Original Article

SURGEONS EXPERIENCE WITH THE CONVERSION RATE OF LAPROSCOPIC TO OPEN CHOLECYSTECTOMY IN PATIENTS WITH PREVIOUS ABDOMINAL SURGERY

Kamran Hakeem Khan[a], Tariq Jabbar Khan[b], Mohammad Farid Khan[b], Fazal Ghani[c], Sidra Manzoor[d]
[a]Registrar Department of General Surgery, Qazi Hussain Ahmed Medical Complex, Nowshera.
[b]Consultant Department of General Surgery, North West General Hospital & Research Center, Peshawar.
[c]Assistant Professor General Surgery, Qazi Hussain Ahmed Medical Complex, Nowshera.
[d]Junior Registrar General Surgery, Rehman Medical Institute, Peshawar.

ABSTRACT:

BACKGROUND: Laparoscopic cholecystectomy is considered a gold standard management of gall stones. Some cases are still converted into open cholecystectomy. Among many other factors, the most important factor is dense adhesions due to previous abdominal surgery. Surgical skills and experience of an operating surgeon plays a vital role in reducing the conversion rates.
OBJECTIVE: We aim to determine the relation of surgeons experience with the conversion rate of laparoscopic to open cholecystectomy in patients of previous abdominal surgery.
METHODS: This cross sectional study was conducted from December 2011 to December 2015. We included patients with previous abdominal surgery who were admitted with gall stone disease and planned to be operated by laparoscopic method. Those patients who have other factors responsible for conversion beside previous abdominal surgery were excluded from the study. A routine preoperative assessment, including biochemical liver assessment and abdominal ultra-sonography was performed for all patients before surgery. The preoperative data collected was age, gender, location and history of previous abdominal surgery.
RESULTS: Total conversion was 11.7 %(35/298) which was significantly low with p-value <0.001. Conversion based on gender was found to be insignificant with p-value =0.07.
CONCLUSIONS: Conversion rate of laparoscopic cholecystectomy to open cholecystectomy in patients of previous abdominal surgery can be markedly reduced if laparoscopic cholecystectomy is performed by high volume surgeon.
KEYWORDS: High volume surgeon, laparoscopic cholecystectomy and adhesions

INTRODUCTION:

In this new era of laparoscopic surgeries, laparoscopic cholecystectomy (LC) is considered a gold standard for gall stones management. Still a few cases are converted to open cholecystectomy (OC). The conversion should not be considered as a failure in surgery, but for the successful completion of surgery, better outcome of surgery and for the benefit of the patient, it should be performed. As previous studies show that continuing the surgery in difficult scenarios can lead to life threatening situations[1].
Many risk factors are identified in the literature which may necessitate the conversion of LC into OC, but the most important factor is dense adhesions between gall bladder and bowel due to previous abdominal surgery[2]. Identification and evaluation of factors pre operatively are useful for surgeons make suitable operation scheme[3]. Acute cholecystitis was initially considered a risk factor for conversion of LC into open, but now with the increasing expertise of the operating surgeons there is no significant

Corresponding Author:
Kamran Hakeem Khan
Registrar Department of General Surgery,
Qazi Hussain Ahmed Medical Complex, Nowshera
Email: kamranhakeemkhan@gmail.com

difference in the conversion rates of patients with acute cholecystitis and chronic cholecystitis[4].

Along these factors, surgical skills and experience of an operating surgeon play a vital role in reducing the conversion rates. Dedication and concentration of the experienced surgeons with interest and commitment to LC leads to reduction in conversion to OC and also in standardization of the procedure. Surgeons who had performed large volume of laparoscopic surgeries has a less ratio of conversion[5].Increase in trends of laparoscopic surgery has also made the surgeons to deal with complex situations during the surgery and most of the cases are handled laproscopically without any complication[6]. The sound clinical judgement of the operating surgeon with expertise has reduced the conversion rates to minimum[7]. A study done by Abelson JS et al shows that LC performed by fellowship trained surgeons has markedly reduced rates of conversion into OC[8].

OC carry a lot of risks like excessive bleeding, blookd clots, damage to blood vessels, infections, injury to the bile duct or small intestine, pancreatitis and many more (Brain K).[9] While on the other hand laparoscopic surgery is much safer as compare to OC. For this reason purpose of this study was to evaluate whether the surgical skills and experience of a surgeon play any role in the conversion of laparoscopic to OC. So far, to our knowledge in this regard no studies have been conducted in Pakistan. The results of the study if found to have positive impact on the conversion rate will suggest proper laparoscopic training programmes for surgeons in order to improve their laparoscopic skills. It will also help the policy makers to make the laparoscopic surgeries mandatory in various post graduate training programmes.

