



# Prevalence of body contouring surgery in post-bariatric patients at a university hospital

## Prevalência de cirurgia de contorno corporal em pacientes pós-bariátricos em um hospital universitário

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### ■ ABSTRACT

**Introduction:** The growing number of patients with massive weight loss after bariatric surgery is correlated with the demand for body contouring surgery. Such procedures reduce physical and psychological complaints, positively influencing the quality of life of these people. However, there is little data on the response of services that offer surgical treatment for morbid obesity to this need. The study aims to measure the prevalence of body contouring surgery between 2015 and 2018, in patients previously underwent on a bariatric surgery, in 2014 and 2015, at a University Hospital. **Methods:** Research in the hospital information system and medical records in order to assess the institutional prevalence of post-bariatric body contouring surgery. Patients who did not undergo both surgeries in our Service, those who underwent these surgical procedures in other years, as well as those with incomplete medical records were excluded. **Results:** Bariatric surgeries were performed in 208 patients. Of these, 11% (n=23) underwent 27 body contouring surgeries, with abdominal dermolipectomy (n=16) being the most frequently performed. The performance of more than one procedure to correct body deformity occurred in 13% (n=3) of patients. The mean age of patients undergoing body contouring surgery was 37 years, the majority was female (96%, n=22). **Conclusion:** Body contouring surgery is an important step in the treatment of morbid obesity and has a restorative feature. There is a huge lack of this therapy, which irreparably compromises the results obtained by bariatric surgery. **Keywords:** Bariatric surgery; Reconstructive surgical procedures; Body contouring; Effective access to health services.

### ■ RESUMO

**Introdução:** O número crescente de pacientes com perda ponderal maciça, após cirurgias bariátricas, correlaciona-se com a procura por cirurgias de contorno corporal. Tais procedimentos reduzem queixas físicas e psicológicas, influenciando positivamente a qualidade de vida dessas pessoas. Todavia, há poucos dados quanto à resposta dos serviços que oferecem tratamento cirúrgico para obesidade mórbida frente a essa necessidade. O estudo tem como objetivo aferir a prevalência de cirurgia do contorno corporal entre 2015 e 2018, em pacientes previamente submetidos à cirurgia bariátrica, nos anos de 2014 e 2015, em um hospital universitário. **Métodos:** Consulta ao sistema de informação hospitalar e a prontuários médicos a fim de aferir prevalência institucional de cirurgia de contorno corporal pós-bariátrica. Foram excluídos pacientes que não tenham sido submetidos a ambas as cirurgias em nosso Serviço, os que realizaram os referidos procedimentos cirúrgicos em outros anos, bem como aqueles com registros incompletos. **Resultados:** Foram realizadas cirurgias bariátricas em 208 pacientes. Desses, 11% (n=23) foram submetidos a 27 cirurgias do contorno corporal, sendo a dermolipectomia abdominal (n=16) a mais realizada. A realização de mais de um procedimento para correção de deformidade corporal ocorreu em 13% (n=3) dos pacientes. A média de idade dos pacientes submetidos a cirurgia do contorno corporal foi de 37 anos, a maioria do sexo feminino (96%, n=22). **Conclusão:** A cirurgia do contorno corporal constitui etapa importante do tratamento da obesidade mórbida e tem caráter reparador. Há imensa carência dessa terapêutica, o que compromete irremediavelmente os resultados obtidos pela cirurgia bariátrica. **Descritores:** Cirurgia bariátrica; Procedimentos cirúrgicos reconstrutivos; Contorno corporal; Acesso efetivo aos serviços de saúde.

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Article received: September 25, 2021.  
Article accepted: December 13, 2021.

Conflicts of interest: none.

DOI: 10.5935/2177-1235.2022RBCP635-en

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## INTRODUCTION

Patients with severe obesity achieve greater and more sustained weight loss through bariatric surgery when compared to non-surgical approaches. Regardless of the technique chosen, the surgical procedure improves comorbidities such as diabetes, hypertension and health-related quality of life. With the increasing number of patients with massive weight loss, there is also an increase in the demand for body contouring surgeries<sup>1</sup>. After massive weight loss, patients commonly have redundant skin folds, which can lead to intertrigo, ulceration, infection, and mobility-related challenges<sup>2</sup>. Despite successful weight loss, a patient's body image and psychological state after bariatric surgery can deteriorate substantially<sup>3</sup>.

Although the need for surgery is more evident in individuals who have experienced massive weight loss, an individual without significant weight loss may have a similar deformity. Strict selection criteria may limit access to individuals who would benefit from body contour correction; however, loose criteria can overwhelm the health system and thus also restrict patients' access to the service. Surgical procedures performed on a patient with significant weight loss are complex, demand intense work from the health team and have high rates of complications<sup>4,5</sup>.

