WEST AFRICAN JOURNAL OF MEDICINE

ORIGINAL ARTICLE

Preliminary Experience with Laparoscopic Cholecystectomy in a Nigerian Teaching Hospital

Expérience Préliminaire de la Laparoscopie dans un Hôpital Universitaire du Nigeria

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ABSTRACT

BACKGROUND: **Presently many centers have facilities for laparoscopic surgery in Nigeria, but the practice is just evolving in most of these centers. This article presents the preliminary experience of the endoscopic surgery unit (general surgery) at the University College Hospital Ibadan Nigeria. The University College Hospital is the premier Nigerian teaching hospital and is located in the south-western part of the country.**

METHODS: **All the patients who had laparoscopic cholecystectomy at the University College Hospital between June 2009 and January 2011 were included in this study. The patients' demographic data, diagnosis, results of investigations and intra-operative findings were obtained from the records. Additional information extracted from the records was the duration of surgery, complications, outcome and discharge periods.**

RESULTS: **There were thirteen patients over the twenty month period consisting of twelve females and one male. The age range was twenty six to sixty seven years with a mean of 44.6 years. The duration of surgery ranged from 90 to 189 minutes with a mean of 124 minutes. There were two complications. These were adhesive bowel obstruction and common bile duct injury. The duration of admission ranged from four to thirty two days with a mean of 7.53SD+/– 8.5 days. There was one conversion to open surgery due to intra-operative gallbladder perforation with consequent dispersal of multiple gall stones within the peritoneal cavity. The common bile duct injury was diagnosed four days following surgery for which a choledochojejunostomy was done after initial conservative treatment. There was no mortality.**

CONCLUSION: **Laparoscopic surgery is feasible in Nigeria and is likely to show increasing popularity among patients and surgeons. A careful patient selection protocol is necessary for an acceptable success rate with minimal complications. Our protocol of patient selection eliminated the need for intra-operative common bile duct exploration which requires expensive instruments. However, to sustain laparoscopic surgery it is pertinent to ensure an activity based costing system which will not make it arbitrarily too expensive for the general population. WAJM 2012; 31(2): 120–123.**

Keywords: **Laparoscopy, Experience.**

RÉSUMÉ

CONTEXTE: Présentement plusieurs centres disposent de l'équipement pour la chirurgie laparoscopique au Nigeria, mais la pratique est en pleine évolution dans ces centres. Cet article présente l'expérience préliminaire de l'unité de chirurgie endoscopique (Chirurgie Générale) à l'Hôpital Universitaire d'Ibadan, Nigeria. Cet Hôpital qui se trouve au sud ouest du Nigeria est le premier Hôpital Universitaire du Nigeria.

METHODES: Tous les patients qui ont subi une cholécystectomie à l'Hôpital Universitaire entre Juin 2009 et Janvier 2011 ont été inclus dans cette étude. Les données démographiques, diagnostiques, d'exploration complémentaire et per opératoires ont été recueillies à partir des dossiers médicaux. Les informations additionnelles provenant de ces dossiers sont : la durée de l'intervention, les complications, les résultats et le délai d'exéat.

RESULTATS: Il y'avait treize patients pendant la période d'étude dont 12 femmes et 1homme. La moyenne d'âge était de 44,6 ans (extrêmes: 26;67). La durée moyenne de l'intervention était de 124 minutes (90;189). Il y avait 2 complications : occlusion intestinale sur brides et traumatisme de la voie biliaire. La durée d'hospitalisation était en moyenne de 7,53 jours (écart type: 8,5 jours). Il y'avait une conversion en chirurgie ouverte due à une perforation de la vésicale biliaire avec dispersion de multiples lithiases vésiculaires dans la cavité péritonéale. La plaie de la voie biliaire principale a été diagnostiquée 4 jours après la chirurgie, une cholédocojéjunostomie a été réalisée après échec d'un traitement conservateur initial. Il n'y avait pas de décès.

