



High-definition abdominal liposuction with silicone tubing

Lipoaspiração abdominal de alta definição e tubos de silicone

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■ ABSTRACT

Introduction: Recently, some authors have described high definition liposuction in the abdominal region, achieved by the vigorous marking of the grooves of the linea alba, linea semilunaris, and transverse tendinous intersections within the rectus abdominis muscle. The aim is to present a pilot study of high-definition abdominal liposuction technique using conventional material and silicone tubing in the dressings. **Methods:** Twenty cases were submitted to conventional liposuction, followed by superficial liposuction under the linea alba, linea semilunaris, and tendinous intersections, until a groove was formed at these sites. Flexible silicone tubing was externally fixed with Micropore tape in the linea alba, bilateral linea semilunaris, and tendinous intersections, and removed after 5 days. **Results:** A mean increase of 20 minutes was required to perform these steps. The marks of the silicone tubing were evident at the first follow-up, and less prominent at the second follow-up. No color change, ischemia, or significant pain was observed using this technique. After 3 months, there were no cases of dermatitis, cutis marmorata, seroma, infection, contour irregularity or need for additional procedures. **Conclusion:** High-definition abdominal liposuction was performed using conventional materials and externally fixed temporary silicone tubing.

Keywords: Lipectomy; Lipectomy/trends; Lipectomy/use; Dressings; Compression dressings.

Institution: Universidade Federal de São Paulo, São Paulo, SP, Brazil.

Article received: October 23, 2018.

Article accepted: November 11, 2018.

Conflicts of interest: none.

DOI: 10.5935/2177-1235.2018RBCP0179

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■ RESUMO

Introdução: Recentemente, alguns autores têm descrito a lipoaspiração de alta definição, na qual, na região abdominal, é alcançada pela marcação vigorosa dos sulcos das linhas alba, semilunar e interseções tendíneas transversais do músculo reto abdominal. O objetivo é apresentar estudo piloto de técnica de lipoaspiração de alta definição abdominal utilizando material convencional e tubos de silicone nos curativos. **Métodos:** Foram descritos 20 casos, submetidos à lipoaspiração convencional e em seguida lipoaspiração superficial sob as linhas alba, semilunar e interseções tendíneas, até que se obtivesse a formação de um sulco nestes locais. Utilizamos tubos de silicone maleáveis nas linhas alba, semilunar bilateral e interseções tendíneas, fixados externamente com micropore, os quais foram removidos após 5 dias. **Resultados:** Houve um acréscimo médio de 20 minutos para realização destas etapas. As marcas dos tubos de silicone apresentaram-se muito evidentes no primeiro retorno, estando mais discretas no segundo retorno. Não foram observadas alterações de coloração, isquemia ou dor maior pela técnica empregada. Após 3 meses, não houve nenhum caso de dermatite, cútis marmorata, seroma, infecção, irregularidade de contorno ou necessidade de procedimentos adicionais. **Conclusão:** Foi realizada lipoaspiração de alta definição abdominal, com material convencional e uso de tubos de silicone temporários fixados externamente.

Descritores: Lipectomia; Lipectomia/tendências; Lipectomia/utilização; Bandagens; Bandagens compressivas.

INTRODUCTION

In 1993, Mentz et al.¹ were the first to perform superficial liposuction to define the abdominal musculature, and suggested the use of superficial liposuction in the linea alba, linea semilunaris, and transverse tendinous intersections, without use of foams or other material to better define the abdominal lines.

In 2003, Hoyos & Millard² introduced the concept of high-definition liposculpture, refining the original concept¹ for a 3-dimensional approach, in which not only the abdomen, but also the back, arms, and legs were treated using third-generation ultrasonic liposuction (Vaser).

Reston[®] foam has been used in liposuction³⁻⁵. Despite the benefits, the application only lasts approximately 30 minutes, in addition to being associated with other problems^{4,6,7} such as allergic dermatitis, blister formation, and postoperative hyperpigmentation.

