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Exploring Surgical Approaches to Gallbladder Disorders: Efficacy and Outcomes

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Abstract. This paper details the present surgical strategy for gallbladder illness in a Baghdad private hospital. We recorded complications in a group of individuals who had laparoscopic cholecystectomy as opposed to open surgery. Our methodology included looking at cholecystectomies that were done by surgeons after the introduction of laparoscopic surgery. We compared laparoscopic cholecystectomies (LCs) performed between 2016 and 2017 with open cholecystectomies (OCs) performed at the same time by randomly selecting patients. In terms of patient demographics, the LC and OC groups showed no significant differences. More over half, or 43%, of the 63 patients who opted for elective surgery were OC recipients. There was a 4% conversion rate, a 4.8-day average hospital stay, and a 5% readmission rate. All groups had comparable complications. Results: Complications from LCs were similar to those from OCs, even though there were less of them. Even in the elective context, a significant percentage of cholecystectomies remained open during the research period.

Key words: gallbladder, lc, oc, surgery introduction:

Cholecystectomy is a well-established and frequently performed procedure (1). The gold standard for treating symptomatic cholelithiasis in the US is now laparoscopic cholecystectomy (LC), which has nearly totally supplanted open cholecystectomy (OC) (2,3). Laparoscopic operations are not commonly performed in impoverished countries because to low financing and resources, which means LC is rarely done (4,5). Considering the Western world's remarkable accomplishment in removing obstacles to LC, it is crucial to comprehend the challenges faced by non-US centers that have not fully embraced this strategy. There is a lack of information about the ratio of laparoscopic to open cholecystectomies in developing nations at the moment. It is also not apparent whether restrictions prohibit the use of laparoscopic procedures in these regions.

As a therapy for AC, laparoscopic cholecystectomy (LC) is gradually replacing open cholecystectomy (OC). Laparoscopic cholecystectomies were performed in 0% of cases in 1987 but in 80% of cases in 1992 (6). There has been a shift away from open surgeries and toward laparoscopic ones as a result of improvements in laparoscopic technology, more surgical skill and experience, shorter hospital stays, and quicker recovery times (7– 12).

In the late 1980s, LC became more popular in the US and France; by the first part of the 1990s, 80% of US general surgeons had used the technology and techniques (13). Inflammation, edema, and necrosis are all problems that may arise from AC, making the treatment more difficult and increasing the risk of postoperative complications. One of the downsides of LC is the high incidence of conversion to open procedures (14–17). However, LC was suggested by the Tokyo

guidelines in 2006 as the first therapy for AC (18). The major goal of the 2013 updated Tokyo recommendations for AC was to provide the best surgical therapy feasible by considering the severity of the condition, the time of the surgery, and the kind of procedure, among other factors. Based on the level of gallbladder inflammation, AC may be categorized into three grades: mild, moderate, and severe (19,20).

Optimal times to have surgeries are a matter of some contention. One alternative is to do surgery right once, whereas the other is to start conservatively with antibiotics until the inflammation goes completely away, and then have a delayed LC a few weeks later (21).

This study aimed to know the efficacy and Outcomes in exploring Surgical Approaches to Gallbladder Disorders.

Methodology:

From January 2016 through April 2017, a comprehensive analysis was conducted on all cholecystectomies carried out at a private hospital in Baghdad. Of the 218 cholecystectomies that were conducted, 100 charts were examined to ascertain the results for both LC and OC. The data was gathered from 57 out of 43 OCs and 43 LCs.

The following variables were analyzed: patient demographics, laboratory data, conversion rate, surgical outcomes, length of stay (LOS) in the hospital, readmission rate, and death. Injuries to the bile ducts, leaks of bile, injuries to the bowels, and retained gallstones were not analyzed since the necessary information was not available for examination. The patient groups were split into two groups: those who had LC and those who had OC.

