



## Internal Hernia and Roux-en-Y Gastric Bypass: Should the Routine Closure of Defects Still Be a Matter of Debate?

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Blockhuys et al. recently reported the impact of the systematic closure of the Petersen's space in the laparoscopic Roux-en-Y gastric bypass (LRYGB) on the occurrence of internal hernia within this space [1]. As expected, the authors found that the systematic closure resulted in a significant reduction in the rate of internal hernia at the Petersen's space.

Although no guidelines have yet been edited advising the routine closure of the mesenteric defects, as stated in the introduction by Blockhuys et al., a well-designed randomized trial, quoted by the authors in their paper, proved in 2016 that the routine closure of the mesenteric and Petersen's defects results in a significantly reduced need for reoperation because of small bowel obstruction over 3 years [2]. In this study, beyond day 30, internal hernia was found at the Petersen's defect in 24 patients of the group with the defects not closed and 8 in the group with the defects closed. It should be noted that this trial showed an increased incidence of immediate small bowel obstruction due to the kinking of the jejuno-jejunostomy that was clearly linked to the learning curve of the surgeons as the latter had been instructed on how to close the defects through dedicated meeting with supporting videos while no information on the learning curve is provided in their study.

Since the first seminal paper by Higa et al. published in 2000 on the complications of the LRYGB highlighting the need of routinely closing the defects in the LRYGB, almost 20 years later, this issue is still a matter of debate [3]. In 2006, we made an exhaustive review of the literature indicating that an internal hernia may happen in any of the three (transmesocolic if the Roux-en-Y loop is passed through the mesocolon and mesenteric and Petersen's spaces) potential sites of herniation [4]. Only 10 years later, in 2016, Stenberg et al. [2] proved in their randomized trial that the non-closure results in an increased rate of reoperation.

Closing the defects may be a hard task at the end of the procedure, especially in patients with central obesity as good exposure of the operative field may be difficult to obtain, the mesentery may bleed and the suture may result in an intestinal obstruction if the mesentery is kinked as reported in the randomized trial by Stenberg et al. [2]. These simple reasons may account for the resistance to accept the routine closure by those surgeons who still leave the defects open in the LRYGB. One further argument that is often brought by the "non closers" is the occurrence of internal hernia also in case of closure. This is most often due to the poor surgical technique during the closure combined with the fact that the loss of visceral fat entails the enlargement of the space between the sutures. The "loose running suture" combined with the rapid and massive loss of weight is most often responsible for the partial opening of the defects. This problem can be easily managed by using barbed sutures that allow obtaining a tight approximation of the two layers of the visceral peritoneum. Of note is also the fact that in case of bleeding during the closure, the barbed suture can be passed further and pulled to stop the bleeding.

Although Blockhuys et al. indicate the retrospective nature of their report as a limitation, the true question is whether we still need further and stronger evidence to recommend the routine closure of all the defects in this operation to limit the risk of reoperation and of life-threatening complications as those linked to the internal hernia.

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## Compliance with ethical standards

This article does not contain any studies with human participants or animals performed by any of the authors.

**Conflict of interest** The authors declare that they have no conflict of interest.

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