

Original Article

Evaluation of serum lipid profile in patients undergoing laparoscopic cholecystectomy

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Abstract

Background: Laparoscopic cholecystectomy (LC) has become the gold standard for surgical treatment of benign gallbladder disease. The advantages of this procedure compared to laparotomy include smaller incisions, reduced surgical trauma, less postoperative pain, faster recovery times, a shorter hospital stay, and faster return to normal activities and work. Hence; we planned the present study to assess the serum lipid profile in patients undergoing LC. **Materials & methods:** The present study included assessment of serum lipid profile of patients undergoing LC. Blood samples were taken after a 12 hour fasting state at the baseline and completion of the study and were kept in -70 °C until they were assessed. Serum concentrations of triglyceride (TG), total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), were measured before and 30 days after the surgery by using specific kit and the serum concentration of low-density lipoprotein cholesterol (LDL-C) were calculated. All the results were recorded on excel sheet and were analyzed by SPSS software. **Results:** Non- significant results were obtained while comparing the mean serum lipid profile in patients undergoing LC. **Conclusion:** Serum lipid profile appears to be unaffected by LC procedure.

Key words: Cholecystectomy, Laparoscopic, Lipid

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INTRODUCTION

Cholelithiasis affects mainly women, at a proportion of approximately 2:1. Numerous conditions contribute to the development of gallstones, with the most important being obesity, hypercaloric diet, diabetes, liver cirrhosis, hemolytic disease, physical inactivity, multiple pregnancies, and long-term treatment with sex hormones.¹⁻⁴ Laparoscopic cholecystectomy (LC) has become the gold standard for surgical treatment of benign gallbladder disease. The advantages of this procedure compared to laparotomy include smaller incisions, reduced surgical trauma, less postoperative pain, faster recovery times, a shorter hospital stay, and faster return to normal activities and work. The use of a single umbilical incision for gallbladder removal was an interesting

innovation and single-incision laparoscopic cholecystectomy has gained momentum in the literature since its description in the literature.⁵⁻⁸ Hence; we planned the present study to assess the serum lipid profile in patients undergoing LC.

MATERIALS AND METHODS

The present study was conducted in the department of surgery of the medical institute and included assessment of serum lipid profile of patients undergoing LC. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Demographic information such as age, sex, weight, and height were determined and recorded. Body weight and height were

measured without heavy clothes by using a Seca scale and a statio-meter, respectively. Blood samples were taken after a 12 hour fasting state at the baseline and completion of the study and were kept in -70 °C until they were assessed. Serum concentrations of triglyceride (TG), total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), were measured before and 30 days after the surgery by using specific kit and the serum concentration of low-density lipoprotein cholesterol (LDL-C) were calculated. All the results were recorded on excel sheet and were analyzed by SPSS software. Chi- square test and student t test were used for assessment of level of significance. P- value of less than 0.05 was taken as significant.

RESULTS

Table 1 shows the comparison of mean serum lipid profile in patients undergoing LC. Non- significant results were obtained while comparing the mean serum lipid profile in patients undergoing LC.

Table 1: Comparison of mean serum lipid profile in patients undergoing LC

Parameter	Mean value preoperatively	Mean value postoperatively	P-value
TC(mg/dl)	185.4	183.6	0.66
Triglycerides (mg/dl)	157.4	155.3	0.34

DISCUSSION

In the present study, we evaluated the pre-operative and post-operative serum lipid profile in patients undergoing LC. We didn't observe any significant difference in the lipid profile of the patients undergoing LC. Gill GS et al studied the effect of cholecystectomy on lipid levels in patients with gallstones. The study was conducted on 50 patients with gallstones and 30 healthy volunteers for comparison of lipid levels. Subsequently, cholecystectomy was conducted on patients with gallstones and pre- and post-operative lipid levels were compared. There was a significant decrease in total cholesterol, and triglycerides levels and increase in high-density lipoprotein levels after 1 month of surgery, while low-density

lipoprotein levels and very low-density lipoprotein were not statistically changed. Cholecystectomy can significantly improve lipid levels in patients with gallstones.⁹ Malik AA et al elucidated the association of dyslipidaemia with Cholelithiasis and effect of Cholecystectomy on the same.⁷ 73 patients with symptomatic gallstones were studied prospectively. Plasma concentration of cholesterol, triglycerides, LDL, HDL was analysed preoperatively and postoperatively on day 3 and after 6 months of Cholecystectomy. None of the patients received any lipid lowering drug or dietary restriction. Results were analysed and compared. 36 (80%) of the female patients and 20 (71.42%) of male patients had one or other abnormality in their lipid profile preoperatively. Plasma concentration of total cholesterol, triglycerides, and LDL cholesterol were significantly reduced in patients on day 3 of surgery and 6 months thereafter. There was no significant increase/decrease in HDL cholesterol in 6 months after Cholecystectomy. There was a significant decrease in plasma concentration of lipids in Cholecystectomy patients postoperatively. These changes in plasma lipids are likely to have significant effect in the development of coronary artery diseases in patients with Cholecystectomy.¹⁰ Tang WH et al investigated predisposing factors that lead to the formation of gallstones. In a group of 70 patients (51 with gallstones and 19 without, 20 possible risk factors were studied: percent of ideal body weight, the presence of superoxide dismutase in erythrocytes and in serum, lipid peroxide in serum, total serum cholesterol (Ch), high-density lipoprotein (HDL)-cholesterol (Ch), low-density lipoprotein (LDL)-Ch, very low-density lipoprotein (VLDL)-Ch, serum triglyceride (TG), HDL-TG, LDL-TG, VLDL-TG, serum bile acids (lithocholic acid, deoxycholic acid, chenodeoxy cholic acid, ursodeoxy-cholic acid, and cholic acid) and serum apolipoproteins (apo A-1, apo B-100, and apo A-1/apo B-100). Levels of apo B-100 and serum insulin in patients with gallstones were strikingly higher, and superoxide dismutase in erythrocytes was significantly lower than in individuals with no gallstones. Apo A-1 and HDL-Ch were also higher and LDL-Ch was lower in the gallstone group, albeit non-significantly so ($P > 0.05$) by t-test. However, Apo A-1, HDL-Ch, and LDL-Ch showed remarkably good discriminatory power in stepwise discriminant analysis of the 20 factors. Bile lipid composition was also measured and the cholesterol saturation index was calculated, but no significant

differences were seen between the two groups. The results demonstrated that serum lipid patterns differ to some extent in patients with and without gallstones. Lipid derangement may contribute to the development of gallstone disease.¹¹

CONCLUSION

From the above results, the authors conclude that serum lipid profile appears to be unaffected by LC procedure. However; future research is required for better exploration of results.

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