

## Case Report

# Is it safe to combine ventral hernia repair with bariatric surgery?

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## ABSTRACT

Obesity is one of the important precipitating factors for primary and incisional ventral hernias. There is controversy regarding the optimal time and method of repair of abdominal wall hernias in patients undergoing bariatric surgery. We reviewed our series of 250 patients who underwent bariatric surgery over 6 years period. 7 morbidly obese patients undergoing bariatric surgery had simultaneous ventral hernia repair. Roux-en-Y gastric bypass (RYGB) in 2 patients and laparoscopic sleeve gastrectomy (LSG) were done in 5 patients. 6 patients had primary midline paraumbilical hernia and 1 patient had large recurrent incisional hernia. Open intraperitoneal onlay mesh (IPOM) repair was done in 5 cases with hernia defect <5 cm. Sutured repair was done in 1 patient, recurrence occurred after 3 months. IPOM repair was done 6 months later after significant weight loss. 1 patient of large incisional hernia (10 cm defect) with cholelithiasis underwent open mesh hernioplasty and panniculectomy. Postoperative seroma occurred in one patient, it subsided after repeated aspirations. After average follow up of over 2 years there has been no recurrence.

**Keywords:** Morbid obesity, Laparoscopic bariatric surgery, RYGB, LSG, Ventral hernia, Incisional hernia, Recurrence, Panniculectomy

## INTRODUCTION

Increased incidence (up to 20%) of ventral hernia has been reported in morbidly obese patients. Factors blamed include increased visceral fat, elevated intra-abdominal pressure, increased abdominal wall circumference, higher risk of surgical site infection and associated comorbidities, example: diabetes.<sup>1</sup> Several options on timing of ventral hernia repair are available.<sup>2</sup> The concomitant bariatric surgery and ventral hernia repair is technically demanding and incarcerated ventral hernia limit working field for bariatric surgery.

Patients with obesity and ventral hernia with the following characteristics were classified as having favorable anatomy: body mass index (BMI) less than 50 kg/m<sup>2</sup>, gynecoid body habitus, midline reducible hernias, abdominal wall thickness less than 4 cm, and the defect's largest diameter not exceeding 8 cm. All other patients

were classified as having an unfavorable anatomy, Eid et al.<sup>3</sup> An experience of 7 patients with morbid obesity undergoing simultaneous ventral hernia repair is presented.

## CASE REPORT

In our series of 250 patients who had undergone bariatric surgery over 6 years (2010 to 2016) period, 25 patients (10%) had associated ventral hernia. Ultrasound (USG) and contrast-enhanced computed tomography (CECT) helped to assess defect size and contents in ventral hernia particularly when it was large and incarcerated. 7 patients underwent concomitant bariatric surgery and ventral hernia repair.

Laparoscopic Roux-en-Y gastric bypass (RYGB) was done in 2 patients who presented with BMI >50 kg/m<sup>2</sup> and comorbidities, example: diabetes, hypertension and

obstructive sleep apnea (OSA). Both had irreducible primary paraumbilical hernia.

One patient with 5.0 cm defect had open intraperitoneal onlay mesh (IPOM) repair.

Another patient had incarcerated hernia with defect size of 8 cm. After reduction of omento-enterocele to allow working space, RYGB was done. However, sutured repair of hernia defect without mesh was done. The hernia recurred within 3 months. IPOM repair was done 6 months later following significant weight loss (Figure 1).



**Figure 1: Morbid obesity with large incarcerated ventral hernia of 8 cm defect size.**

Laparoscopic sleeve gastrectomy was done in 5 patients with average BMI of 42 kg/m<sup>2</sup>. 4 patients had irreducible paraumbilical hernia. Size of defect varied from 3.0 cm to 6.0 cm. IPOM repair was done in all these cases. One patient presented with massive recurrent incisional hernia with 10 cm defect along with cholelithiasis. After laparoscopic sleeve gastrectomy and cholecystectomy, hernioplasty with onlay mesh (synthetic polypropylene) along with panniculectomy was done (Figure 2).



**Figure 2: One year after concomitant sleeve gastrectomy, mesh hernioplasty, cholecystectomy and panniculectomy.**

Dual mesh (proceed) was used for IPOM. It was fixed with combination of trans fascial prolene sutures and double crowning with non-absorbable Protacks at 1.0 cm distance.

Average operating time increased by 40 minutes in 5 patients with concomitant IPOM. It took extra 60 minutes in the patient who needed open repair of large incisional hernia. Average hospital stay was 4 days. 1 patient developed seroma postoperatively which subsided with repeated aspirations over 3 months. There was no incidence of mesh infection or recurrence after 2 years follow up.

## DISCUSSION

Several options are available whenever a morbidly obese patient coming for bariatric surgery has associated ventral hernia. The choice is largely dictated by several factors, including hernia size, presence of symptoms and type of bariatric procedure (clean versus clean-contaminated). They are as follows: hernia repair followed at a later date by bariatric surgery, bariatric surgery and hernia repair at a later date after weight loss and simultaneous bariatric procedure and hernia repair.

