



# Liposuction Practices among Brazilian Surgeons

## *Condutas em lipoaspiração entre cirurgiões brasileiros*

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### ■ ABSTRACT

**Introduction:** Since the 1980s, with Illouz, liposuction has gained popularity and represents one of the most commonly performed procedures in the world today. Some of the complications are serious and potentially lethal. Nevertheless, uniformity in its practice or the manner in which it is taught does not exist. Evaluating techniques employed by plastic surgeons may be the start toward standardization. **Methods:** A questionnaire on liposuction was given to plastic surgeons of different age groups and from regions of Brazil who were present at the 52<sup>nd</sup> Brazilian Conference for Plastic Surgery. **Results:** Two hundred forty-three questionnaires were filled out (n = 243). The average number of incisions was 9 (2–16). Two hundred forty-one surgeons (99%) made incisions along the anterior median/paramedian line, and 236 (97%) made incisions on the posterior median/paramedian line. Approximately half of those surveyed utilized general anesthesia. Two hundred nine surgeons (86%) placed the patient in the prone position during the procedure. One hundred forty-six (60%) interviewees performed superficial liposuction, with 22 (9%) performing liposuction only on this adipose layer. Eighty-five (35%) participants reported controlling the apparatus's pressure during the procedure. **Conclusion:** Liposuction procedures performed in Brazil have significant technical variations. This finding encourages us to reflect on the need to standardize liposuction practice and the manner in which it is taught so as to increase control over the procedure and its safety.

**Keywords:** Lipectomy; Subcutaneous abdominal fat; Dorsal; Patient positioning; Anesthesia.

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## ■ RESUMO

**Introdução:** Desde a década de 1980, com Illouz, a lipoaspiração ganhou popularidade e representa hoje um dos procedimentos mais realizados no mundo. Algumas de suas complicações são graves e potencialmente letais. Não existe, contudo, uma uniformidade em sua prática ou no seu ensino. A avaliação das técnicas empregadas por cirurgiões plásticos pode ser o início de uma padronização. **Métodos:** Foi aplicado um questionário sobre lipoaspiração no 52º Congresso Brasileiro de Cirurgia Plástica para cirurgiões plásticos de diferentes faixas etárias e regiões do Brasil, presentes no evento. **Resultados:** Foram contabilizados 243 questionários preenchidos (n = 243). O número médio de incisões foi de 9 (2 - 16). Duzentos e quarenta e um cirurgiões (99%) realizam incisões na linha mediana/paramediana anteriormente e 236 (97%) incisam na linha mediana/paramediana na região posterior. Aproximadamente metade dos questionados utilizam a anestesia geral. Duzentos e nove cirurgiões (86%) posicionam o paciente em decúbito ventral durante o procedimento. A lipoaspiração superficial é realizada por 146 (60%) entrevistados, sendo que 22 (9%) fazem a aspiração apenas desta camada adiposa. Oitenta e cinco (35%) participantes relatam controlar a pressão do aparelho durante o procedimento. **Conclusão:** A lipoaspiração realizada no Brasil apresenta grande variação técnica. Essa constatação nos faz refletir sobre a necessidade de uma uniformização de sua prática e ensino a fim de aumentar o controle e a segurança do procedimento.

**Descritores:** Lipectomia; Gordura subcutânea abdominal; Dorso; Posicionamento do paciente; Anestesia.

## INTRODUCTION

Charles Dujarier first performed liposuction in the 1920s by curettage of adipose tissues<sup>1</sup>. At the time, it presented a great number of complications.

In 1982, Illouz<sup>2</sup> revolutionized the procedure by using a rhombus instrument connected to a suction device. This technique gained considerable popularity for drastically reducing complications. Today, it is the best treatment for adipose tissue. In the 1990s, Klein<sup>3</sup> introduced the tumescent liposuction method, and Zocchi<sup>4</sup> reported the use of ultrasound-assisted liposuction.

In 2015, it was the second most commonly performed plastic surgery in the world, with 1,394,588 cases according to the *International Society for Aesthetic Plastic Surgery* (ISAPS). In Brazil, it was the most commonly performed plastic surgery, with 182,765 cases<sup>5</sup>.

The Brazilian Society of Plastic Surgery exhibits similar numbers, with liposuction accounting for one-third (32%) of all procedures performed by surgical specialists in the country<sup>6</sup>. Nearly 16.07% of the legal cases in plastic surgery are due to liposuction<sup>6</sup>.

Despite its importance, a standard for conducting the procedure<sup>7</sup> still does not exist, much less a uniformity in teaching surgeons in training.

Liposuction has potentially lethal complications. Grazer and Jong<sup>8</sup> reported that the cause in 23% of the deaths was pulmonary thromboembolism, followed by abdominal perforation in 14.6% of cases.

A study on standardization may reduce these complications and increase the patients' safety.

## OBJECTIVE

To provide a sample of liposuction practices by different plastic surgeons from Brazil.

## METHODS

A questionnaire (Annex 1) was given to surgeons of different age groups and from regions of Brazil who were registered and present at the 52<sup>nd</sup> Brazilian Conference for Plastic Surgery, which took place on November 12–15, 2015 in Belo Horizonte, Minas Gerais. The study followed the principles of the Declaration of Helsinki during its elaboration, and the participants authorized publication of the results.

