

Discussion: The Impact of Body Mass Index on Abdominal Wall Reconstruction Outcomes: A Comparative Study

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Surgeons performing complex abdominal wall reconstruction often encounter patients with significant comorbidities. In their validated modification of the Ventral Hernia Working Group risk stratification scheme, Kanters et al. included obesity as one of the comorbid conditions that upgraded patients from grade 1 (14 percent risk of surgical-site occurrences) to grade 2 (27 percent risk).¹

In this study, Giordano et al. confirm the impact of obesity by retrospectively analyzing 511 patients with body mass indexes of 30 to 40 kg/m² undergoing complex abdominal wall reconstruction for oncologic purposes between 2005 and 2015, with a mean follow-up of almost 3 years, and a robust 88 percent rate of postoperative computed tomographic scans, which is “best-in-class” of any hernia literature of which we are aware. Unsurprisingly, they confirm that obese patients (>30 kg/m²) had a significantly higher risk of surgical-site occurrences, but further stratify surgical-site occurrence risk based on degree of obesity, which is a major finding.

Surprisingly, and against their original hypothesis, the authors did not detect an increase in hernia recurrence with obesity. Through our clinical experience and that of other herniologists, we have found that hernia recurrence rates increase with higher degrees of obesity (especially those with a body mass index >40 kg/m²),^{2,3} with 2-year hernia recurrence rates of 8 percent with a body mass index between 30 and 39 kg/m², 25 percent between 40 and 49 kg/m², and 45 percent above 50 kg/m². As a result, we perform elective abdominal wall reconstruction in patients whose body mass index is less than 40 kg/m² (consistent with the findings of this study), but not in those whose body mass index is greater than 42 kg/m². Body

mass indexes between 40 and 42 kg/m² are considered on a case-by-case basis, and use bariatric surgery referrals for assistance with surgical and nonsurgical body mass index reduction. The existing literature supports the notion that higher body mass index leads to a higher rate of incisional hernia after laparotomy^{4,5} and a higher rate of hernia recurrence after repair.⁶⁻⁸ With this in mind, the findings from this study confirm widely accepted body mass index cutoffs for elective abdominal wall reconstruction. One of the major shortcomings of this study, however, is the self-acknowledged limitation that those patients with a body mass index greater than 40 kg/m² were excluded from analysis because of low numbers ($n = 46$). It would be interesting to see whether the same findings could be extrapolated to those with a body mass index greater than 40 kg/m² and whether there is an “inflection point” above which the recurrence rate becomes statistically significant, similar to the body mass index cutoff of 31.9 kg/m² relative to surgical-site occurrence rates the authors found on their receiver operating characteristic analysis.

The authors suggest that laparoscopic approaches may be beneficial in higher body mass index patients who cannot lose weight, because of lower surgical-site occurrence rates. Although we agree that there are distinct advantages to this minimally invasive approach,² the only issue is that laparoscopic repair most often involves the placement of a bridging underlay synthetic mesh without primary midline musculofascial reapproximation. According to the authors’ previous definitive publication,⁹ bridging is inferior to a mesh-reinforced primary midline repair. Therefore, the more evidence-based strategy would be body mass index reduction followed by a more definitive repair using the basic principles espoused in the hernia literature.^{2,10-13}

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Received for publication December 3, 2016; accepted December 6, 2016.

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DOI: 10.1097/PRS.0000000000003265

Disclosure: Dr. Janis is a consultant for LifeCell and Bard, and has received prior honoraria from Pacira and KCI, and receives royalties from CRC Press/Thieme Publishing. Dr. Khansa has no relevant financial disclosures.

The authors also found concomitant panniculectomy to be a potential risk factor for surgical-site occurrence on univariate analysis, but not on multivariate analysis, consistent with other authors.^{14,15} In contrast, in our experience, we have found excision of excess skin to be beneficial in these patients, leading to lower wound healing complication and recurrence rates—widely known as the “vicious cycle” of hernia repair.¹⁶ We have used three strategies to optimize our outcomes in obese patients. First, to accurately estimate a safe and appropriate amount of resection, we use either a double-crown resection pattern or tailor tacking to simulate the excision before actually performing it.^{2,17} Second, we use a vertical panniculectomy in a “teardrop” configuration.² Alternatively, using a “Mercedes” panniculectomy is useful, as it creates robust, axial flaps with minimal undermining and keeps the T-junction in a higher, more hygienic location.¹⁸ Third, we use incisional negative-pressure wound therapy, which has been shown to decrease wound healing problems in high-risk patients.^{19–23}

Lastly, it is important to note that high-body mass index patients can still be malnourished.²⁴ This may be especially true in oncologic patients, who tend to be catabolic, with associated anorexia. The authors also note the association between obesity and diabetes. Based on published data, elective abdominal wall reconstruction should be reconsidered if the hemoglobin A1c value is greater than 7.5 percent, and perioperative blood glucose level should be kept less than 200 mg/dl, because even one instance of postoperative hyperglycemia increases the risk of dehiscence 3-fold.²⁵ Similarly, elective abdominal wall reconstruction should be postponed in malnourished patients whose albumin level is less than 3.25 g/dl, or whose prealbumin level is less than 15 mg/dl. Although it is not practical to delay reconstruction in the oncologic population that this study specifically addresses, it is important to note the importance of these strategies in nononcologic patients.

We commend the authors for an excellent study—yet another high-quality publication from the M. D. Anderson experience that continues to push the boundaries of abdominal wall reconstruction to higher standards. As with every study, an important question is answered, yet others remain. Ultimately, we will need further information and data to help risk-stratify patients at higher body mass index levels, especially in the nononcologic population. In the meantime, this study is a welcome addition that will help impact existing practices risk-stratify, better inform patients, and improve outcomes.

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