According to Ordinance No. 425/GM/MS of March 19, 2013, patients undergoing reduction gastroplasty with adherence to postoperative follow-up may undergo reconstructive plastic surgery by the Unified Health System (SUS). Among the indications, we have recurrent skin infections due to excess skin, such as fungal and bacterial infections; psychopathological changes due to weight reduction; limitation of professional activity due to weight and impossibility of movement<sup>6</sup>. As a contraindication of reconstructive plastic surgery, we highlight the absence of weight reduction and weight stability.

There are little data regarding the response of services that offer reduction gastroplasty in the face of these concerns. Therefore, this study may bring more data to the scientific community to understand and direct actions in the face of the challenge of managing these patients since they will increasingly integrate into society.

## OBJECTIVE

To assess the prevalence of body contouring surgery performed between 2015 and 2018, in patients previously submitted to bariatric surgery between

2014 and 2015, with both procedures respectively performed by the specialist teams of Plastic Surgery and Digestive Surgery at Hospital de Clínicas from the State University of Campinas (HC-UNICAMP), in the city of Campinas, São Paulo.

## METHODS

Observational, retrospective study that measured the prevalence of patients undergoing body contouring surgery, which took place between 2015 and 2018, after having previously undergone bariatric surgery between 2014 and 2015 at HC-UNICAMP. These are bariatric and plastic surgeries performed by the Digestive Surgery and Plastic Surgery teams at HC-UNICAMP, respectively, duly monitored and recorded by the researchers.

In order to find which patients underwent bariatric surgery between 2014 and 2015, a triple check was performed. First, through their own records stored by the multidisciplinary team of Bariatric Surgery, then through the HC-UNICAMP information system, and finally, through the review of medical records.

Once the patients who met the criteria mentioned above were identified, a double check was carried out; the first in the information system of the University Hospital, in order to assess how many of these patients, previously submitted to obesity surgery, were also submitted to reconstructive plastic surgery, while the second investigation was carried out by checking their medical records.

Regarding the data collected in the medical records, the following variables were chosen for analysis: gender, bariatric surgery technique used, body mass index (BMI) at the time the bariatric surgery was performed, BMI on the date of indication of the body contouring surgery, modality of body contouring surgery used, age on the day of the plastic surgery, the time between the obesity surgery and the surgery performed by the Plastic team.

Patients who underwent body contouring surgery between 2015 and 2018, after bariatric surgery between 2014 and 2015, by the Plastic Surgery and Digestive System Surgery team at HC-UNICAMP were included in this study. We excluded patients who had not undergone both reduction gastroplasty and body contouring surgery at the HC-UNICAMP; those who did not have medical records located, those who underwent the aforementioned surgical procedures in other years, patients with incomplete records, as well as those who refused to sign the Free and Informed Consent Term (FICT).

Participants who proposed to participate in the study signed the informed consent and received a copy. During all stages of the investigation, the researchers treated the identity of patients with professional standards of confidentiality, in compliance with Brazilian legislation (Resolution No. 466/12 of the National Health Council), using the information only for academic and scientific purposes. The medical team was and remains available to resolve patients' doubts regarding this research's procedures.

Data analysis was performed by calculating percentages, means and medians using Microsoft® Office Excel.

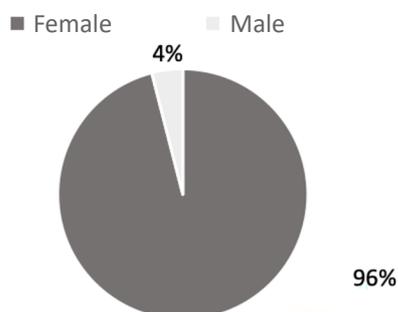
Data collection for this research began after approval by the Research Ethics Committee (CEP) of the State University of Campinas (UNICAMP) under the number CAAE: 11081219.2.0000.5404.

## RESULTS

A total of 208 bariatric surgeries were performed on 183 women and 25 men in 2014 and 2015. Of these, 11% (n=23) underwent 27 body contouring surgeries (Table 1). Almost all plastic surgeries were performed on female patients (Figure 1). The mean age of patients undergoing body contouring surgery was 36 years, with a median of 37 years, ranging from 22 to 53 years. The 23 patients who met the criteria for this study had previously undergone Fobi-Capella surgery.

**Table 1.** Body contouring surgeries performed between 2015 and 2018 by the Plastic Surgery team at HC-UNICAMP in patients previously submitted to bariatric surgery at the same hospital.

