

Evaluation of Lipid Profile Alteration in Patients Undergoing Laparoscopic Cholecystectomy at a Tertiary Care Centre

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ABSTRACT

Background: The present study was conducted for evaluating lipid profile alteration in patients undergoing laparoscopic cholecystectomy (LC).

Materials & Methods: A total of 100 patients scheduled to undergo LC were enrolled. Blood samples were obtained, and preoperative lipid profile was assessed. LC procedure was carried out in all the patients. Postoperative lipid profile was assessed in all the patients. Comparison of preoperative and postoperative lipid profile was done followed by statistical analysis using SPSS software.

Results: Mean preoperative and postoperative total cholesterol was 156.2 mg% and 144.2 mg% respectively. Mean preoperative and postoperative HDL was 45.2 mg% and 42.1 mg% respectively. Mean preoperative and postoperative LDL was 108.6 mg% and 103.9 mg% respectively. Mean preoperative and postoperative triglycerides was 192.4 mg% and 208.4 mg% respectively.

Conclusion: Significant alteration of lipid profile occurs following LC.

Key words: Laparoscopic Cholecystectomy, Lipid Profile.


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INTRODUCTION

Cholelithiasis represents one of the major sources of morbidity in industrialized countries. Advanced age and female gender are well-established risk factors for gallstone disease and among the avoidable risk factors, food pattern, a sedentary lifestyle, and being overweight have been found to be associated with the risk of gallstone formation. However, several studies could not confirm those findings. Inconsistent results may be explained by different study designs (clinically-based versus population-based selection of study participants), by varying definitions of endpoints (e.g. symptomatic gallstone disease versus sonographical diagnosis), by insufficient numbers of subjects, by disregarding gender-related differences and by a limited spectrum of potential risk factors considered for multivariable statistical analyses.¹⁻³ Methodological differences may further account for conflicting results with respect to specific factors such as alcohol and coffee. Some studies found a protective effect of alcohol consumption on the risk of gallstone, whereas other studies could not confirm this relation.^{4,5} Hence, the present study was conducted for evaluating lipid profile alteration in patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

A total of 100 patients scheduled to undergo LC in the Department of General Surgery, RVS Medical College, Chittoor, AP (India) were enrolled. Complete demographic and clinical details of all the patients were obtained. A Proforma was made and complete medical history of all the patients was recorded. Blood samples were obtained, and preoperative lipid profile was assessed. LC procedure was carried out in all the patients. Postoperative lipid profile was assessed in all the patients. Comparison of preoperative and postoperative lipid profile was done.

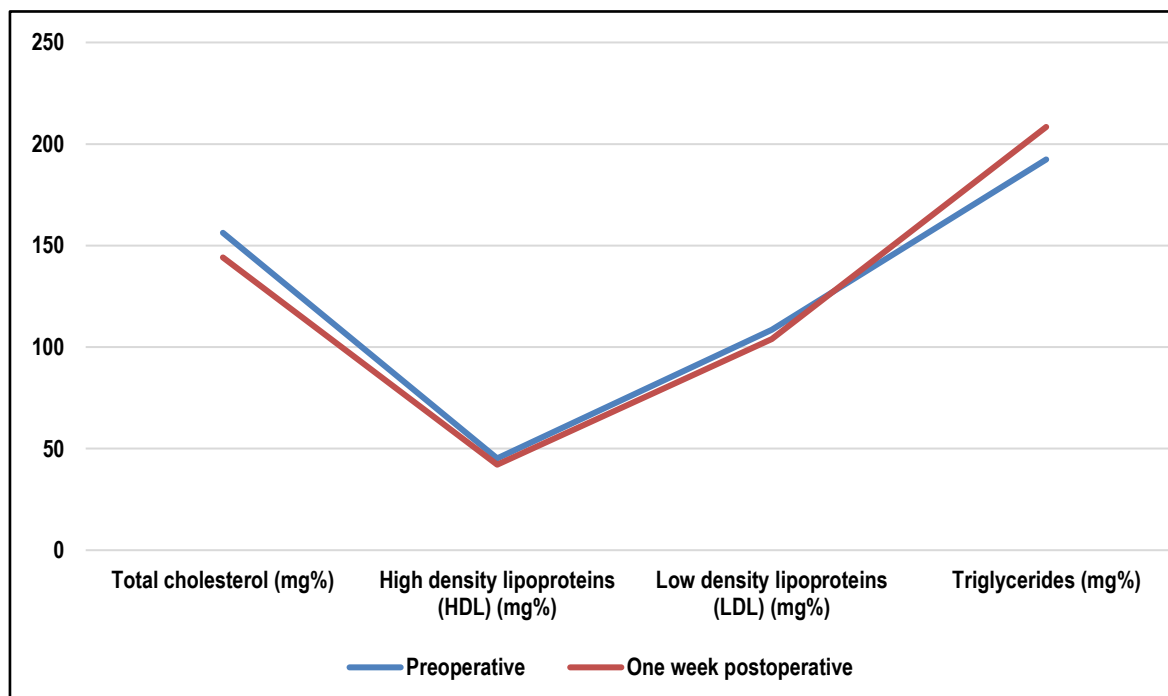
RESULTS

Mean age of the patients was 43.2 years with majority proportion of patients being males. Mean preop and postop total cholesterol was 156.2 mg% and 144.2 mg% respectively. Mean preop and postop HDL was 45.2 mg% and 42.1 mg% respectively. Mean preop and postop LDL was 108.6 mg% and 103.9 mg% respectively. Mean preop and postop triglycerides was 192.4 mg% and 208.4 mg% respectively. Significant alteration of lipid profile was seen following LC.

