case ward but no separate day-case theater,[7] day-case theater but no day-case ward.[8] Many of these authors have demonstrated good outcome measures using these variations with day-case rates of 30.4-65% reported.[4,5,7] Our day-case rate of 47.6% compares favorably with these reports but still far from those from North America where day-case rates of nearly 90% are obtainable;[9] hence there is still room for further improvement. As the desire to expand further to include more demanding cases may naturally arise, it will be our desire that a more dedicated day-case unit should preferably be in place before such expansion. We attribute our low complication rate to very careful patient selection using careful history taking and adequate physical examination to help ascertain fitness of our patients for surgery. Incorporating the ASA-PS classification[10] and limiting patient inclusion to classes I and II may have

further helped exclude more at risk patients for post-operative complications.

An ideal day case surgical service involves establishing a system where there is a dedicated facility and staff to run such a unit.[1] As establishing such a unit is capital intensive[1] and considering the need to develop and expand day surgery in Africa,[11] individual specialists can play a significant role in alleviating the problem by using any of the existing variations of day-case surgery or coming up with modifications that can suit their local environments. In our modification, we have adequately utilized our pre-operative holding area that has all the basic facilities for patient monitoring thereby avoiding congestion of the main recovery room. Since most of our patients were operated on using local anesthesia, the recovery time was usually very short facilitating quick patient turnover. Our modification did succeed in avoiding admitting day-case patients to the general ward and in giving these patients timely access to theatre without significant complication rate and without need for initial capital investment thereby making this approach very practical in a low resource economy like ours.

In this report, we have expanded our list of surgical procedures that can be done on a day-case basis encompassing mostly urological and few general surgical procedures that prior to this study were regularly admitted to the ward with orchiectomy, DVIU, and hydrocelectomy being the most common procedures [Table 1]. However, the spectrum of day-case procedures will certainly depend on the prevailing circumstances in the different institutions as demonstrated in other studies.[4,8] In selecting our cases, emphasis was placed on doing as many of the procedures as possible using local anesthesia. Use of local anesthesia in outpatient procedures has a number of advantages that include shorter recovery period and as such quicker discharge from the hospital;[12,13] lower rate of admission into the hospital;[12] cost effective;[13-15] and better postoperative pain control.[14] Furthermore local anesthesia for the outpatient procedure can be done without need for an anesthesiologist monitoring[16] and this can be especially helpful in many low-resource economies where shortage of anesthesiologists is still significant. Our emphasis on the use of local anesthesia and careful patient selection for short surgical procedures proved its importance in the development of our day-case practice as it helped prevent unplanned admission to the ward, delayed discharge home, and significant complications. As experience, availability of technology, organizational structures, surgical, and anesthetic techniques among many other factors improve, the spectrum of procedures that can be done on a day-case basis in our environment should potentially not be less than what is already obtained in more developed countries where day-case rates of up to 90% are possible.[9]

Day-case surgery has been reported by many authors to be a safe practice and associated with high patient satisfaction.[17-22] Patients' satisfaction and acceptance of day-case procedures in this series were very encouraging. It is then hoped that our experience will encourage more interest in day-case procedures across Africa. There is no doubt that for day-case units to flourish, day-case "champions" who are passionate to the course should be raised and encouraged as mere establishment of day-case units without the needed enthusiastic leadership may fail to bring out the needed results to match the investment.

CONCLUSION

Persisting lack of adequate infrastructures, well-trained professionals, and supportive services among many other factors continues to hinder systemic development of day-case surgery in rural Africa and other low resource economies. In the absence of a functioning day-case service, individual specialists can and should develop safe lists of cases in their respective services that can be done on an outpatient basis with the goal to reduce demand for inpatient beds as well as offer the many advantages of outpatient surgery to qualified patients.