In general, unless the patient is symptomatic, repairing the hernia first is usually not recommended, and it might complicate future bariatric operations as the incidence of incarceration and strangulation increases during the weight loss process.<sup>4</sup> Primary hernia repair has the advantages of technical simplicity and speed. However, the technique is only suitable for small defects (<3-4 cm); primary repair of larger defects carries an unacceptably high recurrence rate of 22 to 100% in bariatric series and up to 51% in larger hernia studies.<sup>5-7</sup>

Definitive repair can be deferred with asymptomatic hernia, even if chronically incarcerated, as long as the hernia is left undisturbed during the bariatric procedure. However, vigilant follow up is necessary.<sup>8</sup>

Conversely, if the hernia must be reduced in order to complete the bariatric procedure, there is a high incidence of postoperative bowel obstruction (up to 35% in some series), which can lead to bowel ischemia, gastric remnant perforation, and gastro jejunostomy disruption.<sup>9</sup>

Bariatric surgery and hernia repair at later date, presents several advantages. The likely resolution of comorbid conditions, such as hypertension and diabetes, will result in decreased postoperative complications.<sup>10</sup> Also, the repair could be technically easier. The addition of panniculectomy at this stage can further improve results and patient satisfaction.<sup>5</sup> The main drawback of a staged repair remains the potential for hernia-related complications (incarceration and strangulation), reported in 3.7 to 35% of cases. This variability seems to correlate with the defect size (higher rates for smaller defects).

There is no consensus or recommendation for concomitant surgeries of ventral hernia with bariatric procedures especially Roux en Y gastric bypass and sleeve gastrectomy. Surgeons have concern of mesh infection, wound complications and higher recurrence.

Simultaneous ventral hernia repair is not advisable in severe obesity if there is large abdominal wall defect, loss of abdominal domain, extensive intestinal adhesions, poor quality skin (attenuated or ulcerated skin, previous skin graft), incarcerated hernia with bowel, recurrent hernia with previous synthetic mesh and hernia with chronic infection.

Some authors advocate concurrent repair of small defect during the bariatric operation and staged approach for the larger ones.<sup>5</sup> The morbidity increases when conversion to an open approach is necessary, as is often the case in patients with larger hernia defects.

In a series of 325 patients who underwent laparoscopic gastric bypass, 26 patients (8%) had a ventral hernia. In 8 patients, the incarcerated omental hernia contents were left in situ, and their hernia repair was deferred. Out of 18 patients who had laparoscopic repair: 8 underwent primary very high resolution (VHR) without mesh, 2 patients developed a recurrence with small bowel obstruction; 10 patients underwent VHR with prosthetic mesh (proceed). None of the patients developed recurrence or infection.<sup>11</sup> The average length of hospital stay for the VHR versus non-VHR repair groups was 1.6 and 2.7 days, respectively.

In another series of Sylvia Krivan et al, 106 patients underwent concomitant bariatric and ventral hernia surgery.<sup>12</sup> 59 patients had laparoscopic VHR and 47 patients had open VHR. Recurrence rate was higher in open repair (14.8%) than in laparoscopic VHR (8.4%) as well as in patients with defect larger than 5.0 cm. Other complications were infection (6 patients), hematoma (5 patients) and seroma in 4 patients.

Patients can be put on very low-calorie diet (VLCD) for few months for short-term weight loss before combining two surgeries.

The type of prosthesis remains controversial. Several authors have reported the safety of synthetic non-absorbable mesh (lightweight, macro pore mesh) in clean-contaminated cases.<sup>13</sup>

But it could be associated with a significant risk of wound complications- seromas (25%) and infection (33%). Synthetic mesh infection can lead to additional operations formesh removal and, ultimately, larger and more complex defects.

Biologic mesh has revolutionized the approach to hernia repair in clean-contaminated and contaminated field. While these products vary on the basis of source (xenogeneic or allergenic), tissue (pericardium, epidermis,

intestinal sub mucosa), and chemical alterations (cross-linked or not), they are resistant to infection. Unfortunately, biologic mesh is not an ideal solution. It is expensive and, additionally, early and mid-term recurrences, especially when used to bridge defects, have been reported.<sup>14</sup>

## CONCLUSION

Primary and incisional ventral hernias are common in morbidly obese patients with associated with complications of irreducibility, incarceration, obstruction or strangulation. Staged approach is recommended of bariatric surgery followed by repair of ventral hernia defect larger than 8-10 cm at a later date. Weight losses by bariatric surgery certainly improves long-term outcome of ventral hernia repair done at a later date. Concomitant mesh repair for ventral hernias with bariatric procedures should be done only in selected cases with smaller hernia defect less than 5.0 cm, after fully informed consent from the patients. Combined ventral hernia repair and bariatric surgery may give short-term outcome but rates of infection and recurrence remains an issue in long term. However, insurance coverage may affect the decision. Many patients of ventral hernia may not have bariatric surgery covered and vice versa. Primary repair with mesh is appropriate. Synthetic mesh for clean cases and biologic mesh for clean-contaminated cases should be reserved. Optimal approach to ventral hernia during bariatric surgery may change as new techniques and products are developed.

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