OBJECTIVE

1. To determine the relation of surgeons experience with the conversion rate of laparoscopic to OC in patients with previous abdominal surgery

Operational Definition:

High volume laparoscopic surgeon: A surgeon who has performed more than 200 laparoscopic cholecystectomies.

METHODOLOGY:

This cross sectional study was carried out in the department of general surgery of North West General Hospital & Research Center (NWGH&RC) from Dec 2011 to Dec 2015, after the approval from the institutional ethics committee. Total 1141 cases underwent the laparoscopic surgery during the study period. NWGH&RC is a tertiary care hospital in Peshawar, Pakistan. Three high volume surgeons were selected for the current study. All the patients having history of previous abdominal surgery, presenting to surgical outpatient department (OPD) & Emergency with symptomatic gall bladder stones confirmed on ultra-sonography and planned to manage surgically by the selected surgeons by laparoscopic method were included in the study of universal sampling technique. Those patients who also had other factors responsible for conversion were excluded from the study. A routine preoperative assessment, including biochemical liver assessment and abdominal ultrasonography of the hepatobiliary system, was performed for all patients before surgery. Confidentiality of both the patients and surgeons was maintained as their names were not disclosed. The preoperative data collected was age, gender, location (residential) and history of previous abdominal surgery.

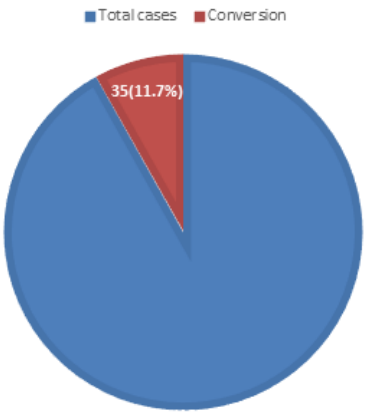
STATISTICAL ANALYSIS:

Data were entered and analyzed by using SPSS version 23. Results were analyzed by computing frequencies and percentages. Chi-sqaure test was used to evaluate the total conversion rate and to compare it on the basis of gender of patients. The P value of < 0.05 was considered statistically significant.

RESULTS:

A total of 1141 patients underwent laparoscopic cholecystectomy. Out of these 1141 patients, 298 were included in the study as they fulfilled the inclusion criteria; 220 were females and 78 were males. Overall 11.7% patients were converted into OC showing significant reduction in the conversion rate with P-value <0.001 (Graph 1). When further comparison was made

on the basis of gender, insignificant difference was found with p value = 0.07. (Graph 2)



Graph 1: Graph showing the total conversion rate of laparoscopic to open cholecystectomy (P-value <0.001)

TABLE No. 2: Table showing the conversion of laparoscopic to open cholecystectomy in male and female patients (chi square test)

Conversion	Male		Female		Total (n=298)	
	No. of patients	%	No. of patients	%	No. of patients	%
Yes	9	11.5	26	11.8	35	11.8
No	69	88.5	194	88.2	263	88.2
Total	**78**	**100**	**220**	**100**	**298**	**100**

Chi-square value= 0.004347
P value = 0.07

DISCUSSION:

The current study to our knowledge represents the first study in Pakistan is regarding the relation of the surgeon's experience and skills with the conversion rate of laparoscopic to OC in patients with a history of previous abdominal surgery. The results of current study revealed a significant reduction in the conversion rate when the procedure was performed by high volume laparoscopic surgeons. Conversion rate was higher in female as compared to male participants.

In this new era of laparoscopic surgery, laparoscopic cholecystectomy is the most commonly performed procedure for cholelithiasis. As it is a minimally invasive technique, therefore, it has gained much popularity in the recent past. Lot of researches are going on to evaluate the factors associated with conversion of laparoscopic to OC and how to reduce the conversion rate.

Surgical skills and experience of a surgeon also play a vital role in the conversion of laparoscopic to OC. It is believed that if the same procedure performed by experienced surgeons will always result in a less conversion rate. Sakhpal and his colleagues performed a study to find out the conversion rate of laparoscopic to open cholecystectomy. They analyzed a total of 2205 cases and find the conversion rate of 54.5%. A significant difference was found when the conversion rate of high volume surgeon (≥ 100 laparoscopic surgeries) was compared to low volume surgeon (< 100 laparoscopic surgeries).[10] A similar study was conducted by Ibrahim et al in Changi general hospital, Singapore. After evaluating 1000 cases, their results showed higher conversion rate among the junior surgeons than the more experienced surgeons ($P < 0.032$).[11]

In another study performed in India by Thyagarajan and his colleagues to find out the conversion rate. In their study, a total of 500 patients were included and conversion due to various factors were determined. Conversion rate in patients with previous abdominal surgery was found to be 36%.[12] Similarly, A large scale study was conducted in the surgery department of University of Mansoura Egypt by Sultan AM et al to explore the conversion rate of laproscopic to OC. It was found to be 54.7%.[13] Yajima H et al in Aoto Hospital, Tokyo, Japan found the conversion rate of 31.9%.[14] In our study the conversion rate was only 11.7% which is too low as compare to the above mentioned studies.