The mean standard deviation was used to represent all continuous data. The Student t-test was used to do a univariate analysis on continuous variables. Percentages were used to represent categorical values. For this reason, we compared the categorical data using Fisher's exact test. We fixed the significance level at P ¼ 0.05. In order to find independent determinants of outcomes in patients undergoing LC and OC, a multivariable logistic regression analysis was carried out. The logistic regression model was used using complications and operational time as dependent variables, and factors with a $P < 0.05$ were included. With Sigma Plot 13 (Systat Software Inc., 2014), we conducted all of our statistical analyses.

Results:

Of the 100 patients reviewed, there was no difference in mean age (36.4± 14.2 y *versus* 37.2± 15.2 y; *P* ¼ 0.69), prevalence of females (79% *versus* 88%; *P* ¼ 0.26), and mean American Society of Anesthesiologists class (1.22 ±0.68 *versus* 1.35±0.82; *P* ¼ 0.31) between patients who underwent OC or LC. However, patients who underwent OC had a higher mean weight than those who did not (163.1±23.5 lbs. *versus*. 144±41.2 lbs.; *P* ¼ 0.02). More information on patient demographics and co- morbid conditions is summarized in Table 1.

Table 1 Patient demographics and comorbid conditions between open and laparoscopic cholecystectomy.

Variable	Open cholecystectomy	Laparoscopic cholecystectomy	*P* value
Mean age SD (median) (y)	36.4 ± 14.2 (33)	37.2 ± 15.5 (32)	0.69
Female gender, *n* (%)	46 (79)	37 (88)	0.26
Mean weight SD (median) (lbs.)	163.1±23.5 (142)	144 ± 41.2 (153)	0.02
Mean ASA class SD (median)	1.22 ± 0.68 (1.0)	1.35 ± 0.82 (1.0)	0.31
Type 2 diabetes, *n* (%)	3 (5)	4 (9)	0.68
Hypertension, *n* (%)	3 (5)	3 (7)	0.89

SD ¼ standard deviation; ASA ¼ American Society of Anesthesiologists.

The mean temperature of patients who had LC at presentation was 37.0±0.21 [◦C] compared to 36.8 ±0.14 (P ¼ 0.01), and the mean duration of symptoms before surgery was 169.1 ±376.0 days against 125.5 ±167.0 days (P ¼ 0.001). The number of white blood cells did not vary among groups. Table 2 provides further details on the symptoms and test results that patients may experience before surgery.

Although 53% of cholecystectomies were performed voluntarily, 47% were done due to an emergency. More over half, or 43%, of the 63 patients who opted for elective surgery were OC recipients. Open cholecystectomies accounted for 58% of the cases, whereas laparoscopic procedures accounted for 42%. The likelihood of OC being performed was higher in patients with biliary colic (79% vs 51%; P ¼ 0.001). Nevertheless, LC was more often performed on patients with acute cholecystitis (36% vs 14%; P ¼ 0.02). The percentage of LC to OC conversion was 4%. The details are fully detailed in Table 2.

No infections of the urinary tract or surgical sites were detected. There was no mortality at 30 or 90 days. Together, the two groups had a total LOS of 4.8 days and a readmission rate of 5%. The length of stay (4.9 ± 5.4 days against 4.8 ± 3.9 days; P ¼ 0.8) and the rate of readmission (8% versus 4%; P ¼ 0.6) were comparable among the groups. No independent predictors of the outcomes under study were found using multivariate logistic regression analysis. All cholecystectomies were done by four surgeons with an average of 10.5 ± 8.6 years of experience and a mean age of 38.3 ± 10.2 years during the research period.

Table 2 Indications for surgery and operative time, length of stay, and readmission rate between open and laparoscopic cholecystectomy.

