



# Retrospective analysis of 70 patients who underwent post-bariatric abdominoplasty with neo-omphaloplasty

*Análise retrospectiva de pacientes pós-bariátrica submetidos à abdominoplastia com neo-onfaloplastia: 70 Casos*

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## ■ ABSTRACT

**Introduction:** With the increasing surgical treatment of obesity, a new group of patients is being attended by plastic surgeons: those with large flaccid skin following weight loss. For patients treated with conventional or open bariatric surgery, vertical, anchor-line, or inverted "T" abdominoplasty has been widely used to improve the abdominal contour. In this study, abdominoplasty was associated with umbilical amputation followed by neo-omphaloplasty. **Methods:** Seventy patients with stable weight for at least 18 months underwent surgery at the UNICAMP Plastic Surgery Outpatient Clinic, from March 2011 to April 2013. In all patients, anchor-line abdominoplasty with excision of the original navel was executed, together with the surgical specimen and preparation of neo-umbilicus, through bilateral dermal-fat flaps. A retrospective analysis of medical records and photographic archives was performed. **Results:** The 70 patients were predominantly female (91%) and white (83%) with a mean age of 40 years. After a wait time of approximately 16 months, they were subjected to anchor-line abdominoplasty associated with neo-omphaloplasty, which lasted an average of 2 hours. There were post-operative complications in 29.85% of the patients, including small dehiscence, unsightly, enlarged, or hypertrophic scars, keloid, seroma, relevant dermo-fatty excesses, and wound infection. The neo-umbilicus obtained from the surgery is very similar to the original umbilicus. We did not observe necrosis, stenosis, morphological distortions, or bad positioning. **Conclusion:** This technique has made it possible to obtain an umbilicus with a natural look, is easy to perform, and shortens operating time.

**Keywords:** Neo-umbilicus; neoumbilicoplasty; neo-omphaloplasty; Vertical abdominoplasty; anchor-line abdominoplasty; post-bariatric surgery.

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## RESUMO

**Introdução:** Com o crescente aumento do tratamento cirúrgico da obesidade, surge para o cirurgião plástico um grupo de pacientes com grande flacidez cutânea após perda ponderal. Para aqueles submetidos à gastroplastia redutora convencional ou aberta, a abdominoplastia vertical, em âncora ou em T invertido, tem sido largamente utilizada para a melhoria do contorno abdominal, e no presente trabalho foi associada à amputação umbilical seguida de neo-onfaloplastia. **Método:** Foram operados 70 pacientes, com peso estável há no mínimo 18 meses, procedentes do ambulatório de Cirurgia Plástica da UNICAMP, no período de março de 2011 a abril de 2013. Em todos foi utilizada a técnica de abdominoplastia em âncora com exérese do umbigo original, juntamente com a peça cirúrgica e confecção de neo-umbigo, através de retalhos dermo-gordurosos bilaterais. Procedeu-se à análise retrospectiva dos prontuários médicos e arquivo fotográfico dos mesmos. **Resultados:** Nos 70 pacientes operados, houve predominância do sexo feminino (91%) e da raça branca (83%), com média de 40 anos. Após tempo de espera de aproximadamente 16 meses, foram submetidos à abdominoplastia em âncora associada a neo-onfaloplastia, que durou em média 2 horas. Observaram-se complicações pós-operatórias em 29,85% - deiscências pequenas, cicatrizes inestéticas, alargadas ou hipertróficas, queloides, seromas, excessos dermo-gordurosos relevantes e infecção de ferida operatória. Os neo-umbigos obtidos são muito semelhantes aos umbigos originais. Não observamos necroses, estenoses, distorções morfológicas e nem mau posicionamento dos mesmos. **Conclusão:** Esta técnica tem permitido a obtenção de umbigos com aspecto natural, é de fácil execução e reduz o tempo operatório.

**Descritores:** Neo-umbigo; Neoumbilicoplastia; Neo-onfaloplastia; Abdominoplastia vertical; Abdominoplastia em âncora; Cirurgia pós-bariátrica.

## INTRODUCTION

Obesity is increasing in prevalence and growing in epidemic proportions<sup>1,2</sup>. Consequently, in the past decade there has been rapid growth in the number of morbidly obese patients undergoing bariatric surgery, generating a new class of patients for the plastic surgeon: the post-bariatric patient. Such patients yearn for improvement in body contour, social life, and quality of life. The abdominal region is the source of the greatest discomfort; in particular, the umbilical scar as the greatest reason for concern<sup>3</sup> to both patients and plastic surgeons.

The umbilical region is central to the aesthetic aspect of the abdomen and generates special attention for women. The work of Liacyr Ribeiro demonstrated that the final appearance of the navel was a cause for concern when performing abdominoplasty<sup>4</sup>. This has been the subject of many studies aimed at obtaining more satisfactory surgical results.