This pilot study aimed to present a superficial liposuction technique using conventional materials, followed by dressings incorporating soft silicone tubing; the technique is easy for plastic surgeons to learn, and

is economically accessible, with satisfactory aesthetic results and low incidence of complications.

OBJECTIVE

To describe a superficial abdominal liposuction technique for the linea alba, linea semilunaris, and transverse tendinous intersections within the rectus abdominis muscle using conventional liposuction material, followed by dressings incorporating soft silicone tubing.

METHODS

This prospective pilot study included 20 patients (19 women and 1 man), who underwent abdominal liposuction under general anesthesia by the same surgeon.

All patients were marked on the abdominal region and other areas planned for liposuction, using a hydrographic pen on the day of surgery. The linea alba, linea semilunaris, and tendinous intersections within the rectus abdominis muscle were identified by abdominal contraction and marked in green (Figure 1).

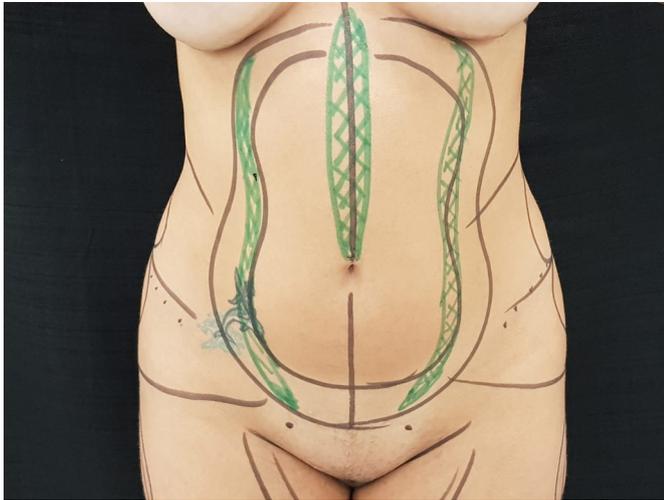


Figure 1. Markings made on the day of surgery. Black: the usual liposuction markings. Green: markings at the linea alba and linea semilunaris for greater definition, with greater removal of fat by superficial subdermal liposuction.

Two 7-mm incisions were made in the pubic region, inside the swimwear line or in previous scars (Figure 1).

Super-saturation of the abdominal region was performed with saline solution combined with epinephrine at a concentration of 1:500,000 and lidocaine at a concentration of 0.05%.

Liposuction was performed below (deep liposuction) and above (superficial liposuction) Scarpa's fascia, using 60-mL syringes in the usual manner, with cannulas 4 mm in diameter and 30 and 35 cm in length.

Liposuction was then performed under the linea alba and linea semilunaris, above Scarpa's fascia and close to the deep dermis (Figure 2), with the same 4-mm cannulas, but with the holes facing the dermis and using the contralateral hand for gripping and vigorous extra fat removal, until the formation of a groove was obtained in these locations, confirmed by the surgeon with a pinch test.

In the male patient, three 3-mm incisions were also made in the supraumbilical linea alba for superficial subdermal liposuction below the tendinous intersections of the rectus abdominis muscle, using 3-mm diameter cannulas, until groove formation was observed.

Next, 20% tincture of benzoin and 7-mm-diameter flexible empty silicone tubing were placed at the contour of the linea semilunaris (Figure 3) and the rectilinear supraumbilical linea alba; the tubing was fixed vertically with Micropore tape over the full length of the treated area (Figure 4).

The hollow silicone tubing was kept occluded for 5 to 6 days and then removed, but shapewear was maintained for 30 days.



Figure 2. Liposuction under the linea semilunaris, close to the deep dermis, using 4-mm cannulas with the holes facing the dermis. The contralateral hand is used for gripping and additional fat removal, forming a groove in these places.



Figure 3. Flexible, 7-mm hollow silicone tubing positioned at the contour of the linea semilunaris, to enhance adhesion of the skin to the aponeurosis.



Figure 4. Image of final dressing, with silicone tubing positioned on the linea alba and linea semilunaris and fixed with vertical Micropore tape.

