

IDEAS AND INNOVATIONS

Cosmetic

Rectus Muscle Plication in Mini-abdominoplasty with Umbilicus Preservation

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Summary: Diastasis recti is a frequent problem that women, particularly, experience after pregnancy. It is an abdominal wall defect in which there is more than 2 cm separation between the abdominal rectus muscles. Aside from being repaired most commonly with a full abdominoplasty, in some cases, diastasis might present with minimal excessive adipocutaneous tissue, thus requiring a mini-abdominoplasty. Because umbilical transposition is not needed in that latter scenario, diastasis repair is only possible by ligating and cutting the existing umbilical stalk to be able to have a direct clear access to the supraumbilical linea alba. However, detaching the umbilical stalk will most certainly lead to the displacement of the umbilicus inferiorly. To overcome this problem, we performed a modified miniabdominoplasty technique, which repairs the recti diastasis, keeps the umbilical stalk in place, and leaves behind a mini-abdominoplasty scar, thus providing a more cosmetically appealing result in addition to a radical solution to the defect. Moreover, this technique can be performed by any qualified plastic surgeon under basic operating settings. (Plast Reconstr Surg Glob Open 2023; 11:e4998; doi: 10.1097/GOX.000000000004998; Published online 17 May 2023.)

INTRODUCTION

Abdominoplasty, or "tummy tuck," is a very common aesthetic procedure done in the modern era, as it provides an aesthetic solution for patients with excess skin or fat around the abdomen and/or abdominal muscle laxity (eg, after pregnancy). Classically, it is performed as an open procedure where an incision from the anterior superior iliac spine to the contralateral anterior superior iliac spine is made, and an adipocutaneous abdominal flap is undermined until the xyphoid process.¹ Abdominoplasty can be divided into two categories: full abdominoplasty and miniabdominoplasty. A full abdominoplasty is indicated when the cutaneous and muscle-fascial laxity is present supraumbilically and might as well be present infraumbilically (ie, between the umbilicus and the pubic hairline), whereas a mini-abdominoplasty is performed only when the excess skin or fat is localized infraumbilically, no rectus diastasis is usually required, and no supraumbilical laxity is present.² When plication is associated with mini-abdominoplasty,

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Copyright © 2023 The Authors. Published by Wolters Kluwer Health, Inc. on behalf of The American Society of Plastic Surgeons. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial-No Derivatives License 4.0 (CCBY-NC-ND), where it is permissible to download and share the work provided it is properly cited. The work cannot be changed in any way or used commercially without permission from the journal. DOI: 10.1097/GOX.000000000004998 the umbilical stalk needs to be ligated, therefore displacing the navel downwards³ (Fig. 1).

Although a classical abdominoplasty achieves the desired outcome of repairing diastasis recti and removing excess skin and/or fat in the whole abdomen, it also comes with some drawbacks such as bigger scar, long surgical duration, and increased risk of complications (eg, seromas and hematomas) with longer recovery time.¹ The advantages of a mini-abdominoplasty are the size of the incision, which does not extend more than the midclavicular line, and that the umbilical stalk is not usually cut. It also poses less risk of seromas, and a faster recovery. However, a mini-abdominoplasty cannot be used to correct diastasis recti without disinserting the umbilicus, as it is difficult to plicate the muscles supraumbilically while keeping the umbilical stalk in place. In such a case, a nonavoidable consequence is the inferior displacement of the umbilicus,³ which is aesthetically nonappealing to some patients.

In our approach, we provide a new modified method of performing a mini-abdominoplasty while gently elevating the skin and underlying fat, mimicking a pneumoperitoneum, and being able to plicate the rectus abdominis muscle without cutting the umbilical stalk, providing a solution to the muscle laxity and avoiding inferiorly displacing the umbilicus simultaneously.

Disclosure statements are at the end of this article, following the correspondence information.

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Fig. 1. Photograph showing the location of the umbilicus after performing a classical mini-abdominoplasty. The umbilicus is in close proximity to the pubic symphysis.

SURGICAL TECHNIQUE

In our modified mini-abdominoplasty, after preopoerative markings were done, we performed a 13-cm lower abdominal transverse incision, 7-cm above the vulva. After the classical mini-abdominoplasty flap undermining and excess adipocutaneous tissue was excised, five traction sutures (one umbilical suture, two supraumbilical lateral, and two supraumbilical midline sutures) (Fig. 2) and one



Fig. 2. Figure illustrating the locations of the traction sutures.

Takeaways

Question: Inability to repair rectus diastasis in miniabdominoplasty without displacing the umbilicus.

