

BMI AND LENGTH OF HOSPITAL STAY IN LAPAROSCOPIC CHOLECYSTECTOMY

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ABSTRACT

Gallbladder disease is one of the most common causes of hospital admission in middle-aged women in developed countries. Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. A high BMI can be an indicator of high body fatness. Postoperative length of stay (POLOS) was defined as the time from operative end to discharge from the hospital. Although increased Body Mass Index (BMI) is well recognized as a risk factor for gallstones and subsequent cholecystectomy, there is little information on what direct impact underweight, overweight and obesity have on the length of hospital stay for gallbladder disease. Aim of this study was to find out effect of BMI on length of hospital stay. This retrospective study of 55 patients was conducted over 3 months in the department of general surgery, Father Muller Medical College Hospital (FMMCH) Mangalore, India, and BMI appeared to contribute to a decreased POLOS.

KEYWORDS

Gallstones, Laparoscopic Cholecystectomy, POLOS, BMI.

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INTRODUCTION

Gallbladder disease is one of the most common causes of hospital admission in middle-aged women in developed countries.^{1,2} resulting in a substantial cost to health systems.³ Although increased Body Mass Index (BMI) is well recognized as a risk factor for gallstones and subsequent cholecystectomy.^{4,5} There is little information on what direct impact underweight, overweight and obesity have on the length of hospital stay for gallbladder disease. Given the increasing rates of overweight and obesity in the community, and the large number of hospital admissions for gallbladder disease, we report on the effect of BMI on length of hospital stay using routinely collected hospital admission records in a hospital admitted patients.

MATERIALS AND METHODS

The retrospective study was conducted over a period of three months in the department of general surgery, FMMCH, Mangalore, India, after ethical committee approval; 55 patients suffering from cholelithiasis admitted confirmed by ultrasonography were included in this study. Inclusion criteria-all the patients who underwent elective laparoscopic cholecystectomy. Emergency cholecystectomy patients were excluded. BMI was calculated using on admission height and weight collected. Participants were categorized according to the following BMI categories as shown in table no 1. Within each BMI category, the total length of hospital stay for all admissions for gallbladder disease and for cholecystectomy alone was calculated and presented as the total length of hospital stay.

RESULTS

Fifty five patients had full weight and height data recorded in the medical notes at the time of admission. According to their BMI, almost one third of the patients in this study were within the normal to overweight range (65.45%), 18.18% were underweight and 16.36% were obese. Out of these 55 patients, males were 19, females were 35. Age distribution of cholelithiasis as shown in Table No. 2. Out of 55, 9 (16.36%) were obese (Group I, BMI >30) and 46 (83.63%) were non-obese patients (Group II, BMI ≤30). Out of 46 patients 10 were underweight patients. Operative time averaged 95 minutes in Group 1 and 78 minutes in Group II. There were no deaths. There were no significant differences between the obese and non-obese groups in conversion to open procedure (Group I: 0%, Group II: 2.4%), intraoperative and postoperative complications (Group I: 4%, Group II: 4.8.0%). Average length of stay was 3 days in normal to overweight, 9 days in underweight, 4 days in obese patients. Preoperative BMI was not significantly related to surgical or medical complications. However, further analysis of preoperative BMI and the total number of complications showed patients with two or more complications trended towards having a lower BMI (19.9 ± 2.6kg/m²) compared with patients who had less than two complications (25.2±6.0kg/m²).

DISCUSSION

When comparing preoperative BMI and POLOS in this study, there were significant differences between patients who were underweight and patients who were of normal weight or overweight and obese. Underweight patients were in hospital 3 times longer than patients who were normal weight or who were overweight or obese. This is similar to a previous study of patients undergoing gastrointestinal surgery where malnourished patients were hospitalized twice as long as their well-nourished counterparts.⁶ although not statistically significant, a trend was seen with BMI and an increase in the total number of complications. Such complications include hemorrhage, bile duct injury, overlooked common bile duct stones, bile leak, perihepatic collection and infection.⁷ Patients with a BMI classified as overweight before surgery in this study had a lower number of complications compared to

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patients with a BMI at the lower limit of the healthy-weight range. This is consistent with previous studies showing that a higher BMI is associated with a better outcome.⁸ Further limitations need to be considered. Due to the retrospective nature of this study and the limited data available, only a small sample of patients was investigated. In addition, very limited nutritional information was available from the review of the medical notes. Insufficient information was available regarding weight history or serum albumin prior to or after surgery. BMI has been criticized as a poor marker of nutritional status as it does not reflect changes in weight, fat free mass⁹ or nutritional intake. Using validated measures to assess nutritional status, including the Subjective Global Assessment (SGA) would be ideal. Nutritional status, as measured by using the widely adopted and validated SGA tool¹⁰, has been demonstrated to predict postoperative nutrition-related complications in patients undergoing gastrointestinal surgery.^{6,11} This study suggests a lower BMI preoperatively is associated with a longer length of hospital stay and a trend towards a greater number of postoperative complications.

CONCLUSION

This study suggests that a lower body mass index preoperatively is associated with a longer length of hospital stay. However, further prospective research is required.

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BMI Classifications	
Normal	18.5 - 24.9
Overweight	25 - 29.9
Obese	30 - 34.9
Severely Obese	35 - 39.9
Morbid Obese	40+

Table 1

Age	Total No. of Patients	%
10-20	2	3.63
21-30	10	18.18
31-40	12	21.81
41-50	15	27.27
51-60	9	16.36
61-70	6	10.90
>70	1	1.81

Table 2