Table 1: Comparison of lipid profile

Lipid profile	Preoperative	One week postoperative	P-value
Total cholesterol (mg%)	156.2	144.2	0.000 (Sig)
High density lipoproteins (HDL) (mg%)	45.2	42.1	0.087
Low density lipoproteins (LDL) (mg%)	108.6	103.9	0.751
Triglycerides (mg%)	192.4	208.4	0.000 (Sig)

Graph 1: Comparison of lipid profile



DISCUSSION

A polypoid lesion of the gallbladder (PLG) is defined as any elevated lesion of the mucosal surface of the gallbladder wall. Recent advances in radiologic tools such as ultrasonography (USG) and computed tomography (CT) have contributed to the early detection of gallbladder (GB) cancer. Eighty percent of GB cancers are characteristically detected as polypoid lesions, and differential diagnosis can be carried out by the pathologic examination alone. Distinguishing between benign and malignant polyps is important to facilitate early diagnosis and treatment, because untreated malignant GB polyps could cause a poor prognosis.⁶⁻¹⁰

Mean preoperative and postoperative total cholesterol was 156.2 mg% and 144.2 mg% respectively. Mean preoperative and postoperative HDL was 45.2 mg% and 42.1 mg% respectively. Mean preoperative and postoperative LDL was 108.6 mg% and 103.9 mg% respectively. Mean preoperative and postoperative triglycerides was 192.4 mg% and 208.4 mg% respectively. Kurtul N et al determined serum lipid and lipoprotein concentrations in a group of thirty-two gallstone patients and compared to the values obtained in thirty two healthy control subjects. The serum levels of high-density lipoprotein cholesterol and lipoprotein(a) in gallstone patients were found to be lower than that of the control group. Total cholesterol, triglyceride, low density lipoprotein cholesterol, apoprotein-A and apoprotein-B concentrations were observed to be higher in gallstone patients than the controls. The differences

in triglyceride and low-density lipoprotein cholesterol concentration were statistically significant. However, there was no significant difference in high density lipoprotein cholesterol, lipoprotein(a), apoprotein-A, apoprotein-B, and total cholesterol concentrations between groups. It was concluded that gallstone formation may be related to a disturbance in lipid and lipoprotein metabolism.¹⁰

Gender-specific risk factors for gallstone formation and their interactions were investigated by using data of the population-based Study of Health in Pomerania (SHIP). There were 468 persons (11.1%) with previous cholecystectomy and 423 persons (10.1%) with sonographic evidence of gallstones. Women had a twofold higher risk for cholelithiasis compared to men. Age, body mass index and low serum HDL cholesterol levels were independently associated with cholelithiasis in both men and women. In the male population, low alcohol and high coffee consumption and in the female population, low physical activity, were further independently related to gallstone formation. Additionally, sex-specific interactions between risk factors were found. Female sex, age and being overweight are major risk factors for gallstone formation in this region where cholelithiasis is a frequent disorder.¹¹

Similar results were seen in a study conducted by Barter P et al. A post hoc analysis of the recently completed Treating to New Targets (TNT) study assessed the predictive value of HDL cholesterol levels in 9770 patients. The primary outcome measure was the time to a first major cardiovascular event, defined as

death from coronary heart disease, nonfatal non-procedure-related myocardial infarction, resuscitation after cardiac arrest, or fatal or nonfatal stroke. Even among study subjects with LDL cholesterol levels below 70 mg per deciliter, those in the highest quintile of HDL cholesterol level were at less risk for major cardiovascular events than those in the lowest quintile ($P=0.03$). In their post hoc analysis, HDL cholesterol levels were predictive of major cardiovascular events in patients treated with statins.¹²

Juvonen T et al elucidated the effect of cholecystectomy, a common surgical procedure, on the concentrations of plasma lipids and lipoproteins. 19 consecutive patient with symptomatic gallstone disease and emptying gallbladder, and 16 control patients (Nissen-Rosetti fundoplication) were studied. Plasma total and LDL cholesterol levels were significantly reduced in cholecystectomy patients at day 3 after the operation, the values returning to the preoperative level thereafter. In the control patients similar trends were observed for total and LDL cholesterol levels but these changes did not reach statistical significance. In cholecystectomy patients a significant increase was noticed in the very-low-density lipoprotein and intermediate density lipoprotein apoprotein B concentration three years after surgery. These minor changes in plasma lipoproteins following cholecystectomy are unlikely to have any importance in the development coronary heart disease.¹³

CONCLUSION

Significant alteration of lipid profile occurs following LC.

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