## RESULTS

A total of two hundred forty-three (n = 243) questionnaires were filled out and received.

Each interviewee was asked to perform a liposuction procedure on the anterior and posterior torso (Figure 1). The number of incisions varied from 2 to 16, with an average of 9 incisions per surgery (Figure 2). Two hundred twenty-eight (94%) surgeons preferred to position the incisions in locations covered by underwear or swimwear. One hundred eighty-five (76%) made incisions on the umbilical scar. One hundred ninety-four (80%) surgeons positioned the scar on the median/paramedian line and 18 (7.5%) made an incision on the lateral region between the anterior and posterior axillary lines.

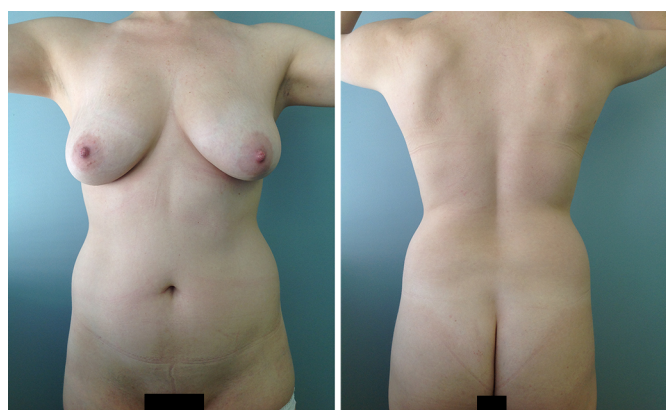


Figure 1. Back of questionnaire with diagram for positioning incisions.

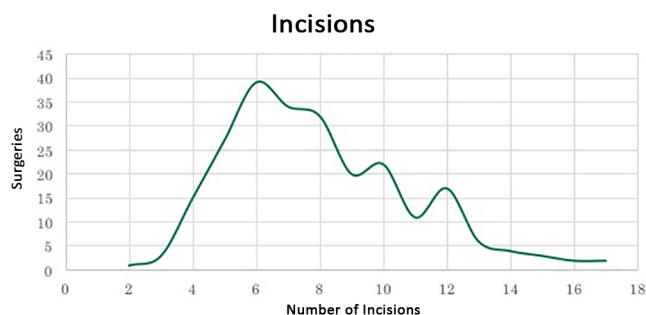


Figure 2. Graph demonstrating the number of incisions made by each surgeon.

Regarding movement vectors, most of the surgeons conduct movements in the medial region to both the anterior and posterior lateral regions (99% and 97%, respectively). Movement of the lateral areas to the medial region was performed by 5% and 11% of the surgeons, respectively.

Given that a large volume of fat was to be removed, 219 (90%) surgeons affirmed that they performed deep liposuction under Scarpa's fascia. At the same time, 143 (59%) surgeons advocated superficial liposuction for better body contours (Figure 3).

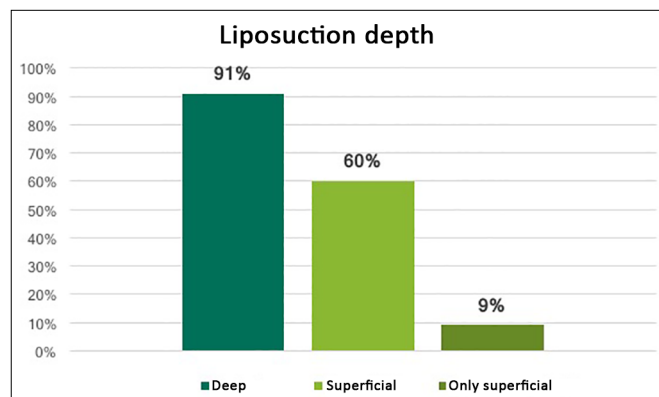


Figure 3. Graph demonstrating the depth of the liposuction procedures performed by the surgeons.

Nearly half of the interviewees administered general anesthesia to perform the procedure. One hundred seven (44%) surgeons used epidural anesthesia, and 15 (6%) used spinal anesthesia.

Two hundred nine (86%) surgeons changed the patient's position during surgery using both the prone and supine positions. Just 34 (14%) surgeons performed liposuction only in the supine position (Figure 4).

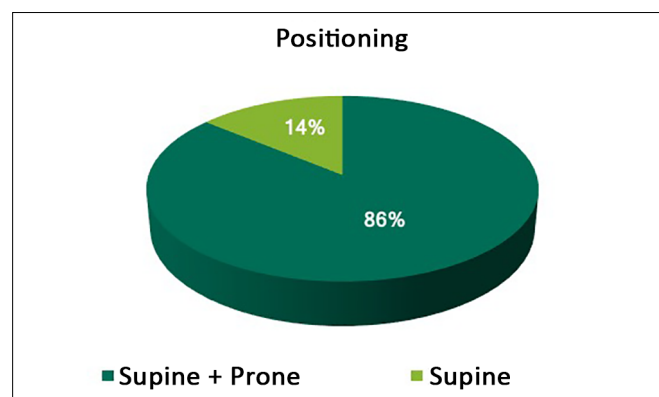


Figure 4. Graph showing the patient's position during the liposuction procedure.

