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A PROSPECTIVE STUDY OF INTRAOPERATIVE DIFFICULTIES DURING LAPAROSCOPIC CHOLECYSTECTOMY IN DIABETIC PATIENTS

Medical Science

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ABSTRACT

Introduction: Gall stones are one of the most common problems affecting the digestive tract requiring hospitalization. The disease frequently occurs in young , otherwise healthy people with a prevalence of 11-36% on autopsy report [1]. The reported prevalence of gallstones in northern India is 6.12%. Elective Laparoscopic Cholecystectomy (LC) is one of the most common minimum access surgery performed by General Surgeon. It is indicated for patients with sufficient symptoms from gallstones [2]. In more than 90% of patients, cholecystectomy is curative, leaving them symptom free. Sometimes the procedure is difficult, challenging, time consuming due to various intraoperative difficulties.

Aims And Objectives: Determine whether or not diabetes as an independent factor can lead to intraoperative difficulties during LC.

Material And Methods: Study design- A Randomized Prospective Cohort type of study period – September, 2018 to March, 2020 (18 months)

Study Area- Ramakrishna Mission Seva Pratishthan hospital, Kolkata, West Bengal.

Inclusion Criteria: Patients who are admitted for elective LC in department of General Surgery. **Exclusion Criteria:** LC performed with other laparoscopic (Ex- with CBD exploration) or open procedures, previous abdominal surgeries, post ERCP patients.

Results: Our study showed that intra-abdominal adhesions (46.7%) and higher proportion of intraoperative bleeding (11%) when compared to non-diabetic patients which had 34.7% patients with intra-abdominal adhesions and only 1.1% patients with intra-operative bleeding but these results were not found to be statistically significant , in our study dense adhesions around GB was found to be present in equal proportion (3.8%) in both the groups.(P value - 0.999) and haemorrhage from GB fossa was observed in 1.9% of cases in diabetics and 3.8% in non-diabetics , here also the difference was not significant.(p value 0.6494).

Summary And Conclusion: Thus, it can be concluded that diabetes as an independent factor cannot lead to a difficult laparoscopic cholecystectomy. We also found that diabetic patients did not have increased conversion to open surgeries, we also conclude that intra-operative difficulties encountered were present in bothdiabetes and non-diabetic patients, the difference in occurrence was not significant and diabetes is often thought to be a major factor contributing to a difficult LC.

KEYWORDS

Intraoperative Difficulties, Laparoscopic Cholecystectomy And Diabetic Patients

INTRODUCTION

Gall stones are one of the most common problems affecting the digestive tract requiring hospitalization. The disease frequently occurs in young , otherwise healthy people with a prevalence of 11-36% on autopsy report [1]. The reported prevalence of gallstones in northern India is 6.12%. Elective Laparoscopic Cholecystectomy (LC) is one of the most common minimum access surgery performed by General Surgeon. It is indicated for patients with sufficient symptoms from gallstones [2]. In more than 90% of patients, cholecystectomy is curative, leaving them symptom free. Sometimes the procedure is difficult, challenging, time consuming due to various intraoperative difficulties.

A more challenging procedure intraoperatively may result in patients exposed to increased anaesthesia time, increased complications and conversion following failed laparoscopic dissection due to difficult anatomy or more severe gallbladder disease. Total prevalence of Diabetes in India as per data by WHO is 7.8% in the year 2016. Where in males it is 7.9% and in females it is 7.5%. It is often debated how diabetic patients with gallstones be managed. Some prefer that Diabetic patients with symptomatic gallstones should have a cholecystectomy promptly, as they are more prone to develop acute cholecystitis that is often severe [3]. And some prefer that prophylactic cholecystectomy may be considered for diabetic patients, as it has been found in these patients that the risk of developing symptoms is increased [4]. Because of increased risk of complications, a diabetic patient with gallstones , when operated may present a challenging problem for operating surgeons.

Various nature of difficulties that is faced during LC may include- Difficult port insertion entry, non-visualization of gallbladder(GB), dense intra-abdominal adhesions, difficulty in gall bladder grasping, ductal anomalies, calots triangle disarranged anatomy due to fibrosis, Mirizzi syndrome , short cystic duct, difficulty finding the plane of dissection between gallbladder and gallbladder fossa , bleed from gallbladder fossa and other difficulties that can make the operation demanding on the surgeon and may lead to conversion to open cholecystectomy.

The operation is difficult for the surgeons due to various obvious reasons like 2 dimensional view, indirect contact with intraabdominal structures, limited tactile feedback but also due to distortions in normal usual picture of operating area.

There is sometimes difficulty in isolating the cystic duct or in following to its confluence with the common hepatic duct. The difficulty may be caused by densely adherent planes in calot's triangle making the anatomy impossible to elucidate [5]. This may occur when the surgeon is forced to operate for complications of cholecystitis when the inflammation has been continuing for a week or more.