For patients undergoing open bariatric surgery, the most common technique is the anchor-line abdominoplasty, preserving the umbilicus and fixing it to the dermal-fat flaps, defined as transposition umbilicoplasty<sup>5,6,7</sup>.

On the other hand, different neo-omphaloplasty techniques have presented fewer complications, increased ease of application, and greater satisfaction with the aesthetic results of the surgery, with no visible peri-umbilical scars<sup>6</sup>.

Total reconstruction of the navel was reported for the first time in 1955. It is required in cases of agenesis (bladder exstrophy, omphalocele, gastroschisis), loss of inflammatory

processes (necrotizing fasciitis), surgical procedures (umbilical herniorrhaphy, laparotomy, abdominoplasty), or skin tumor excision<sup>8</sup>.

Some surgical techniques for reconstructing an absent umbilicus use a small segment of skin of variable size, pedicled or not, that remains connected to the abdominal fascia to create the base of a small tubular structure. Other techniques use skin from the periumbilical region to create a depression and/or a tubular structure that will yield the new umbilicus<sup>9</sup>.

In abdominoplasty that preserves the original umbilicus, the umbilical stenosis resulting from circular scars was the biggest challenge. In 1976, Avelar presented his technique, sectioning the scar in three flaps<sup>9</sup>, a technique that was subsequently widely adopted.

Given the increase in obesity and post-bariatric plastic surgeries, we are confronted with another challenge: anchor-line abdominoplasty with an aesthetically acceptable navel.

In the case of post-bariatric patients, almost all umbilical scars isolated during abdominoplasty have very long pedicles, which are difficult to accommodate and thus generate boundary vascularization and difficulties in defining its shape. Poor perfusion or skin necrosis, dehiscence, prolonged healing, discolorations, stenosis, and scar hypertrophy are some of the post-operative complications that may occur.

The navel is a scar, resulting from a healing process by secondary intention, and therefore there is no reason to retain it. Replacing the lost navel with another scar of similar shape and positioning is a simple and fast neo-omphaloplasty technique routinely performed, leaving only marks that simulate the folds of the original navel.

The aim of this study was to perform a retrospective analysis of the profile, intra-operative data, and results of post-bariatric patients who underwent anchor-line abdominoplasty with neo-omphaloplasty at the university hospital.

## METHODS

A retrospective study was conducted of patients who underwent post-bariatric abdominoplasty associated with neo-omphaloplasty, based on survey of data from medical records and photographic archives from March 2011 to April 2013 in the Plastic Surgery Unit of UNICAMP.

Properly attached to the medical record of each patient was a free and informed consent form signed by the patient, medical team, and witnesses, which contained important information about the surgery and the post-operative follow-up, and allowed for the publication of the photographic documentation and information relevant to the procedure performed.

We included all patients operated on during the period mentioned in which the technique described below was used.

### Markings

With the patient in an orthostatic position, the midline and lateral furrows formed by bending the dermo-fat surplus on the flanks were marked.

Thereafter, in the horizontal supine position, a point positioned 6cm cranially to the fourchette or base of the penis, and a 12cm horizontal line with the center at this point were marked, with the line extending towards the groove marked when the patient was in an orthostatic position.

With bi-digital maneuver from this line, the excess tissue of the lower abdomen was marked, to be sectioned in the form of a horizontal spindle.

A new bi-digital maneuver is made to determine the excess vertical tissue, up to the xiphoid process, resulting in an "A" shaped marking.

With the skin stretched, the distance from the vertex to the base (against the horizontal line) of the "A" was determined on each side. At the junction of the middle third with the distal third of the "A", the midpoint of a rectangular flap (2cm x 3cm), where the neoumbilicus will originate, was marked.

### Operative Technique

Patients underwent general anesthesia, either with or without an epidural. This was followed by infiltration with 0.9% saline solution of epinephrine at a concentration of 1:500,000 into the incision lines made with cold scalpel. Dissection and resection of the marked areas was performed with electrocautery in the aponeurotic plane, including the umbilicus and its pedicle. Invagination and suturing of the umbilical stump were held when necessary. Repositioning of the rectus abdominis muscles was done by plication of the anterior aponeurosis in two planes, with single nylon 2-0 sutures at 5cm intervals, followed by a continuous polyglactin zero suture. The

patient was then placed in Fowler's position, with the isolated polyglactin sutures of the remaining two skin flaps across the middle pubic line. The two rectangular dermal-fat flaps, positioned bilaterally, were sutured in the midline in the rectus aponeurosis through two single nylon 2-0 sutures, followed by suture of their edges with nylon 4-0. The remaining sutures were placed on the vertical and horizontal lines to finalize the skin, and were carried out with isolated sutures with polyglactin zero, including the superficial fascia and dermis, followed by continuous intradermal suture with absorbable monofilament suture. Adhesive sutures were applied to secure the flap to the aponeurosis to reduce the dead space, followed by insertion of a surgical suction drain that remained in place until the patient presented a daily debit of less than 40mL. A dressing was placed over the length of the suture lines with porous and sterile tape, and covered with a cotton pad and elastic strap. Dry gauze is inserted into the neo-umbilicus for 24 hours (Renó BA, Mizukami A, Calaes IL, Staut JG, Claro BM, Baroudi R, Kharmandayan P, Bueno MAC. Neo-omphaloplasty in anchor-line abdominoplasty performed in patients who have previously undergone bariatric surgery. *Revista Brasileira de Cirurgia Plástica* volume 28/ 2013).