One hundred twenty-six (52%) surgeons observed the pressure on the liposuction apparatus; 87 (36%) surgeons performed the procedure under controlled pressure.

## DISCUSSION

A large quantitative and qualitative variation in incisions was observed. The number varied nearly by 800%. The literature defends performing the least amount of incisions possible that can allow appropriate liposuction of the desired area and the perpendicular crisscross subcutaneous tunnels<sup>9</sup>. Correct positioning of the incisions also means reducing the exposure of the resulting scars<sup>9</sup>, which has been observed in 94% of the cases.

Most surgeons provide access for the liposuction from the median/paramedian line, both in the anterior and posterior regions (99% and 97% respectively). This median/paramedian access might explain why a significant number of professionals (86%) need to change the patient's position for dorsal liposuction.

Liposuction with the patient in the prone position must be performed with an emphasis on adequate monitoring of the patient, in order to avoid potential complications such as cervical lesions, ocular lesions, air embolism, venous thromboembolism<sup>10</sup>, bradycardia, and cardiac arrest<sup>10,11</sup>. In this questionnaire, complications related to position change were 5%; however, they were all systemic and potentially serious.

Most of the interviewees (90%) performed deep liposuction, in other words, under Scarpa's fascia. Although the literature argues that superficial liposuction increases the chances of local complications such as scar contractures, skin dyschromia, and abrasions<sup>12</sup>, nearly 60% of the specialists still utilize this technique. A small portion (9%) of surgeons defended superficial liposuction only due to apprehensions regarding cavity perforation.

No anesthetic technique was predominant. The anesthesia technique administered depended on the preference of the surgeon or that of the center where the procedure was performed. However, in large-volume liposuctions, the use of general anesthesia was advised due to the important risks of vasodilation and hypertension<sup>11</sup>. General anesthesia allows more control over the utilization of drugs, the patient's movements, and the handling of air passageways<sup>13</sup>. In Brazil, we verified that the majority of the procedures were performed with general anesthesia, followed by the use of epidural anesthesia, with a considerable portion of the procedures utilizing it.

The surgeons demonstrated little preoccupation (35%) with observing and/or controlling the pressure on the liposuction apparatus. The lack of a definition of an ideal pressure in the literature to this very day leaves an important variable open. There are already authors that defend low-pressure liposuction, which would reduce blood loss and local trauma<sup>14</sup>. This fact was recently corroborated in works on lipografting that demonstrates cellular damage at elevated negative pressures ( $\geq 13.5$  PSI)<sup>15</sup>. If there is a correlation among negative pressure, tissue damage, and systemic inflammatory response in the postoperative phase, controlling the pressure must be considered a routine part of the surgeons' practice.

## CONCLUSION

In conclusion, liposuction practice in Brazil presents a great diversity of techniques and little standardization.

There is a need for further studies on the most performed plastic surgery procedure in Brazil. Further studies are required to improve knowledge and standardize its practice, as well as identify ideal methods of teaching it, with the objective of reducing the number of interurrences and increasing patient safety.

## COLLABORATIONS

- GMCS** Analysis and/or interpretation of data; statistical analyses; conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
- SMC** Final approval of the manuscript; conception and design of the study.
- MHLR** Analysis and/or interpretation of data; statistical analyses; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
- CSS** Analysis and/or interpretation of data; final approval of the manuscript.
- LMF** Analysis and/or interpretation of data; final approval of the manuscript.

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**Annex 1. Questionnaire.**

Name: \_\_\_\_\_

E mail: \_\_\_\_\_

Aspiring: \_\_\_\_\_ Specialist: \_\_\_\_\_ Official: \_\_\_\_\_

1 - Do you work with liposuction?

YES  NO

2 - Have you ever had a case of death related to liposuction?

YES  NO

3 - If yes, what was the primary problem?

4 - Have you ever had a systemic complication in liposuction?

YES  NO

5 - If so, what was it?

6 - What was the outcome/sequela?

7 - What type of anesthesia do you prefer for liposuction?

8 - Do you change the patient's position to the prone position to perform dorsal liposuction?

YES  NO

9 - Have you ever had a specific complication arise from this moment? What was it?

10 - What incision do you make to perform liposuction in the thoracic dorsal region?

11 - What incision do you make to perform liposuction in the sacral lumbar region?

12 - What incision do you make to perform liposuction in the abdomen?

13 - What incision do you make to perform liposuction in the flank?

14 - If you have had a case of perforation, where was it located? What was the incision?

15 - Do you perform deep liposuction? Why?

16 - Do you perform superficial liposuction? Why?

17 - Have you ever had local complications in liposuction? What were they?

18 - Do you know the negative pressure value of your liposuction apparatus?

YES  NO

19 - Do you regulate or control the pressure on the apparatus during the procedure?

YES  NO

20 - If so, what do you consider to be the ideal liposuction pressure?