East African Medical Journal Vol. 84 No. 5 May 2007
THE SCOPE AND UTILISATION OF DAY CASE SURGERY IN A DEVELOPING COUNTRY
E.O. Ojo, FMCS, Department of Surgery, Federal Medical Centre, Gombe, Nigeria, C.H. Ihezue, FRCS, FWACS, FMCS, FICS, A.Z. Sule, FWACS, FMCS, FICS, V.M. Ramyil, FWACS, FMCS and M.A. Misauno, FWACS, Department of Surgery, Jos University Teaching Hospital, Nigeria

Request for reprints to: Dr. E.O. Ojo, Department of Surgery, Federal Medical Centre, Gombe, Nigeria

THE SCOPE AND UTILISATION OF DAY CASE SURGERY IN A DEVELOPING COUNTRY

E.O. OJO, C.H. IHEZUE, A.Z. SULE, V.M. RAMYIL and M.A. MISAUNO

ABSTRACT

Background: **The practice of day case surgery is today an attractive and an appealing one with increase spread to many specialties and many regions of the world. However, there is a great variability in its use and application.**
Objective: **To determine the scope and degree of utilisation of day case surgery in a developing country.**
Design: **A prospective study.**
Setting: **Jos University Teaching Hospital, Jos, Nigeria between January and December 2004.**
Subjects: **One thousand and twenty four patients had elective surgical procedures carried out during the study period out of which, three hundred and twenty procedures were done as day cases.**
Main outcome measures: **There is a changing trend with a great prospect for the practice of day case surgery in the developing world.**
Conclusion: **There is the need to harness all resources and keep abreast with relevant technological drive to realise the full potentials of this practice in this part of the world.**

INTRODUCTION

There has been an increased interest in day case surgery world wide (1). The practice is now available in all surgical specialties although to varied proportions among the various subspecialties (2). There are also wide variations in its utilisation among district health authorities and consultants (2).

The pronounced drift toward day case surgery is driven by an equally impressive technological revolution mainly in the areas of minimal access surgery, interventional radiology, developments in modern anaesthesia and refined management of postoperative pain. These revolutions have led to the development of better operative approaches and broadened scope of practice.

However, the practice of day case surgery in a developing country is still challenged by lack of infrastructures and non-existent dedicated or free-standing day case facilities. This study therefore focuses on the extent of utilisation and the scope of day case surgery under a situation like ours.

MATERIALS AND METHODS

Setting: This work is a prospective study carried out from January to December 2004 in the nine units of the Department of Surgery of the Jos University Teaching Hospital that utilises day case surgical wards and a twin theatre for both day cases and in-patient procedures. Day cases were carried out in the morning before embarking on in-patient operations.

Methodology: The patients were first seen, prepared and booked for surgery in the clinic after satisfying the selection criteria which include: Patients'

willingness to be operated as day case, availability of a responsible adult to accompany the patient home and look after him at home; conducive home environment; haemoglobin of at least 10 gm/dl or packed cell volume of 30%; patients with the American Society of Anaesthesiology (ASA) grades one or two; operations not lasting more than one and half hours; availability of transport to a health facility in the event of a complication occurring at home that needs urgent attention. Excluded were patients on immunosuppressant or steroid therapy, evidence of bleeding diatheses, those residing more than thirty kilometers radius from the hospital and all emergencies.

Patients were operated upon using local, regional, general anaesthesia or sedation with pethidine/diazepam depending on the nature, and the extent of the pathology. All the patients had haemoglobin estimation and urinalysis done while those that underwent general anaesthesia had electrolyte/ urea and haemoglobin genotype in addition. Adults were fasted over night but paediatric patients were allowed intake of clear fluid three hours before operation.

Oral piroxicam was given for post-operative analgesia in adults and paracetamol in children and dyspeptic patients. Combinations of halothane, oxygen and nitrous oxide were used for inhalational general anaesthesia while propofol was used for intravenous general anaesthesia. Premedication was limited to the use of atropine but no sedative/ hypnotic or antiemetic premedications were given.

Intra-operative prophylactic intravenous gentamycin 280 mg at induction of anaesthesia was routinely prescribed for all adult urethrocystoscopies. No antibiotic was given to all clean cases but all dirty cases such as infected in growing toe nails had therapeutic antibiotics.