CONCLUSION: La chirurgie laparoscopique est faisable au Nigeria et elle va très certainement connaitre une popularité croissante chez les patients et les chirurgiens. Un protocole rigoureux de sélection des patients est nécessaire pour un taux de réussite acceptable et des complications mineures. Notre protocole de sélection des patients avait éliminé l'éventualité d'une exploration intra opératoire de la voie biliaire principale qui nécessite des instruments coûteux. Toutefois, pour supporter la chirurgie laparoscopique, il est pertinent d'assurer un système de coût basé sur l'activité qui ne rendra pas les coûts arbitrairement prohibitifs pour la population générale. **WAJM 2012; 31(2): 120–123.**

Mots clés: Laparoscopie, Expérience

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INTRODUCTION

The success in laparoscopic cholecystectomy marked the turning point in laparoscopic surgery with its subsequent incorporation into the armamentarium of the general surgeon from the last decade of the last millennium. Laparoscopy is now a preferred surgical approach in developed countries for varied indications and numerous traditional procedures are converted to laparoscopic surgery annually.[1] The advantages of laparoscopic surgery include reduced hospital stay, early return to normal life style, reduced incidence of complications associated with prolonged bed rest and better cosmesis.[2, 3] Despite these advantages it is not yet widely practiced in many developing countries in Africa. However, there are encouraging results from a few countries in Africa involving a wide range of laparoscopic surgery procedures.[4, 5] Until recently the low acceptance was due to supposed scarce resources compounded by a relative lack of skilled personnel.[6] Many centers have facilities for laparoscopic surgery in Nigeria[7] but the practice is just evolving in most of these centers compared to Senegal, South Africa and some North African countries.[4] This article presents the preliminary experience of the endoscopic surgery unit (general surgery) at the University College Hospital Ibadan, Nigeria. The University College Hospital is the premier Nigerian teaching hospital and is located in the south-western part of the country.

METHODOLOGY

Patient Selection

All the patients who were booked for laparoscopic cholecystectomy at the University College Hospital between June 2009 and January 2011 were included in this study. The patients' demographic data, diagnoses, results of investigations, intra-operative findings, the duration of surgery, outcome, complications and discharge periods were obtained from the records. Exclusion criteria were severe medical morbidity such as congestive cardiac failure and chronic obstructive airway disease, deranged liver function tests and ultrasound features suggestive of common bile duct stones.

Procedure

The choice of surgery was based on available instrumentation and the surgical experience of the operating personnel. The American technique for laparoscopic cholecystectomy was adopted for all the operations. All the operations were performed by the same set of surgeons. All the patients who had laparoscopic cholecystectomy made a voluntary choice of laparoscopic surgery after counseling .A double consent for conversion to open cholecystectomy was obtained from all patients.

RESULTS

Thirteen patients were operated as listed (Table 1). The age range was from twenty six to sixty seven years with a mean of 46+/_ 14.5 years. There were twelve females and one male. Preoperative work up included a complete blood count, blood urea and electrolytes, blood sugar, liver function tests, hepatitis profile, chest X-ray and ultrasound of the abdomen. All the patients had general anesthesia. Twelve of the operated patients had a preoperative diagnosis of caculous cholecystitis while one patient had acalculous cholecystitis. One procedure was converted to open surgery while another patient was re-explored through a laparatomy for common bile duct injury. Operation time ranged from 90 to 189 minutes with a mean operation time of 124 minutes. The patients were considered for discharge after they were within eighty to ninety

Table 1: List of Procedures from September 2009 to May 2011

S/No.	Sex	Age (Years)	Clinical Diagnosis	Associated Morbidity	Complications	Duration of Surgery to Discharge
1.	Female	32	Calculous Cholecystitis	Nil	Nil	4 days
2.	Female	37	Calculous Cholecystitis	Nil	Nil	4 days
3.	Female	55	Calculous Cholecystitis	Nil	Nil	4 days
4.	Female	63	Calculous Cholecystitis	Nil	Nil	4 days
5.	Female	32	Calculous Cholecystitis	Nil	Adhesive intestinal obstruction	20 days
6.	Female	26	Acalculous Cholecystitis	Nil	Nil	4 days
7.	Female	50	Calculous Cholecystitis	Nil	Nil	4 days
8.	Female	38	Calculous Cholecystitis	Nil	Nil	5 days
9.	Female	67	Calculous Cholecystitis	Diabetes/ Hypertension	Gall bladder Perforation/ Conversion to open	5 days
10.	Female	46	Calculous Cholecystitis	Nil	Nil	4 days
11.	Male	47	Calculous Cholecystitis	Diabetes	Nil	5 days
12.	Female	54	Calculous Cholecystitis	Nil	Common bile duct injury (Explored and repaired)	32 days
13.	Female	34	Calculous Cholecystitis	Nil	Nil	4 days

percent of their previous quality of life. The duration of admission ranged from four to thirty two days with a mean of 7.53+/_ 8.5 days. One patient was discharged on the third day, seven patients were discharged on the fourth post operative day, three on the fifth day and one each on the twentieth and thirty second post operative day. There was no perioperative mortality