Findings: Our case report provides a new surgical technique, which will allow rectus diastasis repair in miniabdominoplasty without displacing the umbilicus.

Meaning: Mini-abdominoplasty with umbilicus preservation can be used to repair rectus diastasis in selected patients.

retractor were used to gently elevate the skin with its underlying fat, as the abdominal wall was undermined until the xyphoid process. We used 1.0 nylon (Ethilon; Johnson & Johnson, New Brunswick, N.J.) placed in a single bite transdermal level. Mosquito or Kelly clamps were used to tract in a vertical position by the assistant surgeon. After a good exposure was achieved from the pubis to the xyphoid process, intraoperative muscle markings were drawn, and using Polydioxanone 1 loop (Johnson & Johnson) absorbable monofilament sutures, muscular plication was done in a continuous running fashion as a single layer of plication, and was performed in two stages (supra and infraumbilically) under direct vision, sparing the umbilical stalk and keeping it in place (See Video [online], which displays the traction sutures for the muscle plication). After plication, we placed progressive tension sutures (Vicryl 2.0), and the Scarpa fascia was sutured after excising the excess adipocutaneous flaps, the subcutaneous tissue was sutured, and the skin incision was closed up using Monocryl 3.0 [&] absorbable monofilament sutures leaving behind a pleasant scar with a tightened abdomen (Fig. 3). Two large Blake drains were inserted and kept until the output was less than 40 cm³ per 24 hours. In the postoperative phase, the patient was instructed to refrain from physical activities and apply a pressure garment for 4 weeks, and to perform lymphatic drainage starting postoperative day 5 for 3 weeks.

DISCUSSION

Mini-abdominoplasty was first introduced in 1971 by Elbaz and Flageul and was then modified by Glicenstein in 1975.⁴ However, muscle plication was not feasible while keeping the umbilical stalk uncut because it interferes with the surgeon's ability to reach the abdominal structures located cranially. In their novel "FIT mommy" technique, Hoyos & Perez avoided umbilical displacement, as they disinsert the umbilicus, plicate the rectus abdominis muscles, and reinsert it by fixing it on the abdominal wall using superficial quilting sutures.5 The advantage of our modified mini-abdominoplasty is that we are approaching the laxity of the muscle wall by performing a plication of the rectus abdominis muscles without having to disinsert the umbilicus, thus avoiding the inferior displacement of the umbilicus, which is inevitable in mini-abdominoplasties, as an umbilicus close to the scar and bikini line is cosmetically unappealing to most patients. Also, it provides a very aesthetically appealing result, as all of the previously mentioned concerns are solved during a single



Fig. 3. A 36-year-old female patient presenting with infraumbilical skin laxity, muscle wall weakness, and rectus diastasis after four pregnancies. A, Preoperative frontal view. B, Postoperative frontal view. The figure shows that after our modified mini-abdominoplasty, the umbilicus is still in place, the excess infraumblical skin is excised, and the abdomen is tighter.

operation, and the single lower abdominal incision done is discrete and hidden behind the pubic hair line, in addition to providing a solution for diastasis recti by plicating the rectus abdominis muscles. This approach combines the key features of both mini and full abdominoplasty, to provide a maximal cosmetic benefit while keeping the scar as minimal as possible. Our modified mini-abdominoplasty provides a radical solution for patients who desire a tighter abdomen while having minimal skin laxity and not having to worry much about having a visible surgical scar and the associated complications of a full abdominoplasty. Moreover, this surgical technique requires very basic equipment, can be replicated by any qualified plastic surgeon without the need of laparoscopic expertise, and can be performed in less than 2 hours. Nevertheless, the disadvantages of our technique include its limitation to patients with abdominal wall laxity and adipocutaneous tissue excess limited to the infraumbilical region, in addition to the possibility of leaving scars in the places where traction sutures were placed. Also, our modified technique is successful when the patient has minimal abdominal fat and skin laxity, which gives us the opportunity to elevate the skin with its underlying subcutaneous tissue to have a good exposure. Patients with extensive skin laxity and/or fat deposition may not be good candidates for our modified mini-abdominoplasty.

CONCLUSIONS

The aforementioned modified abdominoplasty is a safe and aesthetically appealing procedure that takes advantage of the key features of full and mini-abdominoplasty and combines them into a single procedure that addresses the patient concerns in achieving the desired cosmetic outcome. The relatively small scar at the lower abdomen, keeping the umbilicus in place, and using very basic equipment allows our technique to be routinely performed in our practice when the patient is a good candidate, and qualifies it to be applicable by any plastic surgeon operating under basic operating room conditions.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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