Postoperative instructions were given to both patients and the responsible adults taking care of them before discharge.

RESULTS

A total of one thousand and twenty four patients had elective surgical procedures carried out by the seven specialties during the period of the study while a total of three hundred and twenty nine procedures were done as day cases in three hundred and eleven patients giving a day case rate of 30.4% (Table 1).

The age distribution ranged between one week and one hundred years with a mean of 39.4 ± 23.1 SD years. Forty nine (15.8%) of the patients were 16 years and below (paediatric age) and more than half of the population (52.7%) were aged 40 years and below. There were 203 males (65.3%) and 108 females (34.7%) giving a male to female ratio of 1.88:1.

Two hundred and sixty three patients (84.6%) and 48 patients (15.4%) were ASA grades one and two respectively. The duration of operation ranged between five and eighty six minutes with a mean duration of 25.59 ± 14.24 SD in minutes. Over 70% of the patients had their procedures carried out in thirty minutes or less.

Figure 1 summarises the nature of procedures carried out as day cases among the studied population while Table 1 shows the distribution of the procedures across the specialties. Endoscopies, hernia repair and excision of various body lumps constituted about 70% of procedures carried out.

Figure 1

Distribution of the study population according to the type of procedures carried out

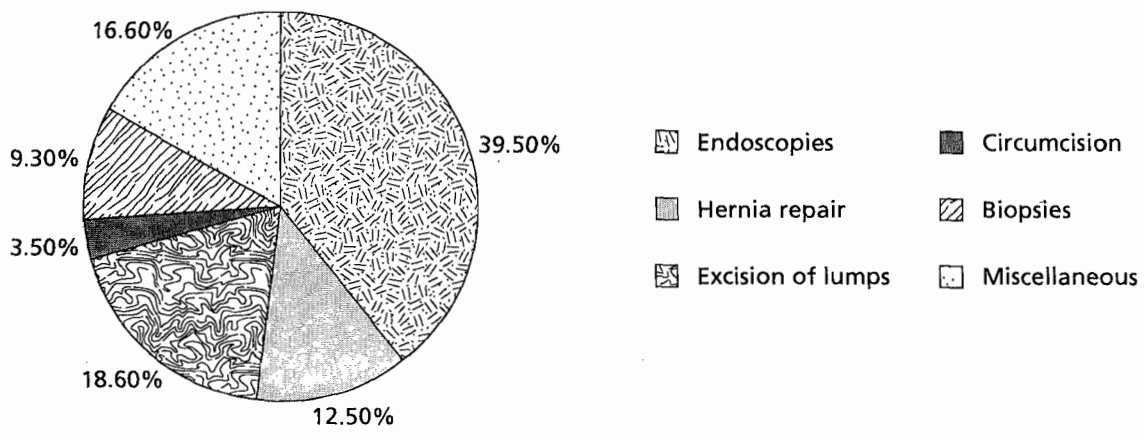


Table 1

Distribution and nature of procedures by specialty

Specialty and procedure	Number of patients	Number of procedures	Percentage of total patients
Gastroenterology/endoscopy			
Oesophagogastroduodenoscopy + biopsy	36	36	11.6
Oesophagogastroduodenoscopy + banding	4	4	1.3
Oesophagogastroduodenoscopy + sclerotheraphy	4	4	1.3
Colonoscopy	2	2	0.6
Proctosigmoidoscopy	1	1	0.3
Total	47	47	15.1
Orthopaedics			
Excision of ganglion	2	2	0.6
Decompression of carpal tunnel syndrome	1	1	0.3
Release of tennosynovitis	1	1	0.3
MUA+POP application	3	3	1.0
Total	7	7	2.3
Plastic surgery			
Keloid excision	5	5	1.6
Revision of scars	3	3	1.0
Incisional and skin biopsies	5	5	1.6
Split thickness skin grafting	1	1	0.3
Excision of extra digit/ haemangioma	2	2	0.6
Finger refashioning	2	2	0.6
Total	18	18	5.8
Ophthalmology			
Eye lumps excision	16	16	5.1
Incision and curettage	4	4	1.3
Suturing of lid laceration	2	2	0.6
Tarsorrhaphy	1	1	0.3
Removal of corneal foreign body	1	1	0.3
Canthal probing/dilatation	1	1	0.3
Repositioning of eye globe	1	1	0.3
Total	26	26	8.4
General surgery			
Hernia repair			
Inguinal	13	15*	4.2
Epigastric	3	4*	1.0
Femoral/ umbilical/ incisional	3	3	0.9
Excision of breast/lipoma/ other lumps	33	33	10.3
Needle and incisional biopsies	12	14*	3.9
Lymph node biopsy	6	6	1.9
Hydrocoelectomy	3	5*	1.0
Zadek's operation	2	2	0.6
Wound closure	2	2	0.6
Incision and drainage	1	1	0.3
Total	77	85	25

