



## An Audit of Laparoscopic Surgeries in Ile-Ife, Nigeria

*Une vérification des chirurgies par laparoscopie à Ile-Ife, au Nigeria*

A. O. Adisa, O. O. Lawal, O. I. Alatise, A. R. K. Adesunkanmi

### ABSTRACT

**BACKGROUND:** After several years of lagging behind due to several constraints, many general surgeons across Nigeria are now performing laparoscopic surgery. An audit of the procedure in our setting is required.

**OBJECTIVE:** To describe the outcome of consecutive laparoscopic general surgical procedures performed at the Obafemi Awolowo University Teaching Hospital, South-western Nigeria.

**METHODS:** All patients with general surgical conditions who had laparoscopic surgery from January 2009 through May 2010 in our hospital were prospectively studied and type of pre, intra and postoperative data including sex, age, indication for surgery, and outcome of the procedure were obtained and analysed.

**RESULTS:** Sixty-two patients (ages 18 to 72 years) had laparoscopic surgeries within the study period. Eighteen (29%) patients had laparoscopic cholecystectomy, 13 (21%) had laparoscopic appendectomy, 10 (16.1%) had laparoscopic adhesiolysis, 7 (11.3%) laparoscopic biopsies of intraabdominal masses while 14(22.6%) others had diagnostic laparoscopies for a range of suspected abdominal conditions. All diagnostic procedures were performed as day cases while the duration of hospital stay was one to two days for the therapeutic procedures. Two(3%) procedures, including a biopsy of hepatic mass and a cholecystectomy were converted to open surgery due to significant haemorrhage. A minor bile duct injury was recorded in one patient who had cholecystectomy and superficial port site wound infections were noticed in two patients who had appendectomy. No mortality was recorded.

**CONCLUSION:** Our results show the feasibility of laparoscopic surgery in Nigeria. We advocate local adaptation and improvisations to increase the use of laparoscopic surgery in Nigerian hospitals. *WAJM* 2011; 30(4): 273–276.

**Keywords:** Laparoscopic Surgery, Local Adaptation, Nigeria.

### RÉSUMÉ

**CONTEXTE:** Après plusieurs années de retard en raison de plusieurs contraintes, de nombreux chirurgiens généralistes à travers le Nigeria sont désormais pratiquer la chirurgie laparoscopique. Un audit de la procédure dans notre réglage n'est nécessaire.

**OBJECTIF:** Décrire les résultats du consécutive laparoscopique générale interventions chirurgicales pratiquées à l'Hôpital Université Obafemi Awolowo d'enseignement, Sud-ouest du Nigeria.

**MÉTHODES:** Tous les patients avec des conditions générales de chirurgie ayant subi une chirurgie laparoscopique de Janvier 2009 à mai 2010 dans notre hôpital ont été étudié de façon prospective et du type de données pré, intra et post-opératoire, y compris le sexe, l'âge, indication de la chirurgie, et l'issue de la procédure ont été obtenus et analysés.

**RÉSULTATS:** Soixante-deux patients (âgés de 18 à 72 ans) avait chirurgies laparoscopiques dans la période d'étude. Dix-huit (29%) patients avaient une cholécystectomie par laparoscopie, 13 (21%) ont eu une appendicectomie laparoscopique, 10 (16,1%) avaient une adhésiolyse laparoscopique, 7 (11,3%) des biopsies par voie laparoscopique des masses intra-abdominale, tandis que 14 (22,6%), d'autres avaient laparoscopies diagnostiques pour une gamme de conditions soupçonnés abdominale. Toutes les procédures de diagnostic ont été réalisées comme des cas jours alors que la durée du séjour hospitalier a été un à deux jours pour les procédures thérapeutiques. Deux (3%) des procédures, y compris une biopsie de la masse hépatique et une cholécystectomie ont été converties à la chirurgie ouverte due à une hémorragie importante. Une blessure mineure conduit biliaire a été enregistré chez un patient qui avait cholécystectomie et infections superficielles port de site de la plaie ont été remarquées chez deux patients qui avaient appendicectomie. Aucune mortalité n'a été enregistrée.

