

Outcomes of Concomitant Bariatric Surgery and Ventral Hernia Repair--Our Experience

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Abstract

Introduction

Ventral hernias are frequently found in patients undergoing bariatric surgeries and the decisions on whether to address both the issues simultaneously or separately is still not clear. To assess the outcomes following concomitant bariatric surgery and ventral hernia repair with mesh in terms of recurrence, peri-operative and long term post-operative complications, the current study was conducted.

Methodology

This was a longitudinal study conducted at two tertiary care hospitals in the Department of Laparoscopic and Bariatric Surgery, Bangalore, for a period of 4 years from January 2012 to December 2015 and a follow up for 1 year. Based on inclusion and exclusion criteria all the patients who underwent concomitant repair were followed up for a period of 12 months and were assessed for recurrence, peri-operative and long-term post-operative complications. The data were expressed in means and proportions. In Sleeve Gastrectomy (SG), intraperitoneal mesh was put after the closure of defect and in Roux-en-Y Gastric Bypass (RYGB), on lay mesh repair was done.

Results

Among 290 obese populations who underwent bariatric surgery, 8.96% had ventral hernia. The mean age of the study participants was 46.4±12.5 yrs. Among the patients who underwent concomitant hernia repair, none of them developed recurrence during the 12 months follow up. Out of 26 patients, 7.7% developed seroma and wound infections each.

Conclusion

Concomitant mesh repair for ventral hernias combined with bariatric procedures can be concluded to be safe with only minor complications that could be managed conservatively and free of recurrence.

Introduction

Ventral hernias are commonly found among the obese patients and are identified in up to 8% of patients undergoing gastric bypass surgeries. Persistently high Intra-Abdominal Pressures (IAP) secondary to visceral fat, defects in fascial structure and reduced healing tendency, previous histories of abdominal surgeries, suboptimal fascial approximation are the factors that contribute for its occurrence [1]. Obesity is also known to be associated risk factor for occurrence of abdominal hernia [2,3] Recurrence rates are also noted to be higher in obese patients due to increased intra-abdominal pressure [3]. The evidences available does not still provide a consensus for the optimal timing of ventral hernia repair for patients undergoing bariatric surgery. However, it is reported that certain studies confirm the risk of small bowel obstruction if hernias are left alone and at the same time rate of surgical site infection is also noted to be low when mesh repair is performed at the same time as weight loss surgery [4]. Hence with an objective to assess the outcomes in terms of recurrence, peri-operative and long term post-operative complications following concomitant ventral hernia repair with mesh, the current study was conducted.

Newcomb et al., suggested bariatric surgery especially RYGB as a facilitating procedure prior to hernia repair among morbidly obese patients to reduce the risk of recurrence [5].

Chan DL et al., demonstrated a 4.4%-5.6% rate of infections during 13 months of follow up. They also suggested the possible reasonable short and long-term outcomes of concomitant laparoscopic abdominal wall hernia repair during bariatric surgical procedures [2].

Eid GM et al., in their study 28 consecutive patients with ventral hernia and needing bariatric surgery were prospectively enrolled into a study to evaluate an algorithmic approach to their surgery. In a group which underwent laparoscopic CMR with biological mesh and bariatric surgery at the same time had no recurrence at 13 months; however, at 30 months, 50% of these patients had been lost to follow up, and in the other 50% all had recurrences; in the other group who had laparoscopic CMR of the ventral hernia with permanent mesh, followed by bariatric surgery, on an average, 6 months later and the other group who had medically supervised weight loss diet for 12 weeks, followed by laparoscopic CMR with biological mesh and bariatric surgery at the same time had no recurrences. The other group who had bariatric surgery, followed by laparoscopic CMR with permanent mesh 9-18 months after the bariatric surgery, depending on rate of weight loss, patients suffered small bowel obstruction secondary to incarcerated ventral hernia 18 months post bariatric surgery. However, there were no reported mesh infections in any of these groups [6].

Cozacov et al., assessed intraoperative peritoneal aspirates 26 and 51 patients prospectively undergoing RYGB and SG, respectively. Bacterial growth was found in 15 % of the RYGB aspirates and none in the SG samples, suggesting the safety of use of synthetic mesh in patients undergoing SG [7].

