

Diabetes and Hypertension as Risk Factor for Conversion to Open Cholecystectomy

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Abstract

Introduction: Laparoscopic cholecystectomy is the gold standard procedure for gall stone disease. Few cases of acute calculous cholecystitis require conversion to open procedure. Patients with diabetes and hypertension are at increased risk of failure of laparoscopic cholecystectomy.

Aims and Objectives: To evaluate the risk of failure of laparoscopic cholecystectomy in type 2 diabetes patients with patients without diabetes.

Materials and methods: A prospective study was conducted at a tertiary care hospital. Study was conducted after obtaining ethical committee clearance and informed consent from patients. 90 patients were included in the study.

Results: 90 patients of acute calculous cholecystitis were taken for laparoscopic cholecystectomy of which 38 patients had to undergo conversion to open procedure. Among these 17 were having diabetes and hypertension and 14 had type 2 diabetes alone.

Conclusion: It is important to evaluate in detail before taking the patients with commodities like diabetes and hypertension for laparoscopic cholecystectomy and prevent morbidity.

Keywords: Acute calculous cholecystitis; Cholecystectomy; Laparoscopic cholecystectomy; Failure of laparoscopy; Conversion to open

cholecystectomy; diabetes with cholecystitis; diabetes and laparoscopic cholecystectomy.

Introduction

In the era of laparoscopic surgeries, Cholecystectomy is one of the surgeries which is approached laparoscopically. Langenbuch was the first to do laparoscopic cholecystectomy in late 1800's¹ but the first to be documented is by Erich Muhe in 1985 in Germany.² Now, Laparoscopic cholecystectomy is considered as "Gold-Standard" for the treatment of symptomatic gallstones.³

It has been reported that 1.8-27.7% of laparoscopic cholecystectomies are converted to open surgery during the surgery.⁴ Diabetes has been considered a risk factor for the development of acute cholecystitis.^{5,6} Gangrenous changes of gall bladder are most common in diabetic in cholecystitis.⁷ These changes further increase the risk of failure of laparoscopic cholecystectomy in diabetics.^{8,9,10}

According to Tokyo guidelines few markers were identified to grade the severity of acute cholecystitis and failure of laparoscopic cholecystectomy.^{11,12} However, the risk of conversion in diabetics is poorly understood. In our study we aim at highlighting the risk of failure of laparoscopic cholecystectomy in diabetic patients.

Aims & Objectives

To evaluate the risk of failure of laparoscopic cholecystectomy in type 2 diabetes patients with patients without diabetes.

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Materials and Methods

A prospective study was conducted in tertiary care hospital. Study was conducted after obtaining ethical committee clearance and informed consent from patients. 90 patients were included in the study irrespective of gender.

Inclusion Criteria

- Age above 35years.
- Confirmed cases of Acute calculous cholecystitis on ultrasonography.
- Patients undergoing cholecystectomy within 3 days of onset of symptoms.

Exclusion Criteria

- Age <35years.
- Presence of other hepatobiliary pathologies like – cirrhosis, hepatitis, tumours, cholangitis, choledocholithiasis.
- Pregnancy.
- Patients with Type 1 diabetes.
- Patient previously who had undergone major abdominal surgery.

Statistical Analysis

The data were analysed using SPSS software. Version 21 Chi square test was applied to establish the relationship between the data obtained.

Results

90 patients with acute calculous cholecystitis presenting between 1 to 3 days of onset of symptoms underwent laparoscopic cholecystectomy. Among 90 patients 38 patients failed to complete laparoscopic procedure and were converted to open cholecystectomy and 52 patients underwent successful laparoscopic cholecystectomy.

Study of distribution of intra operative severity among patients were studied with respect to comorbidities (Table 1). Intraoperative severity was higher among patients with co-existing diabetes and hypertension when compared to other groups and was found to be statistically significant with p value < 0.005 Further, distribution of comorbidities among patients undergoing successful versus failed laparoscopic cholecystectomy was studied (Table 2). Among 38 failed laparoscopic surgery 17 patients had both diabetes and hypertension, 14

Table 1: Distribution of comorbidity in patients with successful versus failed laparoscopic cholecystectomy (Chi-square test).

Laparoscopic cholecystectomy	Diabetes	Hypertension	Diabetes + Hypertension	No comorbidity	Total	P Value
Successful	11 (21.15%)	12 (20.68%)	13 (22.41%)	16 (30.76%)	52	0.0089
Failed	14 (36.84%)	3 (7.89%)	17 (44.73%)	4 (10.52%)	38	

Table 2: Distribution of intra operative severity in patients with and without comorbidities (Chi-square test).

Intra operative severity	Diabetes	Hypertension	Diabetes + hypertension	No comorbidities	Total	P Value
I	7	10	6	13	36	0.00015
II	3	5	2	4	4	
III	2	0	4	1	1	
IV	13	0	18	2	2	

patients had type 2 diabetes. These data was found to be statistically significant on Chi square test with P value of 0.0089.

Discussion

Laparoscopic cholecystectomy being gold standard procedure for symptomatic gall stone disease in present era is been widely employed by many surgeons. However due to various factors intraoperatively the patients may require conversion to open procedure. According to Tokyo guidelines few markers were identified to grade

the severity of acute cholecystitis and failure of laparoscopic cholecystectomy.^{11,12} such as raised TLC, raised total bilirubin and raised ALP levels. However few studies have shown to have failed laparoscopic cholecystectomy in diabetics even without significant raise in the above-mentioned biochemical parameters.^{13,14,15} Hence in our study we aim at establishing the relationship between diabetes, hypertension and failure of laparoscopic cholecystectomy.

Few studies have proven that gangrenous changes of gall bladder is most common in patients with diabetes.⁷ This is been proven in our study that

intraoperative severity was higher in patients with coexisting diabetes and hypertension followed by diabetes alone. The p value was found to be significant on Chi square test.

Further it was statistically proved that the failure of laparoscopic cholecystectomy was higher in patients with diabetes and hypertension with p value of 0.008

Conclusion

1. Diabetes and hypertension coexisting in a patient is a risk factor for failure of laparoscopic cholecystectomy
2. Diabetes alone is also a potential risk factor for conversion to open procedure when compared to patients with hypertensive alone and patients without any comorbidities.
3. Patients with diabetes and hypertension and patients with type 2 diabetes alone had poor intraoperative finding with the severity being higher compared to patients without comorbidity

It is important to evaluate in detail before taking the patients with commodities like diabetes and hypertension for laparoscopic cholecystectomy.

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