**CONCLUSION:** Nos résultats montrent la faisabilité de la chirurgie laparoscopique au Nigeria. Nous préconisons une adaptation locale et des improvisations pour accroître l'utilisation de la chirurgie laparoscopique dans les hôpitaux du Nigeria. *WAJM* 2011; 30(4): 273–276.

**Mots-clés:** Chirurgie laparoscopique, l'adaptation locale, le Nigeria.

## INTRODUCTION

Over the past two decades, laparoscopic surgery has been replacing open surgery for a continuously increasing range of indications across the world.<sup>1,2</sup> Laparoscopic operations are mostly associated with less postoperative pain, shorter duration of hospital stay and early return of patients to normal activities.<sup>3-5</sup> In most industrialized and some developing countries, laparoscopic surgery and other forms of advanced minimal access procedures are routinely performed in many hospitals whereas in Nigeria, similar to many other low resource countries, technologically driven procedures such as laparoscopic general surgery are not yet routinely offered to patients. The high cost of procuring equipment, the dearth of trained personnel as well as the reluctance of local surgeons who still have to contend with lack of basic healthcare infrastructures have limited the practice of laparoscopy in developing countries over the years.<sup>6,7</sup>

In the past few years, many public and private hospitals in Nigeria have embraced laparoscopic surgery especially in the field of general surgery. At the Ife Hospital Unit of the Obafemi Awolowo University, Ile-Ife, Nigeria, we had an initial period of familiarisation and local adaptation following which we began routine deployment of laparoscopic surgery for some common surgical conditions.<sup>8</sup> This report describes the outcome of the patients who had laparoscopic surgery in our hospital recently and highlights the lessons we learnt in our pioneering experience.

## SUBJECTS, MATERIALS, AND METHODS

Laparoscopic surgery was introduced in the surgery department of the Ife State Hospital Unit of the OAUTHC in 2008. A number of surgeries were performed within the first few months during which we perfected local adaptation and improvisations of the equipments and set-up.<sup>8</sup> From January 2009, we began routine deployment of laparoscopic surgery techniques for a range of surgical conditions.

Between January 2009 and May

2010, 75 patients had laparoscopic surgical operations.

Thirteen surgeries done in conjunction with the gynaecologists and paediatric surgeons were excluded, leaving 62 patients who had laparoscopic surgeries in the general surgical units as the subjects of this study.

Patients were selected based on their diagnoses and suitability for laparoscopic surgery in our setting. Conditions such as calculous cholecystitis, acute appendicitis, postoperative adhesive intestinal obstruction and some undetermined abdominal masses were selected for laparoscopic approach.

Written and verbal information about laparoscopy were presented to the patients and informed consent obtained. Patients with conditions better suited for open surgery in our setting were excluded from the study.

All procedures were performed under general anaesthesia with insufflations of carbon dioxide to achieve pneumoperitoneum. Initial diagnostic laparoscopy was undertaken in all patients and further procedures were performed as indicated.

## RESULTS

Table 1 shows the age, sex distribution and indications for laparoscopy in the 62 patients who had a range of laparoscopic surgical procedures within the study period. The majority [44 (71%)] were females while 18 (29%) were males. Their ages ranged between 18 and 72 years with half of the patients being in

the fourth decade of life. Table 2 shows the laparoscopic procedures performed.