Methodology

This was a longitudinal study conducted at two tertiary care hospitals in the Department of Laparoscopic and Bariatric Surgery, Bangalore, for a period of 4 years from January 2012 to December 2015. Obese study subjects who underwent either RYGB or sleeve gastrectomy bariatric surgeries along with the ventral hernia repair in the two tertiary care hospitals during the study period were included in the study. The patients who were not available for 12 months follow-up was excluded from the study.

Ethical approval was obtained from the Institutional Ethics committee. After obtaining the written informed consent, detailed clinical history was taken from the study subjects using a pre-tested semi-structured questionnaire. All the patients were examined clinically, and patients were evaluated preoperatively by a multidisciplinary team according to an established protocol.

Concomitant Bariatric Surgery and Ventral Hernia Repair

All the subjects underwent Bariatric surgeries viz., Sleeve Gastrectomy (SG) or Roux-en-Y Gastric Bypass (RYGB) along with ventral hernia repair. We performed standardized techniques for both procedures. In RYGB, we create a gastric pouch of 50-ml volume using a 36 French (Fr) bougie with an alimentary limb of 100 cm in length and a biliary limb of 150 cm in length. Gastro-jejunal anastomosis done in 4 layers using maxon 2-0 and jejuno-jejunal anastomosis done with stapler white 60 and enterotomy closed with maxon 2-0. Flat drain kept near the gastrojejunal anastomosis. SG is fashioned using a 36 Fr calibration gastric tube, excising an estimate 90 % stomach. We begin gastric resection 6.0 cm proximal to the pylorus using either Duet TRS™ or Endo GIA™ staplers (both by Covidien™), with suture line reinforcement using PDS™ 3.0 suture in the latter.

In sleeve gastrectomy, intraperitoneal mesh was put after the closure of defect and in RYGB, onlay mesh repair was done.

Outcome

After the surgery all the subjects were followed up for a period of 12 months to study the recurrence, peri-operative and long-term post-operative complications.

Statistical Analysis

The collected data were entered into an excel sheet. The data were expressed in means and proportions and presented in the form of tables and graphs where ever necessary. The analysis was done using standard statistical package.

Results

During the study period, 290 obese patients underwent bariatric procedure among which, 26/290 i.e., 8.96% had ventral hernia. The mean age of the study participants was 46.4±12.5 yrs and the age group ranged from 27 to 66 yrs. The median BMI of the study participants was

40.83 kg/m² and the BMI ranged from 28.40 to 54.51 kg/m². Females predominated (88.5%) the study. Majority i.e., 24/26, 92.4% of the hernias were umbilical hernias and 1/26, 3.8% para-umbilical hernia and incisional hernia each. Majority i.e., 61.5% underwent Sleeve gastrectomy with intraperitoneal mesh repair. 69.2% had co-morbidities like Diabetes (13/26, 50.0%), Hypertension (7/26, 26.9%), arthritis (3/26, 11.5%), Hypothyroidism (1/26, 3.8%), asthma (1/26, 3.8%) (Table 1).

Majority i.e., 24/26, 92.3% belonged to grade-2 obesity and remaining 2/26, 7.7% belonged to grade-1 obesity [8].

Characteristics of the study participants	
Age in years (Mean ± SD)	46.42±12.45
Gender (%)	
Males	03 (11.5)
Females	23 (88.5)
Median BMI in Kg/m² (Range)	40.83 (28.40 – 54.51)
Type of Hernia (%)	
Umbilical Hernia	24 (92.4)
Para-umbilical hernia	01 (3.8)
Incisional hernia	01 (3.8)
Operation type (%)	
Sleeve Gastrectomy + intraperitoneal mesh repair	16 (61.5)
Roux-en-Y Gastric Bypass (RYGB) + only mesh repair	10 (38.5)
Co-morbidities (%)	
Present	18 (69.23)
Absent	08 (30.77)

Table 1: Characteristics of Study Population

Among the patients who underwent concomitant hernia repair, none of them developed recurrence during the 12 months follow up. The most common complications encountered were wound infection and seroma formation which were managed conservatively. Out of 26 patients, 4 developed minor complications. 2/26, 7.7% developed seroma and were managed conservatively and other 2/26, 7.7% developed wound infections among whom one was managed with antibiotics and the other with incision and drainage under the cover of antibiotics.

