

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

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ABSTRACT

Background: Diseases of the gallbladder commonly manifest as gallstones and gallbladder cancer. Though laparoscopic cholecystectomy bids many benefits over open cholecystectomy, but fears are arising about its effect on lipid profile. Though lipid and bile acids metabolisms are functionally correlated, how cholecystectomy affects lipid profile is not well-comprehended. Hence; the present study was conducted for assessing the lipid profile alteration in patients undergoing laparoscopic cholecystectomy.

Materials & Methods: A total of 100 patients undergoing laparoscopic cholecystectomy were enrolled. Blood samples were obtained preoperatively, and serum lipid profile was evaluated. All the patients underwent LC. The lipid profile (TC: Total cholesterol, TG: Triglycerides, HDL: high density lipoproteins, LDL: Low density lipoproteins) was evaluated postoperatively. All the results were analyzed by SPSS software.

Results: Mean age of the patients was 45.3 years. Out of 100, 17 subjects were males while remaining 83 were females. While comparing the mean TC levels and TG levels from

baseline to 1 week postoperatively and further to 1 month postoperatively, significant results were obtained.

Conclusion: Since LC causes lipid levels to return to normal, it may be able to prevent the CAD and stroke that follow.

Keywords: Lipid, Laparoscopic cholecystectomy, Gallstones.


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INTRODUCTION

Diseases of the gallbladder commonly manifest as gallstones and gallbladder cancer. Gallstones constitute a significant health problem in developed societies.¹ The prevalence of gallbladder stones varies widely in different communities in India. In north India gallbladder stones are 7 times more common as compared to southern region of India.²

It affects 10% to 15% of the adult population, meaning 20 to 25 million Americans have (or will have) gallstones. The resultant direct and indirect cost of gallbladder disease represents a consumption of ~\$6.2 billion annually in the U.S.¹ Laparoscopic surgery is always considered as better than classical open one due to various advantages. Because of small incisions pain and complications like haemorrhage are reduced and time required for recovery is squatted.^{3,4} The key feature in laparoscopic surgery is the custom of a laparoscope, a long optic cable system which allows easy accessibility of site. Though laparoscopic cholecystectomy bids many benefits over open cholecystectomy but fears are arising about its effect on lipid profile.⁵

Based on the evidence, more than 50% of patients with gall stones have some sort of lipid disorder. Though lipid and bile acids metabolisms are functionally correlated, how cholecystectomy affects lipid profile is not well-comprehended. High lipid profile readings, are becoming increasingly prevalent, especially with the spreading factors among the general population.⁶⁻⁸ Hence; the present study was conducted for assessing the lipid profile alteration in patients undergoing laparoscopic cholecystectomy.

MATERIALS & METHODS

The present study was conducted in the Department of General Surgery, Maheshwara Medical College & Hospital, Sangareddy, Telangana (India) with the aim of assessing the alteration in the lipid profile of patients undergoing laparoscopic cholecystectomy. A total of 100 patients undergoing laparoscopic cholecystectomy were enrolled. Written consent was obtained from all the patients after explaining in detail the entire research protocol.

Inclusion Criteria for the present study included patients undergoing laparoscopic cholecystectomy and having symptomatic gallstones. A detailed work up of all the patients enrolled in the study i.e detailed history, a thorough Clinical Examination was performed, followed by routine investigations. After that all patients got their pre-anaesthetic check-up and underwent laparoscopic cholecystectomy under constant intraperitoneal pressure subsequently. Patients were kept nil orally 8 hrs prior to the surgery. Patients were given a loading dose of i/v

antibiotics after sensitizing dose just before surgery. Blood samples were obtained preoperatively and serum lipid profile was evaluated. All the patients underwent LC. The lipid profile (TC: Total cholesterol, TG: Triglycerides, HDL: high density lipoproteins, LDL: Low density lipoproteins) was evaluated postoperatively. All the results were analyzed by SPSS software version 16.0. Chi- square test and paired t test were used for assessment of level of significance. P- Value of less than 0.05 was taken as significant.