Surgery performed	Frequency (%); n=27
Abdominal dermolipectomy	59
Brachioplasty	22
Mammoplasty	7
Dorsoplasty	7
Cruroplasty	4



**Figure 1.** Sex of patients undergoing body contouring surgery after bariatric surgery, between 2015 and 2018, by the Plastic Surgery team at HC-UNICAMP.

The mean BMI pre-gastroplasty was 36 kg/m<sup>2</sup>, while the BMI before the body contouring surgery was 23.6 kg/m<sup>2</sup>, with a mean delta BMI of 12.4 kg/m<sup>2</sup>. The time interval between bariatric surgery and reconstructive plastic surgery was 29 months in our sample. All patients undergoing body contouring surgery in this series were discharged from the hospital on the first postoperative day (n=23).

The performance of more than one procedure for correcting body deformity occurred in 13% (n=3) of the patients. One patient underwent anchor abdominoplasty and dorsoplasty simultaneously. Another also had his abdomen operated on first and later underwent dorsoplasty and mammoplasty, performed in the same surgical procedure. The third, during follow-up, needed reduction mammoplasty after having been previously submitted to abdominal dermolipectomy. Initially submitted to brachial dermolipectomy, one case was followed up with an indication for rhytidoplasty and facial fat grafting; neither procedure was included in the calculation of body contouring surgeries.

In the abdominal approaches, the anchor abdominoplasty technique was used with the excision of the original umbilicus, the surgical specimen, and the neo umbilicus fabrication, using bilateral skin-fat flaps.

## DISCUSSION

Body contouring surgeries after significant weight loss help improve self-esteem and reintegrate these patients into social and professional life, facilitating hygiene and walking and improving sexual performance<sup>7</sup>. Surgical techniques vary according to each case and are difficult to perform due to exuberant sagging, poor skin quality and loss of elasticity. Increased vessel caliber, anemia and protein-calorie malnutrition increase the incidence of complications<sup>8</sup>.

The aesthetic results obtained in patients with morbid obesity are below those achieved in non-obese patients. However, the relief from removing excess skin fat is greater than the presence of scars, leading to improved quality of life<sup>7</sup>. The selection of patients is based on a detailed clinical history and physical examination, which, combined with an accurate surgical technique, allow the achievement of satisfactory aesthetic results and, above all, with a low rate of complications<sup>9</sup>.

The desire for surgeries to improve body contour after massive weight loss is a growing demand. A study by Kitzinger et al.<sup>10</sup> found that 75% of women and 68% of men were interested in plastic surgery after weight loss.

Although many patients wish to undergo body contouring surgery, unfortunately, they do not have access to the surgical procedure, bringing several other consequences to the SUS, such as occupancy of beds due to complications, and increased care costs, among others.

In developing countries, such as Brazil, problems in the organization and hierarchy of the health system and inequity in access to services make plastic surgery care beyond the reach of a large portion of the population. In Rio de Janeiro, for example, the average time for scheduled care for the population ranges from 30 days for physical therapy consultations to 123 days for reconstructive plastic surgery, the latter being the specialty with the longest waiting time, which corroborates our hypothesis of difficult access<sup>11</sup>. A possible contributing factor may be the need for patients to travel large geographic distances to the specialist, which makes it difficult to maintain a regular schedule of follow-up consultations, in addition to creating barriers to establishing bonds with the team and the service.

In our series, associations of procedures were avoided since, in addition to the complex surgeries, the patients, formerly morbidly obese, often have comorbidities such as arterial hypertension, and diabetes mellitus, among others, which could increase the risks of complications.

The mean BMI before plastic surgery of 23.6 kg/m<sup>2</sup> was lower than that found by other authors<sup>12-15</sup>. Likewise, the mean delta BMI of our patients, 12.4 kg/m<sup>2</sup>, was below 18.3 kg/m<sup>2</sup>, 20.7 kg/m<sup>2</sup> and 22.3 kg/m<sup>2</sup> verified in other studies<sup>12,14,16</sup>. We believe that this finding is related to the preoperative follow-up by the multidisciplinary team, which throughout the surgical planning, encourages changes in life habits, in addition to improvements in eating habits, which is reversed in intense weight loss even before surgery to obesity. This study's most common plastic surgery was abdominal dermolipectomy, also found in several other studies<sup>10,14,17,18</sup>.