Among those who underwent sleeve gastrectomy with intraperitoneal mesh repair, 3/16, 18.7% developed complications among whom, 2 had wound infections and 1 had seroma. Only 1/26, 3.8% among those who underwent Roux-en-Y Gastric Bypass (RYGB) with only mesh repair wound infection as a complication (Table 2).

Complications	Sleeve Gastrectomy + intraperitoneal mesh repair (n=3)	Roux-en-Y Gastric Bypass (RYGB) + onlay mesh repair (n=1)
Seroma	01 (33.3)	01 (100.0)
Wound infection	02 (66.7)	00 (0.0)

Table 2: Complications after concomitant bariatric surgeries and ventral hernia repair among the study population.

Discussion

Obesity, a significant precipitating factor for both primary and recurrent ventral hernias (incisional and umbilical) is a common worldwide disease. With the rise in prevalence of obesity, it is not infrequent to find abdominal wall defect in patients opting surgery for obesity. Operating surgeons and patients can decide on, whether to address both the issues simultaneously or separately. However combining the two procedures will not change the length of hospital stay and similarly the rate of complications [6,9].

Datta et al., in his study has reported ventral hernia among 8% of patients who presented for a gastric bypass procedure similar to the present study wherein, 8.96% had ventral hernia repair [10]. The mean age of the study participants who underwent concomitant bariatric surgery with ventral hernia repair was 53 years with a range of 31 to 74 yrs and majority were females as reported by Raziel A et al., which are similar to the current study findings wherein, the mean age was 46.4±12.5 yrs and ranged from 27 to 66 yrs.¹¹ Chan DL et al., has found a mean BMI with a range of 40.3 kg/m² and 31.4 kg/m² to 57.0 kg/m² which is in line with the current BMI of the study participants [2]. Umbilical hernia is the commonest type which was found in our study and is the same in many of the studies [11,12]. In the current study, majority underwent sleeve gastrectomy similarly, in a study by Raj PP et al., of the 36 patients who had combined surgery, majority underwent sleeve gastrectomy [13]. Major comorbid condition among our patients was diabetes and Chan DL et al., in their study also found diabetes as the commonest comorbidity [2].

Chan DL et al., in their study noted a low rate of mesh infection (5.56%) with resectional procedures at a median follow-up of 13 months and similarly in the current study, the rate of infection was noted to be 7.7% considering RYGB and SG operations as the resectional procedures [2]. In a study by Padmakumar R et al., among the 82 patients who underwent concomitant laparoscopic bariatric surgery and abdominoplasty, 6 patients developed postoperative seroma and 3 patients developed surgical site infection [9] however in our study the seroma rate was noted to be 7.7% among those who underwent both combined bariatric surgery along with ventral hernia repair. The difference in the rates of seroma may be due to the fact that the rate of seroma in Padmakumar R et al., study was mentioned among 82 patients who underwent concomitant laparoscopic bariatric surgery and abdominoplasty. The data on number of patients who developed seroma or infections were not specified out of patients who underwent both combined laparoscopic bariatric surgery and ventral hernia repair but was

among the patients who underwent concomitant laparoscopic bariatric surgery and abdominoplasty [9].

In a study by Raj PP et al., has noted no immediate complications or any incidence of mesh infection or recurrence in either of the groups operated with either RYGB or SG [13]. Spaniolas K et al., in their study has noted that there was no significant effect of procedure type (RYGB or SG) on rates of surgical site infections after controlling for baseline comorbidities¹⁴ which are not in line with the current study findings that the rate of infections were more among those who underwent sleeve gastrectomy with intra-peritoneal mesh repair and the difference may be due to the confounders like comorbidities which are not controlled in the current study.

To elicit generalizable inferences to the whole population, the current study needs to be conducted in a larger sample and with a control group to compare the outcomes among both the groups.

Conclusion

Concomitant mesh repair for ventral hernias combined with bariatric procedures like Roux en Y gastric bypass and sleeve gastrectomy can be conducted safely. Though there were more complications among those patients undergoing Sleeve gastrectomy, there were only minor complications which could be managed easily on OPD basis.

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