CONCLUSION:

In our study the lower (11.7%) conversion rate is a clear indication that conversion rate of LC to OC in patients of previous abdominal surgery can be markedly reduced if LC is performed by high volume surgeon.

Limitation of the study:

As the results are based on a single institute, therefore, further research studies should be conducted at a wide level in Pakistan in order to make the results valid for the whole country.

REFERENCES:

1. Malik AM. Difficult laproscopic cholecystectomies. Is conversion a sensible option? J Pak Med Assoc 2015 Jul;65(7):698-700.
2. Genc V, Sulaimanov M, Cipe G, Basceken SL, Erverdi N, Gurel M, Aras N, Hazinedaroglu SM. What necessitates the conversion to open cholecystectomy? A retrospective analysis of 5164 consecutive laparoscopic operations. Clinics 2011; 66(3):417–20.
3. Yang TF, Guo L, Wang Q. evaluation of preoperative risk factor for converting laproscopic to OC: A meta analysis. Hepatogasteroenterolgy 2014 Jun;61 (132):958-65.
4. Selmani R, Karagjozov A, Stefanovska V. Conversion in LC in acute vs chronic cholecystitis. Prilozi 2013;34(2):43-50.
5. Andrews S . Does concentration of surgical expertise improve outcomes for LC? 9 year audit cycle. Surgeon 2013 Dec;11(6):309-12.
6. Kala S, Verma S, Dutta G. Difficult situations in LC: a multicentric retrospective study. Surg Laprosc Endosc Percutan Tech 2014 Dec;484-7.
7. Ghnnam W, Malek J, Sheebl E, Elbeshry T, Ibrahim A. Rate of conversion and complication of LC in a tertiary care center in Saudi Arabia. Ann Saudi Med 2010 Mar-Apr;30(2):145-8.
8. Abelson JS, Afaneh C, Rich BS,Dakin G, Zamegar R, Fahay TJ, Pomp A. Advanced laproscopic fellowship training decreases conversion rates during LC for acute billiary diseases: A retrospective cohort study. Int J Surg 2015 Jan;13:221-6.
9. Brain K, Nall R. What is open gall bladder removal. Available from:https://www.healthline.com/health/gallbladder-removal-open [Accessed on 22-04-2019].
10. Sakpal SV, Bindra SS, Chamberlain RS. Laparoscopic Cholecystectomy Conversion Rates Two Decades Later. JSLS 2010;14(4):476-83.
11. Ibrahim S, Hean TK, Ho LS. Risk factors for conversion to open surgery in patients undergoing laproscopic cholecystectomy. World J Surg. 2006;30(9):1698-1704.
12. Thyagarajan M, Singh B, Thangasamy A, Rajasekar S. Risk factors influencing conversion of laparoscopic cholecystectomy to OC. Int Surg J.2017;4 (10):3354-57.
13. Sultan AM, El Nakeeb A, Elshehawy T, Elhemmaly M, Elhanafy E, Atef E. Risk Factors for Conversion During LC: Retrospective Analysis of Ten Years Experaince at a Single Tertiary Referral Center.Dig Surg. 2013;30(1):51-55. Doi: 10.1159/000347164.
14. Yajima H, Kanai H, Son K, Yoshida K, Yanaga K.Reasons and Risk Factors for Intra-Operative conversion from Laproscopic to OC. Surg Today 2014 Jan;441(1):80-33. Doi: 10.1007/s00595-012-0465-5.

	Authors Name	Contribution	Signature
1	KAMRAN HAKEEM KHAN E-mail kamranhakeem khan @gmail.com	•proposed the topic •wrote the paper	
2	MOHAMMAD FARID KHAN E-mail Faridkhan123@yahoo.com	•Performed surgeries •consulted references	
3	TARIQ JABBAR KHAN E-mail drTariqclinic@yahoo.com	•Performed surgeries •helped in literature review	
4	FAZAL GHANI E-mail Fazalnmc2015@gmail.com	•helped in literature review.	
5	SIDRA MANZOOR E-mail sidra-Manzoor01 @hotmail.com	•helped in collecting data.	

Submitted for publication: 28.01.2019

Accepted for publication: 18.05.2019
After Revision