



## Best evidence topic: Should ventral hernia repair be performed at the same time as bariatric surgery?



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### HIGHLIGHTS

- There is a paucity of evidence on this topic & overall, the quality is poor.
- Some of the selected studies contradict each other.
- The studies affirm the risk of small bowel obstruction if hernias are left alone.
- SSI rates are low during concomitant bariatric surgery & mesh repair of hernia.
- A case by case approach is best, with an open discussion of the risks & benefits.

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### ABSTRACT

A best evidence topic has been constructed using a described protocol. The three-part question addressed was: In morbidly obese patients undergoing bariatric surgery, when a ventral hernia is picked up in clinic or intraoperatively is concurrent repair of the hernia better than delayed repair after weight loss with regards to complication rates? Using the reported search, 179 papers were found. 5 studies were deemed to be suitable to answer the question.

All 5 studies assessed were non randomised studies either retrospective or prospective and the overall quality of these studies was poor. The outcomes assessed were incidence of complications associated with hernia repair (recurrence, infection) and deferral of repair (small bowel obstruction). The patient's symptoms and anatomy is important in determining the timing of repair.

The evidence does not provide a consensus for the optimal timing of ventral hernia repair for patients undergoing bariatric surgery, with some of the selected studies contradicting each other. However, the studies do affirm the risk of small bowel obstruction if hernias are left alone. The reported rate of surgical site infection is low when mesh repair is performed at the same time as weight loss surgery.

Until large volume, high quality randomized control trials can be performed, a case by case approach is best, where the patients' symptoms, anatomy, type of bariatric surgery and their personal preferences are considered, and an open discussion on the risks and benefits of each approach is undertaken.

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## 1. Introduction

This BET was devised using a framework outlined by the International Journal of Surgery [1]. This format was used because a preliminary literature search suggested that the available evidence is of insufficient quality to perform a meaningful meta-analysis. A

BET provides evidence based answers to common clinical questions, using a systematic approach of reviewing the literature.

## 2. Clinical scenario

You are a general surgery trainee. You are in the bariatric surgery clinic and review a 45 year old lady who is morbidly obese, and is a suitable candidate for weight loss surgery. On clinical examination you palpate a ventral hernia. You wonder whether it is better to repair the hernia at the same time as surgery, or on a separate

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occasion following a period of weight loss. You conduct a literature search to source the answer.

### 3. Three part question

In [morbidly obese patients with a ventral hernia undergoing bariatric surgery] is [immediate repair of the hernia at the time of bariatric surgery preferable to delayed hernia repair following weight loss] with regards to [complications of the hernia repair or delaying hernia repair].

### 4. Search strategy

A. No Best BETs or other synoptic evidence was found on this topic.

B. Cochrane library.

‘(Bariatric surgery) AND (ventral hernia OR umbilical hernia)’ No Cochrane review was found on this subject.

C. [www.clinicaltrials.org](http://www.clinicaltrials.org) was searched for an ongoing trial on this topic. No relevant trial was found on this subject.

D. MEDLINE (through Pubmed)

1) (bariatric surgery) AND hernia ventral, ((bariatric surgery) AND ventral hernias) AND treatment outcomes, (umbilical hernia) AND bariatric surgery. Limit to human and English language.

E. EMBASE.

1) (bariatric surgery) AND hernia ventral, ((bariatric surgery) AND ventral hernias) AND treatment outcomes, (umbilical hernia) AND bariatric surgery. Limit to human and English language.

### 5. Search outcomes

The literature search yielded 179 results on Medline and 237 results on Embase. The titles and abstracts of these papers were scanned and 13 papers were identified. Of these 12 were original research articles and 1 was a review. Studies that did not compare immediate repair with deferred repair were excluded. The review that was found was a literature review that did not review any studies that compared immediate repair with deferred repair, and was thus also excluded. Thus, 5 papers were deemed to provide the most relevant evidence to answer this BET. These were of sufficient quality and represent the best evidence. These are summarised in Table 1.