Eighteen (29%) patients had laparoscopic cholecystectomy. Six of them had acute calculous cholecystitis while the remaining twelve (including three with sickle cell anaemia) presented with features of chronic calculous cholecystitis. Thirteen (21%) patients had laparoscopic appendectomy for acute appendicitis while 10 (16.1%) had laparoscopic adhesiolysis for recurrent postoperative adhesive intestinal obstruction. Seven of the ten postoperative adhesions followed open appendectomy, two were from previous Caesarean Sections while one patient had a previous laparotomy for trauma. Laparoscopic biopsy of intra-abdominal masses was performed in seven (11.3%) patients including biopsy of hepatic masses in five, mesenteric mass in one and a retroperitoneal mass in an HIV positive patient. Fourteen (22.6%) others had diagnostic laparoscopies for a range

**Table 1: Patient Characteristics and Indications for Surgery**

Total Number	62
Female : Male	18 : 42
Age range (year)	18 – 72
Indication for laparoscopy (N%)	
Acute calculous cholecystitis	6(9.7)
Chronic calculous cholecystitis	12(19.4)
Acute appendicitis	13(21)
Adhesive intestinal obstruction	10(16.1)
Diagnostic evaluation	21(33.9)

**Table 2: Laparoscopic Procedures Performed**

Procedure	Frequency(%)
1. Laparoscopic cholecystectomy	18(29.0)
2. Laparoscopic adhesiolysis	10(16.1)
3. Laparoscopic biopsies	7(11.3)
i. Hepatic masses	4
ii. Retroperitoneal mass	1
iii. Mesenteric mass	1
4. Diagnostic laparoscopy	14(22.6)
i. Acute Abdomen	5
ii. Intra-abdominal Malignancies	4
iii. Chronic Pelvic Pain	2
5. Laparoscopic appendectomy	13(21.0)

of suspected abdominal conditions including acute abdomen in six, chronic pelvic pain in four and intra-abdominal malignancies in four.

All diagnostic procedures were performed as day cases while the duration of hospital stay was one to two days for the therapeutic procedures.

### Outcome

Table 3 shows the outcome of the procedures. Two(3%) procedures, were converted from laparoscopy to open due to significant haemorrhage. These included a biopsy of an hepatic mass and one cholecystectomy. A minor common bile duct diathermy injury was recorded in one patient who had cholecystectomy. She had open laparotomy on the seventh postoperative day with repair of biliary injury over a T-tube and did well post-operatively. Superficial infections were noticed in three trocar wounds of two patients who had appendectomy and one wound in a patient who had cholecystectomy. No mortality was recorded.

**Table 3: Outcome in 62 Laparoscopies**

Outcome	Number(%)
Haemorrhage	2(3.0)
Superficial infections	3(4.5)
Duration of Hospital Stay	
One day	21(33.9)
Therapeutic procedures	41(66.1)
Mortality	0

### DISCUSSION

Over the past decade, the subject of laparoscopic surgery has been recurring in the discourse at different surgical fora in Nigeria. While Gynaecologists across the country have consistently practised laparoscopy, there was initial apathy among General Surgeons in the country for several years. Following different, often infrequent attempts in some public and private hospitals, the procedure gradually gained acceptance and now laparoscopic surgery can be said to be in its infancy in Nigeria. Indeed, prior to this study, there were no reports of consecutive laparoscopic general surgical operations from any public

hospital in Nigeria. In a large country with limited resources, the commonest challenges facing the general surgeon include complicated infectious conditions and late presentation of benign and malignant swellings. Such conditions are not frequently encountered in developed countries where most procedures in laparoscopy are developed and publicised. Hence the routine use of laparoscopy for conditions such as generalised peritonitis or advanced intra-abdominal malignancies were not very popular initially making laparoscopy rather unappealing to the average Nigerian surgeon. Similarly, governments in many developing countries are targeting the attainment of Millennium Development Goals necessitating deployment of funds to tackle primary healthcare challenges thereby limiting funds available for development of modern tertiary care facilities. Some developing countries have however made significant progress in minimal access surgery through local adaptation and improvisations.<sup>9</sup> We learnt from their experience and introduced similar local adaptation and improvisations which facilitated the establishment and sustenance of laparoscopic surgery in our center.<sup>8</sup>