Although LC is now the standard method where facilities are and skills are available and It has proven clinical and economic benefits with comparable and shorter operative times, shorter hospital stay, more rapid return to full activity and less morbidity/mortality compared with open surgery, patients must be warned that that there is a risk of conversion to open procedure (approximately 2-5%), which is higher in patients having an urgent cholecystectomy (10- 15%).[6]

Due to growing burden of Diabetes Mellitus, and Gallstones, and various manifestations arising from the two disease presenting together, a study is done taking both the disease into account.

AIMS AND OBJECTIVES

1) To determine whether or not diabetes as an independent factor can lead to intraoperative difficulties during LC.

2) To study following parameters in diabetic and non-diabetics undergoing Laparoscopic Cholecystectomy

- Dense Upper Abdominal Adhesions
- Difficult in Grasping Gallbladder
- Fibrosis and difficult calot's triangle
- Haemorrhage from gall bladder fossa
- Fundus first dissection approach
- Requirement of a fifth port
- Conversion to open cholecystectomy

MATERIAL AND METHODS

Study Design- A Randomized Prospective Cohort type of study period – September, 2018 to March, 2020 (18 months)

Study Area- Ramakrishna Mission Seva Pratishthan hospital, Kolkata, West Bengal.

Inclusion Criteria: Patients who are admitted for elective LC in department of General Surgery.

Exclusion Criteria: LC performed with other laparoscopic (Ex- with CBD exploration) or open procedures, previous abdominal surgeries, post ERCP patients.

Statistical Analysis:
1. The primary aim will be to fit the model (1). To do so the parameters α, β need to be estimated.
2. After the parameters are estimated we could test Ho: $\beta = 0$ vs H1: $\beta \neq 0$
3. Categorical variables are expressed as Number of patients and percentage of patients and compared across the groups using Pearson's Chi Square test for Independence of Attributes/ Fisher's Exact Test as appropriate.
4. The statistical software "R" has been used for the analysis.

An alpha level of 5% has been taken, i.e. if any p value is less than 0.05 it has been considered as significant.

Criteria For Difficult LC
If any one or more of below numbered observational parameters occurs, it is considered as a difficult LC.
1- Dense adhesions around GB
2- 2- Difficulty in grasping GB
3- Fibrosis and difficult calots triangle dissection
4- Hemorrhage from GB fossa
5- Fundus first dissection
6- Subtotal Cholecystectomy
7- Requirement of Fifth Port
8- Conversion to Open LC

RESULTS

We found that (16%) than non-diabetic patients (7.2%) but in our study ,which is prospective randomized study , we did not find similar results , in fact none of the patients in diabetic group had open surgery and in non-diabetic only 2.5% of patients had an open surgery, the difference was not significant (P value – 0.5163).

Our study showed that intra-abdominal adhesions (46.7%) and higher proportion of intraoperative bleeding (11%) when compared to non-diabetic patients which had 34.7% patients with intra-abdominal adhesions and only 1.1% patients with intra-operative bleeding but these results were not found to be statistically significant , in our study dense adhesions around GB was found to be present in equal proportion (3.8%) in both the groups.(P value - 0.999) and haemorrhage from GB fossa was observed in 1.9% of cases in diabetics and 3.8% in non-diabetics , here also the difference was not significant.(p value 0.6494).

We found that the incidence of difficult LC among diabetes group was 36.5 patients per 100 patients, which was within 95% confidence interval and the incidence of same among non – diabetic patients was 29.4 patients per 100 patients, which was within 95% confidence interval also. To test whether the incidence of Difficult LC in Diabetics patients is significantly greater than that of Non-Diabetic patients Chi-square test of independence is carried out. Based on the data the test suggests to reject any such findings (p value = 0.4235).

DISCUSSION

In our prospective randomized cohort study, majority of the patients are female in their forties, and majority of diabetic patients also belong to females in their forties.

Population of non-diabetic patient undergoing LC was greater, which reflects in the sample proportion also. Majority of the patients in both diabetic and non-diabetic group had a normal LC that is without any difficulty that is they did not have any parameters to prove it was a difficult LC. Out of all parameters of difficulty, fibrosis and difficult Calots triangle dissection was relatively common, in both diabetic and non-diabetic patients.

The primary aim of our study was to determine whether or not diabetes as an independent factor can lead to intra-operative difficulties during LC , we have found that in our study sample , the incidence of difficult LC in diabetic group is greater than non-diabetic group , but on statistical analysis for significance , the difference is not significant , so our study cannot be applied to the general population as a whole , also after calculating the relative risk we found that the association of difficult LC in diabetics is more than in non-diabetic patients , but it was not significant. So in our analysis we come to the conclusion that diabetes as an independent factor cannot lead to intra-operative difficulties during LC.