All patients underwent manual lymphatic drainage for a period of 30 days, starting at a variable period of 3 to 6 days.

Follow up was performed with clinical and photographic examination at 4-6 days, 3-4 weeks, and 3 months after surgery.

RESULTS

The additional superficial liposuction of the linea alba and linea semilunaris added an average time of 15 minutes to the procedure. Use of dressings with silicone tubing added 5 minutes.

The marks of the silicone tubing were very evident at the first follow-up, and were less prominent at the second follow-up. No color change, ischemia, or significant pain was observed with this technique.

After 3 months, the results were considered good (Figures 5 to 8), with no cases of cutis marmorata, dermatitis, seroma, infection, contour irregularity, or need for additional procedures.

DISCUSSION

In 2012, a randomized, blinded, controlled clinical trial⁷ compared conventional liposuction with Vaser liposuction, and concluded that there is more



Figure 5. A 31-year-old preoperative female patient.

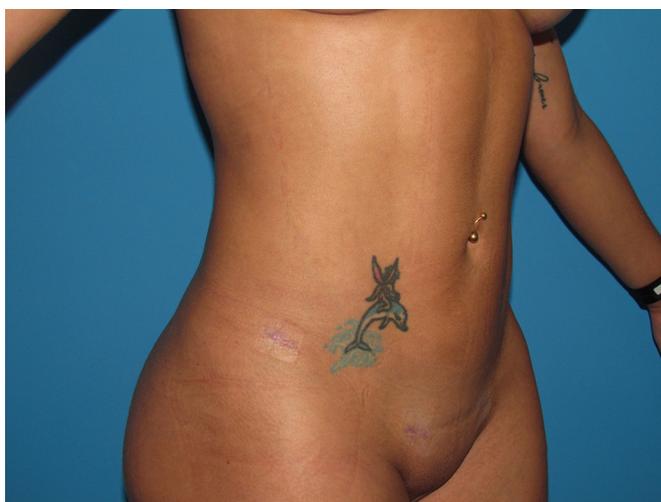


Figure 6. A 31-year-old female patient, 3 months postoperatively.

retraction and less blood loss with Vaser, but no change in outcome in terms of pain, edema, or adverse effects. This work was limited in its validity⁸ due to sampling methodology, financial conflicts, and commercial bias. The study also described the occurrence of seromas, burns, and prolonged edema, in addition to a longer learning curve and greater investment for equipment^{9,10}.

The technique advocated in this study differs from those previously described by using silicone tubing, not previously described for use in liposuction dressings. The tubing is hollow and thin (7-mm diameter), and used in pre-planned locations, especially at the linea semilunaris, where the wavy shape helps the skin to adhere directly in the muscular plane; this enhances the appearance of the abdominal musculature, with a more natural final result, besides avoiding possible complications with foams, as previously described³⁻⁶.



Figure 7. Preoperative 34-year-old male patient.



Figure 8. A 34-year-old male patient, 3 months postoperatively.

This technique required little additional surgical time, especially when compared to use of Reston® and ultrasonic or laser liposuction, to achieve greater abdominal refinement.

This method can be added to any conventional liposuction technique, whether performed with syringe, aspirator, or vibro-liposuction, and can be used by any plastic surgeon familiar with liposuction who wants to achieve greater anatomical definition of the abdomen.

Both the medical team and patients reported greater satisfaction with this technique, compared to that without a high-definition approach.

The cases in this pilot study remain in follow-up for long-term evaluation with statistical analysis.

CONCLUSION

This study described the technique of superficial abdominal liposuction at the linea alba, linea semilunaris, and transverse tendinous intersections within the rectus abdominis muscle, using conventional liposuction material, followed by dressing that incorporated silicone tubing and shapewear.

COLLABORATIONS

- RSG** Conception and design study; conceptualization; data curation; realization of operations and/or trials; writing - original draft preparation.
- CMM** Conception and design study; investigation
- NBR** Conceptualization.
- EBG** Project administration; supervision.
- HFCG** Project administration; supervision.
- LMF** Project administration; supervision.

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