Table 1 *(continued)*

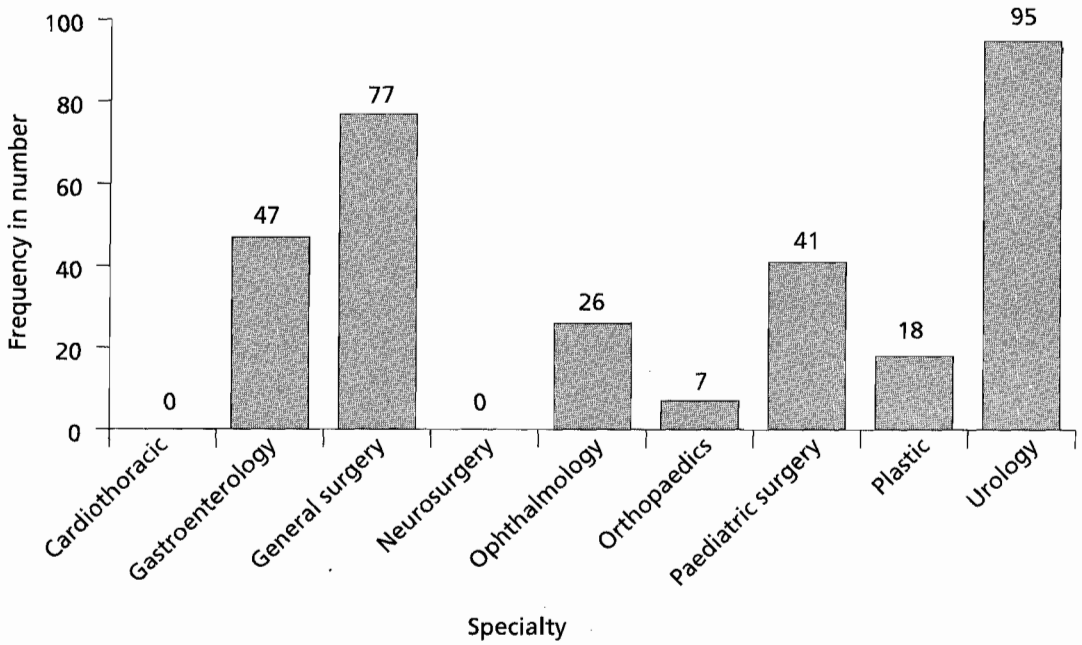
Specialty and procedure	Number of patients	Number of procedures	Percentage of total patients
Urology			
Endourology			
Ucs + biopsy	40	40	12.9
Ucs + Viu/urethral dilatation	27	27	8.7
Ucs + Ruc	4	4	1.3
Ucs + Viu/prostatic biopsy	2	2	0.6
Ucs + J stent removal	3	3	1.0
Urethral dilatation	3	3	1.0
EUA + biopsy	5	5	1.6
Orchidectomy	4	8*	1.3
Orchidopexy	1	1	0.3
Testicular/prostatic biopsy	6	10*	1.9
Total	95	103	30.5
Paediatric surgery			
Hernia repair			
Inguinal	19	21*	6.1
Umbilical	1	1	0.3
Circumcision	11	11	3.5
Release of tongue tie	5	5	1.6
Orchidopexy	2	2	0.6
Meatotomy	1	1	0.3
Anal dilatation	1	1	0.3
Removal nasal foreign body	1	1	0.3
Total	41	43	13
Total	311	329	100

Ucs = Urethrocystoscopy
Ruc = Retrograde ureteric catheterisation
Viu = Visual internal urethrotomy
EUA = Examination under anaesthesia
MUA = Manipulations under anaesthesia
POP = Plaster of Paris
* = Group of patients having more than one procedure

Figure 2 shows the degree of utilisation of day case facilities by the specialties. Urology, general surgery and gastroenterology specialties respectively made the most use of the day case facilities. There is non-utilisation by the cardiothoracic and neurosurgery specialties.