Variable	Open cholecystectomy	Laparoscopic cholecystectomy	*P* value
Mean duration of symptoms SD (median)	124.9±167.0 (14)	169.1±376.0 (60)	0.001
Mean temperature SD (median)	36.8 ± 0.14 (37.1)	37.0 ± 0.21 (37.1)	0.01
Mean white blood cell count, $\times 10^9$ per liter SD (median)	9.2 ± 3.2 (8.3)	10.2 ± 5.1 (8.1)	0.21
Emergency surgery, *n* (%)	15 (26)	22 (53)	0.001
Elective surgery, *n* (%)	43 (74)	20 (47)	0.008
Indication for surgery			
Biliary colic, *n* (%)	46 (79)	21 (51)	0.001
Cholecystitis, *n* (%)	8 (14)	15 (36)	0.02
Choledocholithiasis, *n* (%)	1 (2)	4 (10)	0.23
Mean operative time SD (median), min	65.3 ± 20.6 (55.0)	61.6 ± 31.0 (57.2)	0.5
Mean length of stay SD (median), d	4.9 ± 5.4 (3.0)	4.8 ± 3.9 (2.5)	0.8
Readmission rate, *n* (%)	4 (8)	2 (4)	0.6

Discussion

We found that cholecystectomy makes up a big fraction of general surgical operations at Worldwide, gallbladder disease is a serious concern, thus it suggests that the incidence of gallbladder illness in El Peten, Guatemala, is high. Based on studies with over a thousand patients, the median prevalence of gallstone disease, as determined by sonographic surveys, ranged from

5.9% to 21.9%, according to a comprehensive review conducted by Kratzer et al. (22). This is comparable to the high incidence of gallbladder illness in the United States, where general surgeons do this procedure more often than any other (23-25).

The first LC was done in France in 1987, and since then, minimally invasive surgery for gallbladder disease has been completely transformed. In the West, it has quickly supplanted the open approach as the preferred method of illness management (26). It is now quite unusual for any US institution to do a cholecystectomy without a laparoscope. Between 1985 and 1992, the OC rate dropped significantly, going from 1.65 per 1000 to 0.51 per 1000 (27). From 2005 to 2008, a total of 65,511 cholecystectomies were conducted using closed methods, with just 10.9% using open methods (28). Disappointingly, resident training may be impacted by this change from open biliary surgery (OC) to laparoscopic (LC) procedures. This is because many residents may not execute enough OCs to provide them enough experience by the end of their training (29). since an example, one US surgical program relies heavily on its hepato-biliary-pancreatic program to educate six category surgical residents to do operative procedures, since their short number of operating rooms (OCs) would be insufficient otherwise (30).

Governmental hurdles, hospital obstacles/lack of resources, and surgeon preference/training are the three main categories into which the enormous constraints on laparoscopic surgery implementation fall. Furthermore, these constraints worsen in the absence of continuous assistance from groups like Refuge International. Still, these groups provide a sliver of hope for removing obstacles to better surgical procedures. Given the scarcity of operating room doctors (OCs) in American residency programs, it may be mutually advantageous to keep trying to enlist US-based volunteer surgeons and trainees (and anesthesiologists) in the recruitment drive.

Due to the learning curve and high expense of laparoscopic surgery, some have questioned whether LC should be done in certain countries (31,32). Technical issues during surgery may be more common in certain nations that are only starting to use this procedure, even though studies have shown comparable rates of mortality and morbidity following LC (33). In addition to not having access to laparoscopic procedures, these facilities often do not provide endoscopic retrograde cholangiopancreatography or other treatments that may help with the management of problems after cholecystectomy (34). Equipment and people availability need to increase for the system to properly support minimally invasive procedures.

Recommendations

On the basis of the findings and conclusion of this study, the following recommendations are made;

1. Government at all levels are advised to give maximum support and required encouragement to the implementation of electronic health records, at primary healthcare level so as to enhance health data management skills of primary healthcare workers.

2. National Primary Healthcare Development Agency should provide health data management infrastructure that facilitates availability of hardware, software and procedures for enhancing health data management skills of primary healthcare workers.

2. Primary healthcare workers should get acquainted with the use of electronic health records applications, for them to be able to navigate database software successfully in order to enhance their health data management skills.

4. Government at all levels should also organize regular training and re-orientation workshop for primary healthcare workers on electronic methods of managing healthcare data for improved health data management skills of primary healthcare workers.

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