DISCUSSION

Laparoscopic surgery provides better cosmesis than open or conventional surgery. Postoperative pain, operative wound complications, blood loss, and the length of hospital stay are also reduced. However it is capital intensive to acquire appropriate instruments and train surgeons. The laparoscopic surgery team at the University College Hospital was trained in phases. The surgeons were initially instructed in dry laboratories both locally and in Korle Bu Teaching Hospital Accra, Ghana. Subsequently the surgeons had practice sessions on anesthesised animals for skills acquisition. These skills were then transferred to live patients under tutelage of experienced laparoscopic surgeons for about six months. The supporting staff were trained in instrument handling during these proctoring sessions. We finally started operating independently of our mentors after this initial training period.

The patients were carefully selected as previously stated. The small number of cases is due to the stringent exclusion criteria. Secondly, the fear of a relatively new procedure by the patients and the availability of funds by patients, further limited the number of patients who consented to laparoscopic cholecystectomy. The low hospital incidence rate of cholecystitis in Nigeria which is about eight cases per year[8, 9] also contributed to the small number of patients operated in our study.

The range of surgical procedures was limited by both the availability of appropriate instruments as well as the operating experience of the surgeons. Each new procedure needs to be learnt to a reasonable safety limit before it was performed on patients. The average operating time was one hundred and twenty minutes compared to forty five minutes in other studies.[10] Patients in Nigeria do not seek treatment early as in developed countries. There is often a recurrent history of colicky pain over a prolonged time with subsequent fibrosis around the area of dissection thus prolonging the duration of surgery and increasing the risk of complications. Although the duration of admission is longer than a quoted mean of two days in some of developed nations [11] we chose to err on the side of caution to avoid readmission for any post operative complications as this may discourage consent by other patients in future . The patient whose surgery was converted to an open procedure was also discharged home on the fifth day after surgery with the skin clips which were removed on the surgical outpatient clinic a week later. The two cases of post operative adhesive intestinal obstruction and biliary tract injury accounted for the abnormally high calculated mean admission days. The bile duct injury was recognized four days after surgery. This was characterized by progressive painless abdominal distention. Abdominal ultrasound scan revealed increased intra-abdominal fluid, while a guided aspiration revealed bilous fluid. A continuous percutaneous drainage was done which persistently drained bilous fluid for ten days following which she had an exploratory laparotomy. A large circumferential defect >50% was identified and choledochojejunostomy was done. A short cystic duct was attributed to this complication while the adhesive intestinal obstruction was attributed to peritoneal and small bowel dissection from the region of the carlot's triangle and the gall bladder. Despite being a relatively new procedure in our institution the conversion rate of 7.6 % (1 in 13) and complication rate of 15.3 %(2 in 13) is comparable with other centers. [12, 13] Instrument failure was a major problem despite our choice of reusable instruments. The graspers could not hold satisfactorily after the first ten surgical procedures, while the clips were loose occasionally due to a faulty clip applicator. Subsequently a few modifications were made intra-operatively. Such modifications involved intra-operative changes of the 10–12 mm ports from reusable to disposable and vice-versa to accommodate instruments of corresponding manufacturers consequently increasing operating time and carbon dioxide consumption. We used a 9mm gum elastic bougie as a guide when changing the 10–12mm ports intra-operatively to reduce the risk of bowel injury from trocar insertion. Power interruptions were eliminated by the use of an uninterrupted power system (UPS). Currently the operation fee is heavily subsidized at the University College Hospital. It is necessary to keep the cost of surgery as low as possible. Based on the fact that two thirds (70%) of operation cost of laparoscopic surgery is from operative instruments,[14] the cost of surgery may be reduced as we did with further inculcation of both reusable and disposable instruments.

Conclusion

Laparoscopic surgery is feasible in Nigeria and is likely to show increasing popularity among patients and surgeons. However it is necessary to have a careful patient selection protocol to ensure a good success rate. The exclusion of patients with indications which may require common bile exploration enabled us to work successfully with a limited range of instruments while the exclusion of certain medical conditions reduced the incidence of metabolic complications [15] . Some local modification to the instrumentation made by surgeons with frugal resources without increasing morbidity or mortality. It is also pertinent to ensure an appropriate activity based costing system which will be affordable to patients.

Conflicts of Interest

There are no areas of conflicting interest.

There is no source of funding.

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