We have relied almost entirely on re-useable hand instruments with local technologists involved in the maintenance of the different components of the laparoscopic set-up. Different studies comparing the use of such re-useable to disposable equipments for laparoscopic cholecystectomy have reported a higher cost with the use of disposable equipments.<sup>10-13</sup> Adler *et al* also observed that re-useable equipment are more environment friendly than the disposable ones.<sup>14</sup> In our setting, the cost implication was weightier in our choice of purchasing re-useable over disposable equipments. During the period of this study, the hospital administration graciously waived the extra cost that should have been passed on to the patients as they were made to pay the same rate as open surgeries. In a semi-urban location like ours, we were not sure if a higher cost would not have discouraged the initial cohort of patients especially when they were not yet familiar with the advantages

of the procedure.

The outcome of surgeries in these our patients appears to be comparable to those of other pioneering experiences.<sup>15,16</sup> Two(3%) of the sixty-two procedures were converted to open surgery due to significant intraoperative bleeding. In a 70-year-old man who had bleeding following biopsy of a liver mass, we converted early to avoid a compromise of his frail cardiovascular status. Histopathology of the mass later confirmed haemangiosarcoma which explained the significant bleeding. The second conversion was during a laparoscopic cholecystectomy in which dissection of the gallbladder from its bed on the liver was attended by profuse bleeding which was not immediately amenable to coagulation. A recent study proposed different methods for the prevention and control of bleeding during laparoscopic liver surgery.<sup>17</sup> We believe the use of some of the materials like Quizil, Fibrillar Collagen and or Surgicel Nu-Knit Absorbable Haemostat that they used in these reports will be of help in our setting.

It has been shown in different centers across the world that laparoscopic cholecystectomy can be safely performed as a day case procedure while many other surgeons keep the patients until the first postoperative day.<sup>18,19</sup> We, however, chose to keep our patients who had laparoscopic appendectomy and cholecystectomy for one to two days after surgery. In our hospital's semi-urban location, patients' immediate access to the hospital in case of emergency conditions developing in the midnight could not be guaranteed and we restricted laparoscopic day procedures in our centre to diagnostic laparoscopies and biopsies. Along the line, we realised that our decision to keep these patients enhanced the acceptability of laparoscopic surgeries among our surgical colleagues, other hospital workers and the patients themselves. As with every other newly introduced surgical procedure, there were initial concerns about the possibility of frequent complications particularly because we started with a modified set-up. It was therefore reassuring to all when these patients were easily accessed and openly assessed on the following day.

Our immediate goal following this initial outcome is to expand the scope of our practice of laparoscopy. We have recognised a great potential for the use of laparoscopy for diagnosis and/or staging of a wide range of intra-abdominal conditions. Radiological investigations like computerised tomographic scanning and magnetic resonance imaging are very useful for staging intraabdominal tumours but they are expensive and unaffordable to many of our indigent patients who commonly present with late stage disease. With fairly reduced cost of performing a diagnostic laparoscopy in our setting, we have started to use laparoscopic surgery for staging these patients. We are also hoping that the use of laparoscopy for patients presenting in emergency conditions with trauma and or peritonitis will more or less “domesticate” the procedure and increase its growing popularity among Nigerian surgeons. We are willing to also encourage other centers in Nigeria who desire to introduce laparoscopy into their general surgical practice to ensure their surgeons are exposed to the practice in other developing countries to ensure easier adaptability back home. In our experience, working with perioperative nurses who have not been previously exposed to laparoscopy lengthen the operation time considerably and we believe their prior training will be helpful.

### Conclusion

On the basis of our experience, we are of the opinion that laparoscopic surgeries can be performed routinely in Nigerian hospitals with acceptable outcome. We advocate the local adaptation of equipments in our environment to ensure sustainability.