REFERENCES

1. Birch BR. Day case surgery and urology: Present practice and future trends. Br J Urol 1994;74:2-10.
2. Amid PK, Shulman AG, Lichtenstein IL. Local anesthesia for inguinal hernia repair step-by-step procedure. Ann Surg 1994;220:735-7.
3. Okorie CO, Pisters LL, Ndasi HT, Fekadu A. A simplified protocol for evaluating and monitoring urethral stricture patients minimizes cost without compromising patient outcome. Trop Doct 2010;40:134-7.
4. Sowande OA, Takure AO, Salako AA, Badmus TA, Olajide AO, Banjo OO, *et al*. Day case urology in a dedicated day case surgery unit in a Nigerian teaching hospital. Ambul Surg 2009;15.2.
5. Arole G. Day-case oral and maxillofacial surgery in a Nigerian district general hospital: Scope and limitations. Ann R Coll Surg Engl 1998;80:108-10.
6. Mulimba JA, Gakuu LN, Odhiambo MA. Orthopaedics in day surgery. East African Orthopedic Journal 2009;3:19-20.
7. Ojo EO, Ihezue CH, Sule AZ, Dakum NK, Misauno MA. The safety of day case surgery in a developing country. The Journal of One-day surgery 2008;18:13-8.
8. Takure AO, Shittu OB, Okeke LI, Olapade-Olaopa OE, Adebayo SA. Daycase urology at Ibadan, Nigeria: A ten year review. Pan Afr Med J 2010;6:13.
9. Toftgaard C, Parmentier G. International terminology in ambulatory surgery and its worldwide practice. In: Lemos P, Jarrett PE, Philip B, editors. Day Surgery – development and practice. London: International Association for Ambulatory Surgery; 2006. p. 35-60.
10. Dripps RD. New classification of physical status. Anesthesiology 1963;24:111.
11. Ojo EO. Day case surgery and the developing countries: A review. Niger J Clin Pract 2010;13:459-66.
12. Meridy HW. Criteria for selection of ambulatory surgical patients and guidelines for anesthetic management: A retrospective study of 1553 cases. Anesth Analg 1982;61:921-6.
13. Song D, Greilich NB, White PF, Watcha MF, Kendell Tongier W. Recovery profiles and costs of anesthesia for

outpatient unilateral inguinal herniorrhaphy. Anesth Analg 2000;91:876-81.
14. Ezeh UI, Shepherd S, Moore HD, Cooke ID. Morbidity and cost-effectiveness analysis of outpatient analgesia versus general anaesthesia for testicular sperm extraction in men with azoospermia due to defects in spermatogenesis. Human Reprod 1999;14:321-8.
15. Archampong EQ, Darko R. Day surgery at Korle Bu Teaching Hospital: A six year review. West Afr J Med 1996;15:143-8.
16. Callesen T, Bech K, Kehlet H. One-thousand consecutive inguinal hernia repairs under unmonitored local anesthesia. Anesth Analg 2001;93:1373-6.
17. Natof NE. Complications associated with ambulatory surgery. JAMA 1980;244:1116-8.
18. Warner MA, Shields SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anesthesia. JAMA 1993;270:1437-41.
19. Mezei G, Chung F. Return hospital visits and hospital readmissions after ambulatory surgery. Ann Surg 1999;230:721-7.
20. Shnaider I, Chung F. Outcomes in day surgery. Curr Opin Anaesthesiol 2006;19:622-9.
21. Issa MM, Hsiao K, Bassel YS, Bouet R, Young MR, Petros JA. Spermatic cord anaesthesia block for scrotal procedures in outpatient clinic setting. J Urol 2004;172:2358-61.
22. Bain J, Kelly H, Snadden D, Staines H. Day surgery in Scotland: Patient satisfaction and outcomes. Qual Health Care 1999;8:86-91.

How to cite this article: Okorie CO, Pisters LL. Modifying and increasing day-case procedures to solve local problems: Experience of a urology unit. Niger Med J 2012;53:26-30.

Source of Support: Nil, **Conflict of Interest:** None declared.