### 6. Discussion

Eid et al. [2] retrospectively analysed a cohort of 85 patients with a ventral hernia (VH) who underwent laparoscopic Roux en Y gastric bypass surgery (LRYGB). Patients were allocated to one of three approaches to the hernia: LRYGB and concomitant primary repair with sutures (CPRS) ( $n = 59$ ), LRYGB and concomitant mesh repair (CMR) ( $n = 12$ ), and deferred repair (DR) ( $n = 14$ ). The outcomes were post-operative length of stay (LOS), and complications of hernia repair and delay of hernia repair (recurrence, infection and bowel obstruction). There was no recurrence in patients undergoing mesh repair within the follow up period for these patients (mean follow up = 13 months), though three patients had cellulitis and four patients had seroma. Patients who had CPRS were followed up for 30 months on average. The recurrence rate in this group was 22%. Of the patients that had DR, 35.7% had small bowel obstruction (SBO) due to incarceration with the average time for presentation being 63 days. Eid et al. conclude that CMR at the time of LRYGB is the optimal strategy. This is a small, single centre retrospective study. There are differences in the size of the three groups, as well as the duration of follow up for two groups where concurrent hernia repair was undertaken.

Bonatti et al. [3] conducted a study of 9 patients who underwent incisional hernia (IH) repair and laparoscopic gastric band (LGB). 3 of these patients developed their IH after their bariatric surgery, and thus were excluded from our study. Of the remaining 6 patients, 2 underwent CPRS at the time of the LGB, and neither had a recurrence (median follow up = 34 months; range = 13–69 months). Of the 4 patients who had DR, 2 suffered SBO secondary to incarcerated IH, and required emergency surgery. The authors do not state how long after their LGB these patients presented with SBO; nor do they state how long after LGB the other 2 patients had their hernia repair. This study concludes that small IHs (less than 3 cm) can be repaired safely with a low risk of recurrence with sutures alone. Bonatti et al. concluded that for large IH which require mesh, the operative strategy should be formulated on a case by case basis. This is a very small, single center retrospective study, with a wide range of follow up duration.

Newcomb et al. [4] carried out a retrospective analysis of 27 patients that had gastric bypass surgery – 22 had open Roux en Y bypass (ORGB), and 5 had LRYGB. There were three groups of patients: CPRS at the time of bypass ( $n = 4$ ), CMR at the time of bypass using biological mesh ( $n = 3$ ) and DR ( $n = 20$ ). All 7 patients that had hernia repair at the time of bypass suffered recurrence. In the CMR group 1 patient had dehiscence of the biological mesh and required a re-operation. One patient (5%) had SBO eleven months after bypass, which required emergency surgery. None of the patients that had DR had recurrence or an infection. The study concludes that hernia repair should be performed after bypass surgery. This is a small, single center retrospective study. The size of the cohorts varies considerably. It is also unusual in that the majority of patients had open bypass surgery, rather than laparoscopic and this certainly does not reflect current practice.

Datta et al. [5] undertook a retrospective study of 26 patients who underwent LRYGB and CPRS ( $n = 8$ ), CMR with synthetic mesh ( $n = 10$ ) and DR ( $n = 8$ ). Outcomes were LOS (days), rates of recurrence and SBO. The mean follow up time was 14 months. LOS was longer when patients underwent hernia repair at the same time as LRYGB (2.7 days on average, compared to 1.6 days for those who had repair deferred); undergoing repair with mesh was found to be the only predictor for this increased LOS (odds ratio 9.2,  $p = 0.002$ ). Of the 8 patients that had undergone CPRS, 2 (25%) presented with SBO secondary to hernia recurrence, and required urgent surgery. None of the patients who had mesh repair developed a recurrence or infection. None of the 8 patients who had DR developed SBO whilst waiting for their hernia repair. The study concludes that CPRS at the time of bariatric surgery has a risk of recurrence. Mesh repair, either deferred or concomitantly, is preferable and has a low risk of infection, although LOS may be longer. This is a small, single center retrospective study.

Another study from Eid's group prospectively enrolled 28 consecutive patients with ventral hernia and needing bariatric surgery into a study to evaluate an algorithmic approach to their surgery [6]. The first step was categorizing these patients into whether their hernia was symptomatic or asymptomatic; and whether their anatomy was “favorable”, or “unfavorable”. Six criteria was used to determine this. Criteria deemed to be favourable included: a gynecoid shape, a small (<8 cm), reducible, central hernia in patients with a BMI <50 and abdominal wall thickness of <4 cm. Thus patients were placed into 4 treatment groups: Group 1) symptomatic patients with favorable anatomy, Group 2) asymptomatic patients with favorable anatomy, Group 3) symptomatic patients with unfavorable anatomy, and Group 4) asymptomatic patients with unfavorable anatomy ( $n = 3$ ). Each group received different treatment:

Group 1 ( $n = 3$ ) – laparoscopic CMR of the ventral hernia with permanent mesh, followed by bariatric surgery, on average, 6

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