In our study, on our parameters for suggesting difficulty, none of the parameters showed significant difference in their occurrence when compared in both diabetic and non-diabetic patients. The most common parameter to occur was fibrosis and difficult calots triangle dissection but that too was not significantly different in the two groups. In the retrospective study by Paajanen et al [7] in 2010 found that diabetic patients had more conversion to open surgery (16%) than non-diabetic patients (7.2%) but in our study, which is prospective randomized study, we did not find similar results, in fact none of the patients in diabetic group had open surgery and in non-diabetic only 2.5% of patients had an open surgery, the difference was not significant (P value – 0.5163).

In a study conducted in 2012 [8], it was found that diabetic patients undergoing LC had higher proportion of patients with intra-abdominal adhesions (46.7%) and higher proportion of intraoperative bleeding (11%) when compared to non-diabetic patients which had 34.7% patients with intra-abdominal adhesions and only 1.1% patients with intra-operative bleeding but these results were not found to be statistically significant , in our study dense adhesions around GB was found to be present in equal proportion (3.8%) in both the groups. (P value - 0.999) and haemorrhage from GB fossa was observed in 1.9% of cases in diabetics and 3.8% in non-diabetics, here also the difference was not significant.(p value 0.6494).

A study in KMC, Manipal [9], has tried to develop a predictive scoring method for difficult LC. Their analysis revealed elderly, male, recurrent cholecystitis, obese patient, previous surgery ,post ERCP, abnormal liver and pancreatic enzymes, distended or contracted gall bladder, cirrhotic liver on ultrasound were identified as predictors of difficult LC. But they did not study Diabetes as a factor that can predict difficult LC, in our study we have found that Diabetes as an independent factor cannot lead to a difficult LC.

SUMMARY AND CONCLUSION

This study named a prospective study of intraoperative difficulties during laparoscopic cholecystectomy in diabetic patients , has been done in view of the growing cases of both diabetes and gallstones presenting together to a surgeon and tries to determine whether or not diabetes as an independent factor can lead to intraoperative difficulties during LC by observing the presence of intra-operative parameters in diabetic and non-diabetics undergoing LC.

Thus, it can be concluded that diabetes as an independent factor cannot lead to a difficult laparoscopic cholecystectomy. We also found that diabetic patients did not have increased conversion to open surgeries, we also conclude that intra-operative difficulties encountered were present in both diabetes and non-diabetic patients, and the difference in occurrence was not significant.

Clinical Data: All Patients Of Intraoperative Parameters

Factors	Levels	Count%
Exposure	Diabetic	52(40%)
	Non diabetic	78(60%)
Difficulty	None	88(68%)
	Dense adhesions around GB 1	5(4%)
	Difficulty in grasping GB 2	7(5%)
	Fibrosis and difficult calots triangle dissection	14(11%)
	Hemorrhage from Gb fossa 4	04(3%)
	Funds first dissection 5	07(5%)
	Subtotal Cholecyestectomy 6	02(2%)
	Requirement of Fifth Port 7	01(1%)
	Conversion to open LC 8	02(2%)

REFERENCES

1. Brett M, Barker DJ. The world distribution of gall stones. Int J Epidemol. 1976;5:335.
2. Jackson PG. Biliary System. In: Sabiston Textbook of surgery. 19th ed. Philadelphia : Elsevier; p. 1487.
3. Pham TH, Hunter JG. Gallbladder and the extrahepatic Biliary System. In: Schwartz's Principles of Surgery. 10th ed. USA: McGraw-Hill; 2015 p.1320
4. Conlon K. The gall bladder and bile ducts. In: Bailey & Love's short practice of Surgery. 26th ed. Boca Raton: CRC Press; 2013. P.1108.
5. Farquharson M, Hollingshead J, Moran B. Gallbladder and Biliary surgery. 10th ed. London: CRC Press; 2014. P. 330

6. Farquharson M, Hollingshead J, Moran B. Gallbladder and Biliary Surgery. In: Farquharson's Textbook of Operative General Surgery. 10th ed. London: CRC Press;2014. p.325.
7. Paajanen H, Suuronen S, Nordstrom P. Laparoscopic versus Open Cholecystectomy in diabetic patients and postoperative outcome. Surg Endosc 25, 764-770(2011).
8. Saleh M. Aldaqal, Alia T. Albaghdadi, Hanaa M. Tashkandi, Basem S. El-deek, Ghada A. Al-Malki; Ali M. Turki and Ahmed M. Makki. Effect of Diabetes Mellitus on Patients Undergoing Laparoscopic Cholecystectomy: A Comparative Cross-Cross- Sectional Study. Life Science Journal 2012; 9(1):431-439]. (ISSN: 1545-1003).
9. Vivek MK, Augustine AJ, Rao R. A comprehensive predictive scoring method for difficult Laparoscopic cholecystectomy. J Min Access Surg 2014;10:62-7.