Worldwide, there is a lack of data on the real rate of patients undergoing reconstructive plastic surgery after a bariatric procedure<sup>19</sup>. Studies that analyze reconstructive plastic surgeries by the SUS are uncommon in Brazil. In our country, between 2010 and 2016, there were 6,654 hospitalizations for post-bariatric reconstructive plastic surgery via the public network. Only 14.5% of patients who underwent bariatric surgery also had access to this care. Of this total number of surgeries, 52% of the procedures corresponded to abdominal dermolipectomy, 17% to mammoplasty and 13% to brachial dermolipectomy, with a total expense of hospitalizations for SUS related

to reparative surgical procedures of R\$ 6,019,082.72. Considering that the same patient may have performed more than one procedure, this prevalence should be even lower.<sup>17</sup>

These data corroborate our research findings, which measured the level of access to restorative therapy at 11%. Furthermore, 93% of reconstructive plastic surgeries after bariatric surgery were performed on female patients, a rate similar to that reported by Rosa et al. in a study on the profile of post-bariatric patients undergoing plastic surgery procedures in Brasília and at the percentage found in our study, 96%<sup>14,17</sup>. This number was slightly higher than that found in a study previously carried out by the Plastic Surgery team at HC-UNICAMP, which reported 91% of the female population in a retrospective analysis of post-bariatric abdominoplasties<sup>20</sup>.

Regarding the age of the patients at the time of the body contouring surgery, our findings are similar to those reported by Aldaqal et al.<sup>18</sup>, in a study carried out in Saudi Arabia, who found a mean age of 37 years. This age is lower than those published by a previous study by UNICAMP<sup>20</sup>, 40 years old, by the group by Rosa et al.<sup>14</sup>, 41 years old, and by Poyatos et al.<sup>16</sup>, in Barcelona, 48 years old. The average time interval between bariatric surgery and reconstructive plastic surgery was 29 months in our series, which is lower than the 42 months and 47 months seen in other national studies but higher than the 22 months and 24 months described in other works<sup>10,14-16</sup>.

Gusenoff et al.<sup>21</sup> reported that 11.3% of 926 patients who underwent gastric bypass surgery underwent follow-up plastic surgery in a study by the University of Rochester, USA. In the same state of New York, another research group published that reconstructive plastic surgery was performed by only 6% of patients after bariatric procedures<sup>19</sup>. Aldaqal et al.<sup>18</sup>, in Saudi Arabia, reported a slightly higher rate, 14%. Regarding Europe, Kitzinger et al.<sup>10</sup>, in Austria, found that among patients who underwent bariatric surgery between 2003 and 2009, only 21% actually underwent body contouring surgery, while in Greece, a prevalence of 3.6%<sup>22</sup> is reported. Health insurance and income are associated with the search for surgery, and improved access to health services can increase the number of patients able to undergo these reconstructive procedures<sup>19</sup>.

Less than 10% of patients who undergo bariatric surgery through the public health system will have access to body contouring surgery<sup>10,19</sup>. Public health systems that do not provide coverage for reconstructive plastic surgery prevent most bariatric patients from accessing the procedures, as only a small part of them have the financial resources to pay the particular costs of corrective procedures.

This may explain the low percentage of post-bariatric reconstructive plastic surgeries described in the international literature. Other possible reasons for the low-performance rate of reparative procedures are fear of complications in other surgeries and differences in the quality of information on aspects of body contouring procedures<sup>18</sup>.

The SUS must act as an instrument for promoting citizenship for people who experience massive weight loss. Promoting, therefore, comprehensive care and offering, in an articulated and continuous way, the resources that make it possible to face the determinants and conditions of health and illness of this type of patient.

## CONCLUSION

There is an immense lack of this treatment, which irremediably compromises the functional results and quality of life of patients undergoing bariatric surgery. Despite its limitations due to its unicentric nature and small sample space, this study provides initial evidence on the prevalence of body contouring procedures after bariatric surgery in our country. Thus, we believe that more studies of this type should be carried out in other referral centers to verify the real access to body contouring surgery after bariatric surgery among SUS patients. Our findings may be used as indicators to guide actions aimed at improving care for patients in the postoperative period of Bariatric Surgery in Brazilian public hospitals.

## COLLABORATIONS

- LHZZP** Data analysis and/or interpretation, Statistical analysis, Final approval of the manuscript, Data collection, Conceptualization, Conception and study design, Resource Management, Project Management, Investigation, Methodology, Conducting operations and/or experiments, Writing - Original Preparation, Writing - Revision and Editing, Validation, Visualization
- ETR** Final approval of the manuscript, Conceptualization, Conception and design of the study, Writing - Review and Editing, Supervision, Validation, Visualization
- AS** Analysis and/or interpretation of data, Final approval of the manuscript, Project Management, Investigation, Performing operations and/or experiments, Visualization
- BBS** Research, Carrying out operations and/or experiments, Writing - Revision and Editing

- DRC** Conception and design of the study, Methodology, Writing - Revision and Editing, Supervision, Visualization
- EAC** Final approval of the manuscript, Conceptualization, Conception and design of the study, Methodology, Supervision
- PK** Final approval of the manuscript, Supervision

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