

Quilting Sutures, Scarpa Fascia Preservation, and Meta-Analyses of Seroma Rates after Abdominoplasty

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Sir:

Three recently published meta-analyses compare seroma rates after abdominoplasty.¹⁻³ Two studies find in favor of quilting sutures^{1,3} and both studies evaluating Scarpa fascia preservation find it beneficial.^{1,2} An earlier meta-analysis of tissue adhesives (surprisingly) found no significant reduction in seroma rates.⁴ Is it time for plastic surgeons to adopt quilting sutures and preserve the Scarpa fascia?

Systematic reviews are notoriously difficult in plastic surgery because of confounding variables—the surgeon, method, body mass index, tissue resection weight, liposuction, diagnostic method (eg, clinical or ultrasound), compression garments, drains, and tissue adhesives. Publication bias is a problem.¹

In support of their meta-analysis, Seretis et al.² comment, “The methodology overcomes the insufficient study power of several RCTs [randomized controlled trials] to measure more than one endpoint due to small sample sizes and obviates the methodological flaws of retrospective studies or case series.” In truth, no amount of statistical rigor can compensate for flaws in the constituent studies.⁵ Nasr et al.⁴ acknowledge the heterogeneity of data and risk of bias. Despite limiting their analysis to randomized trials, these investigators found inadequate study quality.⁴

Ardehali and Fiorentino¹ believe that preservation of Scarpa fascia involves “leaving a thin layer of subscarpa fascia fatty tissue on the abdominal wall.” Leaving a thin layer of areolar tissue on the abdominal wall is a traditional method used by most plastic surgeons; it is not the same as Scarpa fascia preservation, which typically leaves a thick layer of tissue (depending on patient weight of course) on the abdominal wall that includes the Scarpa fascia and subscarpal fat (Fig. 1).^{5,6} Importantly, both meta-analyses evaluating Scarpa fascia preservation^{1,2} included a level 1 study by Costa-Ferreira et al.⁷ Ordinarily, one might consider the findings of such a high-level study almost irrefutable. However, a confounder undermined the conclusion. In the group treated with Scarpa fascia preservation, an avulsion technique was used.⁷ Flap elevation in the control group was performed using electrodissection.⁷

Only 1 meta-analysis compares dissection methods—scalpel versus electrodissection² but omitted a large comparative study by Rousseau et al.⁸ (possibly because the keywords “abdominoplasty” and “seromas” do not appear in the title). In their comparison of 327 patients treated with scalpel dissection versus 320 patients treated with electrodissection, Rousseau et al.⁸ report significantly more seromas after electrodissection. Similarly, Valença-Filipe et al.⁹ report no seromas in 39 scalpel dissections versus 15 seromas in 80 patients (18.8 %) treated with electrodissection. Both studies document a significant reduction in drain output and time to drain removal after scalpel dissection.^{8,9} The meta-data yield a significant seroma risk reduction using scalpel dissection ($P < 0.01$).¹⁰

Tourani et al.,¹¹ in their cadaveric study, conclude that Scarpa fascia preservation would not preserve the lower abdominal lymphatic collectors. Scarpa fascia preservation does have a downside; the abdomen is not quite as flat because of the preserved fatty tissue (Fig. 1).^{5,6}

Quilting (also called progressive tension) sutures add about 23 minutes of operating time and may cause dimpling.³ Seromas may still develop. Among patients treated with quilting sutures, the overall seroma rate reported in Ardehali and Fiorentino’s¹ meta-analysis was 5.8 % (15/260), similar to the rate associated with scalpel dissection and no quilting sutures (5.4 %).⁵ Quilting sutures may be technically difficult to perform if the patient is placed in a jackknife position during surgery so as to maximize flap mobility (Fig. 1) and keep the scar within the panty line.⁵

Seroma fluid resembles an inflammatory exudate,¹² as opposed to a transudate from lymphatic obstruction. Total protein, lactate dehydrogenase, cholesterol levels, and neutrophil percentage are higher in seromas than in lymphatic fluid.¹² Although a limited dissection is believed to improve circulation and reduce complications, a controlled evaluation of abdominoplasty flap perfusion using laser fluorescence imaging found no advantage over a traditional dissection.⁶ A reduced seroma rate may be related to less electrodissection and therefore less tissue injury, rather than preservation of perforators and the Scarpa fascia.⁶

Electrodissection was introduced decades ago to reduce bleeding. However, a superwet infusion containing 1:500,000 epinephrine causes potent vasoconstriction, reducing blood loss from abdominoplasty to an average of 290 cc when the procedure is combined with liposuction.¹³ The evidence supports a reduction in seroma rates by using scalpel dissection and avoiding a need for quilting sutures.

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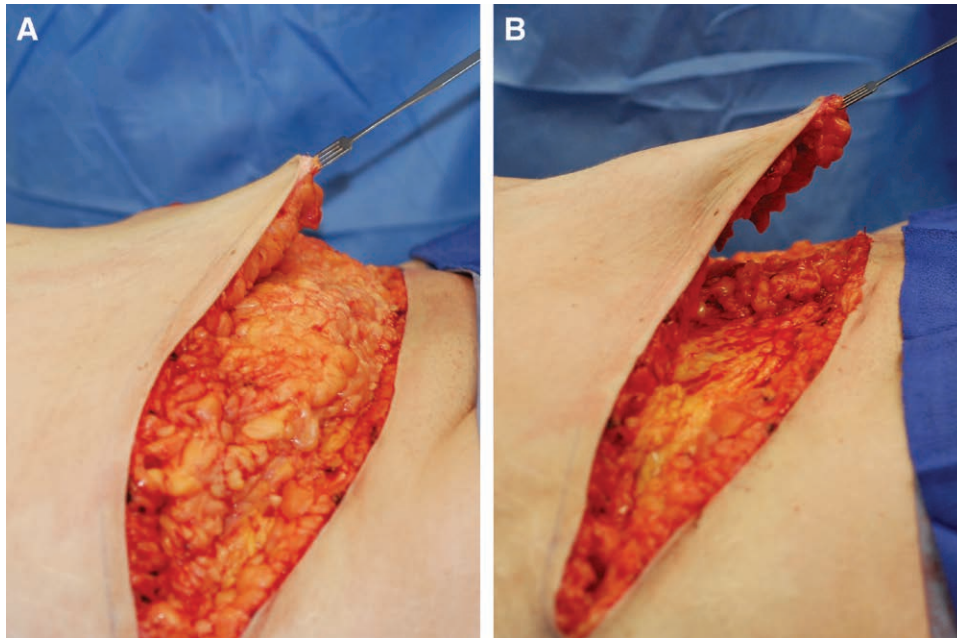


Fig. 1. Lateral intraoperative photographs compare limited (A) and full (B) abdominoplasty dissections in the same 27-year-old patient. The preserved Scarpa fascia and fat leave bulk on the abdominal wall, reducing the degree of flattening of the lower abdomen and creating a longer distance for the upper abdominal flap to travel (A). After removal of the Scarpa fascia and fat and conversion to a full dissection, the abdominal wall is flat and the flap has greater mobility (B).

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DISCLOSURE

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