### REFERENCES

1. Bittner R. Laparoscopic surgery – 15 years after clinical introduction. *World J Surg* 2006; **30**: 1190–1203.
2. Ito M, Horiguchi A, Asano Y, Yamamoto T, Tuda K, Morigaki S, *et al.* Spleen-preserving distal pancreatectomy performed laparoscopically. *Hepatogastroenterology*. 2010; **57**: 162–4.
3. Kaplan M, Salman B, Yilmaz TU, Oguz M. A quality of life comparison of laparoscopic and open approaches in acute appendicitis: a randomised prospective study. *Acta Chir Belg*. 2009; **109**: 356–63.
4. Hemandas AK, Abdelrahman T, Flashman KG, Skull AJ, Senapati A, O’Leary DP, *et al.* Laparoscopic colorectal surgery produces better outcomes for high risk cancer patients compared to open surgery. *Ann Surg*. 2010; **252**: 84–9.
5. Martin RC, Scoggins CR, McMasters KM. Laparoscopic hepatic lobectomy: advantages of a minimally invasive approach. *J Am Coll Surg*. 2010; **210**: 627–34, 634–6.
6. Asbun HJ, Berguer R, Altamirano R, Castellanos H. Successfully establishing laparoscopic surgery programs in developing countries. Clinical results and lessons learned. *Surg Endosc*. 1996; **10**: 1000–3.
7. Akute OO. Laparoscopic surgery: An esoteric hitech procedure of little relevance to present day Nigeria? *Annals of Ibadan Postgraduate Medicine*. 2003; **1**: 27–30.
8. Adisa AO, Arowolo OA, Salako AA, Lawal OO. Preliminary experience with laparoscopic surgery in Ile-Ife, Nigeria. *African Journal of Medicine and Medical Sciences*. 2009; **38**: 351–356.
9. Udwadia TE, Udwadia RT, Menon K, Kaul P, Kukreja L, Jain R, *et al.* Laparoscopic surgery in the developing world; an overview of the Indian scene. *Int Surg*. 1995; **80**: 371–5.
10. Yung E, Gagner M, Pomp A, Dakin G, Milone L, Strain G. Cost comparison of reusable and single-use ultrasonic shears for laparoscopic bariatric surgery. *Obes Surg*. 2010; **20**: 512–8.
11. Schaer GN, Koechli OR, Haller U. Single-use versus reusable laparoscopic surgical instruments: a cost analysis. *Am J Obstet Gynecol* 1995; **173**: 1812–1815.
12. Traverso LW, Hargrave K. A prospective cost analysis of laparoscopic cholecystectomy. *Am J Surg* 1995; **169**: 503–506.
13. Demoulin L, Kesteloot K, Penninck F. A cost comparison of disposable versus reusable instruments in laparoscopic cholecystectomy. *Surg Endosc* 1996 **10**: 520–525 X
14. Adler S, Scherrer M, Ru“ckauer K. D, Daschner F. D. Comparison of economic and environmental impacts between disposable and reusable instruments used for laparoscopic cholecystectomy. *Surg Endosc* 2005; **19**: 268–272.
15. Esposito C, Alicchio F, Giurin I, Perricone F, Ascione G, Settini A. Lessons Learned from the First 109 Laparoscopic Cholecystectomies Performed in a Single Pediatric Surgery Center. *World J Surg* 2009; **33**: 1842–1845.
16. Udwadia TE, Patil SU, Udwadia RT, Bhandarkar DS. Laparoscopic cholecystectomy in India. *Int Surg*. 1992; **77**: 149–53.
17. Hilal MA, Underwood T, Taylor MG, Hamdan K, Elberm H, Pearce NW. Bleeding and hemostasis in laparoscopic liver surgery. *Surg Endosc* 2010; **24**: 572–577.
18. Victorzon M, Tolonen P, Vuorialho T. Day-case laparoscopic cholecystectomy: treatment of choice for selected patients? *Surg Endosc* 2007; **21**: 70–73.
19. Psaila J, Agrawal S, Fountain U, Whitfield T, Murgatroyd B, Dunsire MF, *et al.* Day surgery laparoscopic cholecystectomy: Factors influencing same day discharge. *World J Surg* 2008; **32**: 76–81.