Figure 2

The degree of utilisation of day case facilities by the specialties



DISCUSSION

Day case surgery could be traced historically to biblical Egypt where day case circumcision was performed and anaesthesia achieved by a blow to the head or strangulation (3) but the earliest published report of the concept of day care was from James Nicoll (4) of Royal Hospital for Sick Children, Glasgow in 1909 and the further popularisation of the concept by Eric Farquharson (5) in 1955 in Edinburgh.

Consequent upon the success of these pioneers, there was gradual embracement of day case surgery first in America culminating in the establishment of modern freestanding centre in 1969 (6) and later in Europe with the establishment of many day case centers in the 1970s (7,8). Presently in the western world, Office Surgical Facilities (OSFs) controlled by individual surgeons under the regulations and accreditation of appropriate bodies such as the American Association for Accreditation of Ambulatory Surgery Facilities and the Accreditation Association for Ambulatory Health Care has evolved. Today, day case is practiced worldwide. However, despite its widespread practice, there are variations in the scope of practice largely due to difference in the level of organisation, manpower and technological development.

In this study, endoscopies were the most frequently performed procedure in 123 patients (39.5%) and this has overtaken excision of lumps and hernia surgeries earlier reported in Accra (9). This clearly illustrates the immense contribution of minimally invasive procedures to the practice of day case surgery. Seventy six (24.4%) of the endoscopies were urethrocystoscopies, 44 (14.1%) patients had upper gastrointestinal endoscopies (Oesophagoga-stroduodenoscopy) and three (1%) patients had lower gastrointestinal endoscopy (two colonoscopies and one proctosigmoidoscopy).

The urethrocystoscopies were carried out mainly for investigation of the lower urinary tract symptoms, biopsies of the lower urinary tract lesions, retrograde ureteric catheterisation for upper urinary tract investigation, visual internal urethrotomy, bladder neck incision and retrieval of J stents.

Upper gastrointestinal endoscopies were done for investigation of dyspepsia, epigastric masses with or without biopsy of lesions in 36 (11.6%) patients

while eight (2.6%) patients had endoscopic rubber band ligation and sclerotheraphy (four patients apiece) for controlling upper gastrointestinal bleeding. Colonoscopy and proctosigmoidoscopy were done for investigation of colorectal polyps.

However, despite its huge contribution to day case surgery, we are still limited in our endoscopic experience to upper/lower gastro intestinal endoscopy and urethroscopy. This contrasts with the trends in other parts of the world where more challenging minimal access day case surgeries such as laparoscopic hernia repair (10), fundoplication (11), cholecystectomy (12) are in vogue. There is therefore an imperative need for us to fully embrace the technological drive of day case surgery to keep abreast of recent developments. Training of residents and consultants to acquire the necessary skills in laparoscopic / other minimal access surgery, and acquisition of relevant equipments will boost and widen the horizon of our day case practice.

Excision of body lumps which included breast lumps, lipoma, ganglia, keloids, haemangioma and eye swellings such as pterygia in 58 (18.6%) patients follows endoscopies and these are usually the group of patients that languish on the waiting list while priority is given to operation of more life threatening conditions and emergencies.

Hernia repair was the third most common procedure done in 39 (12.5%) patients made up of 20 adults who had herniorraphies and 19 children who had herniotomies. The other major indications were biopsies that included diagnostic lymph nodes, skin, testicular and incisional biopsies (9.3%), circumcision in 11 patients accounting for 3.5% of the patients. Other miscellaneous procedures effected were orchidectomy/orchidopexy, examinations under anaesthesia for pelvic tumours, hydrocelectomies, Zadek's operations for ingrowing toe nails, incision and curettage for meibomian cysts, finger refashioning, release of tongue ties and secondary wound closure etc.

Our day case surgery rate is 30.4%, which is far below the 50% recommendation by the Royal College of Surgeons of England Commission on the provision of surgical services signifying an under utilisation of the full potentials of day case surgery. Interestingly, some results have shown that the recommended rate is an achievable target. This calls for properly planned, administered and organised day case facilities for attaining this goal.