Table 1: Lipid profile at different time intervals

Lipid profile	Baseline	1 week postoperative	1 month postoperative
TC (mg/dL)	151.3	140.2	119.2
TG (mg/dL)	199.1	222.9	171.5
HDL (mg/dL)	44.8	41.9	46.2
LDL (mg/dL)	108.2	103.3	104.3

Table 2: Comparison of lipid profile at different time intervals

Lipid profile	Baseline Vs 1 week postoperative	Baseline Vs 1 month postoperative	1 week postoperative Vs 1 month postoperative
TC (mg/dL)	0.001*	0.000*	0.004*
TG (mg/dL)	0.000*	0.003*	0.002*
HDL (mg/dL)	0.123	0.775	0.631
LDL (mg/dL)	0.228	0.298	0.897

*: Significant

RESULTS

Mean age of the patients was 45.3 years. Out of 100, 17 subjects were males while remaining 83 were females. At baseline, mean TC, TG, HDL and LDL levels were found to be 151.3 mg/dL, 199.1 mg/dL, 44.8 mg/dL, and 108.2 mg/dL respectively. At 1 week postoperatively, mean TC, TG, HDL and LDL levels were found to be 140.2 mg/dL, 222.9 mg/dL, 41.9 mg/dL, and 103.3 mg/dL respectively. At 1 month postoperatively, mean TC, TG, HDL and LDL levels were found to be 119.2 mg/dL, 171.5 mg/dL, 46.2 mg/dL, and 104.3 mg/dL respectively. While comparing the mean TC levels and TG levels from baseline to 1 week postoperatively and further to 1 month postoperatively, significant results were obtained.

DISCUSSION

Since the introduction of the laparoscopic cholecystectomy in 1987, knowledge about the difficulties associated with the procedure and awareness of the potential complications have grown. Modernization of technical skills to overcome the difficulties and early detection of the complications and their timely management are keys to the success of this procedure. Although open cholecystectomy has largely been replaced by the laparoscopic technique, the potential for iatrogenic duct injuries is higher in the latter procedure. The frequency and type of biliary injuries during laparoscopic cholecystectomy vary, and timely diagnosis and management is critical for the well-being of the patient.⁷⁻⁹

The removal of the gallbladder is thereby known to affect the production of bile acids and lipid metabolism. Absorption of cholesterol is chiefly facilitated by the action of bile salts and phospholipids. Excess cholesterol or insufficiency of bile salts or phospholipids can lead to the nucleation of cholesterol crystals, which can cause gall stones. To it, secretion of cholesterol-rich bile acids, levels of bile acids and phospholipids that mediate cholesterol accumulation and reabsorption of deoxycholic in large intestine are some of the known causes of gallstones. Dyslipidemia is also reported to be a risk factor of gall stones and is presented in more than 50% of the patients with gallstones.⁸⁻¹¹ Hence; the present study was conducted for assessing the lipid profile alteration in patients undergoing laparoscopic cholecystectomy.

In the present study, the mean age of the patients was 45.3 years. Out of 100, 17 subjects were males while remaining 83 were females. At baseline, mean TC, TG, HDL and LDL levels were found to be 151.3 mg/dL, 199.1 mg/dL, 44.8 mg/dL, and 108.2 mg/dL respectively. At 1 week postoperatively, mean TC, TG, HDL and LDL levels were found to be 140.2 mg/dL, 222.9 mg/dL, 41.9 mg/dL, and 103.3 mg/dL respectively. Gill 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.¹²

Hayat S et al compared serum lipid profile of gallstone patients with the controls. A total of 50 patients were included in the study after screening through the inclusion criteria. A control group of 50 inpatients with no personal or family history of gallstones were also recruited for comparison. The mean age of the patients was 40.90 years and that of controls was 34.74 years. 46 patients were females and 44 controls were females. The serum cholesterol levels were high in the patients as compared to the controls but the comparison was not statistically significant. Serum triglycerides levels were high in the patients as compared to the controls and the analysis was statistically significant. Furthermore, the serum HDL levels were low in the patients as compared to the controls with a statistically significant p-value. However, the serum LDL levels were low in the patients as compared to the control group. It was concluded that serum triglyceride levels and serum HDL levels were statistically significant in gallstone patients and there was a positive correlation between these parameters and gallstone disease.¹³

CONCLUSION

Since LC causes lipid levels to return to normal, it may be able to prevent the CAD and stroke that follow.

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