## RESULTS

From March 2011 to April 2013, there were 70 patients from the plastic surgery outpatient clinic of UNICAMP, 64 women (91%) and six men, who had previously undergone bariatric surgery, and who had maintained a stable weight for at least 18 months and had a minimum hemoglobin level of 12 g/dL.

The patients were predominantly white (83%), with a mean age of 40.48 years. Most were from Campinas and environs (32.85% from the city of Campinas, 44.28% from the metropolitan area of Campinas, 18.57% from São Paulo, and 4.28% from Minas Gerais).

Most patients had comorbidities before undergoing bariatric surgery, and a significant reduction of these was noted after weight loss when the patients were submitted to abdominoplasty (average loss of 33.41 kg). Prior to surgery, patients had comorbidities related to obesity: 50% were hypertensive, 11.42% had type 2 diabetes, and 5.71% exhibited dyslipidemia. At the time of plastic surgery these rates were, respectively: 4.28%, 1.42%, and 0%.

Before bariatric surgery, 8.71% of the patients were smokers, and none of the 70 patients smoked when they underwent abdominoplasty.

All patients underwent bariatric surgery in the Hospital Complex of UNICAMP: 83% in the Hospital de Clínicas and 17% in the Sumaré State Hospital. The average wait time from entry into the plastic surgery outpatient clinic to the completion of abdominoplasty was 16-39 months.

Surgery was performed under general anesthesia (50%) or general anesthesia with an epidural (50%), with surgery lasting an average of two hours. Anchor-line abdominoplasty with transposition umbilicoplasty previously completed by our team lasted an average of 3.5 hours.

The surgical specimen containing the excised excess der-

mal-fat and the original umbilicus had a mean weight of 1.637g, ranging from 400g to 6600g.

The surgical drain was maintained for an average period of 12 days.

Post-operative complications occurred in 29.85% of the patients. Patients experienced small dehiscence that required no re-suture (8.95%), unaesthetic, expanded, or hypertrophic scars (8.95%), keloids (4.47%), seroma submitted to outpatient drainage (2.98%), relevant excess dermo-fatty (2.98%), and wound infection (1.49%). No complications related to the neoumbilicus were observed. In the 70 cases, there was no dehiscence, stenosis, bulging, or umbilical format distortions.

The dissatisfaction rate of patients with the result of abdominoplasty was 4.41% when questioned in post-operative return visits.

## DISCUSSION

Patients were predominantly female and white, in agreement with the higher prevalence of obesity in these groups, although there is an increase in obesity across demographics.

There was a significant reduction of comorbidities related to excess weight after bariatric surgery; most patients had normal blood pressure, blood glucose levels, and lipemia at the time of abdominoplasty, in agreement with the literature.

The wait time for patients until the completion of abdominoplasty was 16–39 months, and the interval from bariatric to plastic surgery was at least 18 months in order to stabilize weight, as recommended by the Brazilian Society of Plastic Surgery.

The neo-omphaloplasty technique described in this report, with two-dermal fat flaps at the edges of the side flaps<sup>11,12,13,14</sup>, is easily replicated, since the length and width of the flaps does not vary across patients, with no need for the secondary resections of other techniques<sup>15</sup>.

The surgical maneuvers require nothing other than the adoption of the two dermal-fat flaps, without the resection of their adipose layer, through isolated points upon the aponeurotic skin edges without a specific dressing besides gauze for 24 hours. Patients are instructed to perform daily cleaning of the neoumbilicus with soap and water, and replace the gauze over a four-week period. The use of an elastic strap to cover the torso from the inframammary fold to the base of the thighs is indicated for three months, and should only be removed for hygiene.

Post-operative complications related to abdominoplasty were observed in approximately 30% of cases<sup>16,17</sup>, which is compatible with other studies, and none of these complications was related to the neo-umbilicus.

Thus, a reduction in surgical time (by 1 hour and 30 minutes) and satisfactory results were achieved.

## CONCLUSION

This approach, routinely adopting neo-omphaloplasty, allows the reduction of surgical time and better aesthetic appearance of the umbilical region due to the absence of visible scars in this location. We thus have a technique with low morbidity and high patient satisfaction.

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