Our day case utilisation by the various specialties varied widely in this study with urology, general surgery and gastroenterology/endoscopy units contributing 30.5%, 24.8% and 15.1% of the total patient population respectively. This is a similar pattern of day case utilisation found between 1972 and 1978 in Edinburgh by Ruckley *et al* (14) where urology, gastrointestinal and general surgery specialties had the highest day care load. This finding in our study could be attributed to the availability of endoscopes for minimally invasive surgeries that are carried out in short time with a high patient turn over in urology and gastroenterology/endoscopy units and the presence of more teams in our general surgery unit all practising day case surgery. There was zero utilisation of day cases by the neurosurgery and cardiothoracic surgery specialties. Although it is known that these two specialties generally make limited use of day case surgery (15) compared to the others, our absolute zero value indicates the need for an appropriate manpower, protocols and infrastructural development to allow these units operate optimally and provide necessary day case services in these fields.

We conclude that there is a great potential for day case surgery in our setting and we still have a lot to offer despite the paucity of organised day case facilities. However, with the rapid evolutions in the field of day case surgery, if we must keep abreast with this expanding field of surgery and offer the optimal operative procedures/approaches, there must be relevant technological, infrastructural and manpower development. We therefore advocate the establishment of dedicated day case units in all our major and tertiary institutions now and look forward to the establishment of freestanding day case centres in the very near future.

REFERENCES

1. Jiburum B.C. and Akpuaka F.C. Scope and problems of day care surgery in a plastic surgery unit. *West Afr. J. Med.* 1996; **15:** 237-239.
2. Richard S. More day surgery. *Brit. Med. J.* 1990; **301:** 1009-1010.
3. Godwin A.P.L. and Ogg T.W. Preoperative preparation for day surgery. *Brit. J. Hosp. Med.* 1992; **47:** 197-201.
4. Nicoll J.H. The surgery of infancy. *Brit. Med. J.* 1909; **2:** 212-215.

5. Farquharson E.L. Early ambulation with special reference to herniorrhaphy as an outpatient procedure. *Lancet.* 1955; **2:** 517-519.
6. Jean M.M. Day surgery. In: Russell R.C.G., Williams N.S. and Bulstrode C.J.K. (Eds). Bailey and Love's short practice of surgery, 23rd edn. *Oxford University Press.* 2000; 1284-1295.
7. Doran F.S.A, Mary W. and Drury M. The scope and safety of short-stay surgery in the treatment of groin hernia and varicose veins. *Brit. J. Surg.* 1972; **59:** 333-339.
8. Jarrett P.E.M. Provision of a day surgery service. In: Johnson C.D. and Taylor I. (Edn). Recent advances in surgery: Churchill Livingstone., Edinburgh. 1994; **17:** 49-64.
9. Archampong E.Q. and Darko R. Day surgery at Korle Bu Teaching Hospital: A six-year review. *West Afr. J. Med.* 1996; **15:** 143-148.
10. Evans D.S., Ghaneh P. and Khan I.M. Day case laparoscopic hernia repairs. *Brit. J. Surg.* 1996; **83:** 1361-1363.
11. Bailey M.E., Garrett W.V., Nisar A., Boyle N.H. and Slater G.H. Day case laparoscopic Nissen fundoplication. *Brit. J. Surg.* 2003; **90:** 560-562.
12. Johanet H., Laubre.au C., Barei R., *et al.* Outpatient laparoscopic cholecystectomy. *Ann. Chir.* 2002; **127:** 121-125.
13. Guidelines for day case surgery: The Royal College of Surgeons of England. Commission on provision of surgical services. Working party report. 1992.
14. Rainey J.B. and Ruckley C.V. Work of a day-bed unit 1972-8. *Brit. Med. J.* 1979; **2:** 714-717.
15. Archampong E.Q., Yeboah E.D., Osei E.K., Akafo S. and Nkyekyer K. Day surgery. In: Badoe E.A., Archampong E.Q. and da Rocha-Afondu J.T. (Eds). Principles and practice of surgery including pathology in the tropics 3rd Edn. Ghana publishing co-operation, Accra. 1288-1298.