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Abdominoplasty in a patient after bariatric surgery – case study

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Abstract

Introduction: Up to 96% of patients after bariatric surgery struggle with excess skin, which negatively affects their daily functioning due to frequent skin infections, difficulties with sexual activity and physical exercise, as well as discomfort, especially in social situations. Abdominoplasty is a surgical procedure that allows post-bariatric patients to resolve these problems. At the same time, like any surgical intervention, the incidence of complications is relatively low. These potential complications after surgery include mainly superficial wound dehiscence or other minor complications.

Purpose of the work: This study aims to detail the stages of abdominoplasty performed on a post-bariatric surgery patient and to demonstrate the outcomes achieved.

Materials and methods: In this study, the individual case study method was used. The subject of the study was a 36-year-old woman after bariatric surgery who, having lost more than fifty kilograms and already having a normal BMI= 23.88 kg/m², applied for an abdominoplasty procedure. For practical reasons, despite indications for a circular abdominoplasty, the patient underwent a classic abdominoplasty complemented by liposuction.

Results: During the abdominoplasty procedure, liposuction of the lateral fat tissue was performed, along with the removal of a skin-fat fold weighing over 1 kilogram, reinforcement of the abdominal muscles, and repositioning of the navel. The patient left the clinic without any drainage in place. After 8 days, the sutures placed during the operation were removed and after 4 weeks, the effects of the surgery were also verified by photo documentation. The abdominoplasty performed in the post-bariatric patient allowed for the successful removal of the excess skin after a considerable amount of weight loss. The procedure required meticulous planning and adaptation of surgical methods and techniques to the patient's living situation.

Keywords: abdominoplasty, bariatric surgery, obesity

Introduction:

Abdominoplasty, also known as abdominal wall plastic surgery or tummy tuck, is a procedure aimed at reducing excess skin in the abdominal region and strengthening the abdominal wall muscles. This surgery is primarily performed on individuals seeking to improve the appearance of their abdomen, including women with weakened abdominal walls and loose skin after pregnancy, as well as post-bariatric patients who experience excess skin after significant weight loss. For the latter group, abdominoplasty complements the therapeutic process, helping to achieve the desired body shape and improve quality of life [1,2].

The increased interest in abdominoplasty or liposuction [3] is associated with the modern societal desire for an aesthetic body. Additionally, the growing incidence of obesity has led to an increase in bariatric surgeries.

Approximately 70% [4] to 96% of patients [2] who have lost a significant amount of weight due to bariatric surgery report issues with excess skin, which affects their satisfaction with their appearance. This problem is mainly observed in the abdomen, thighs, arms, breasts, knees, back, and cheeks. Up to 85% of these patients want to reshape their bodies, but less than a quarter actually undergo such procedures [4].

For patients who have lost a significant amount of weight, abdominoplasty not only addresses the aesthetic consequences of such weight loss but also alleviates issues related to excess skin. Excess skin can limit mobility, hinder physical activity, and make personal hygiene difficult, leading to painful irritations, chafing, and fungal skin infections. These patients may also experience stress and discomfort in social situations involving body exposure [2]. Drooping skin can also hinder sexual activity by covering the genital area.

Abdominal wall plastic surgery is often regarded as a purely cosmetic procedure by many, but it is important to remember that abdominoplasty, including for post-bariatric patients, is a surgical procedure with health indications. It helps to eliminate the problem of recurring infections or chafing in the area of excess skin, especially during physical activity due to increased sweating and elevated body temperature during such activity.

Abdominoplasty, like any medical procedure, carries the risk of complications, which vary depending on the amount of tissue removed, the time elapsed since bariatric surgery, the patient's BMI before surgery, gender, comorbidities, and the use of substances such as tobacco [2]. Despite the frequency and nature of these complications, abdominoplasty is considered a safe procedure that offers many benefits to post-bariatric patients.

Contraindications to abdominoplasty include poor general health, uncontrolled diabetes, liver cirrhosis, deep vein thrombosis, and superficial thrombophlebitis. Due to the extensive nature of the surgery and the associated recovery process, patients undergoing this procedure should not smoke, as it hinders post-operative healing. Relative contraindications include the presence of varicose veins.

Aim of the Study

The aim of this study is to present the successive stages of abdominoplasty performed on a patient after bariatric surgery and to illustrate the obtained results.

Materials and Methods

The study utilized the case study method. The subject was a woman who underwent abdominoplasty. Data were collected through observation, medical interviews, measurements, and analysis of medical records. Photographic documentation of the procedure was also taken, showing the various stages of abdominoplasty. Post-operative photographs documenting the results were included as well.

The study involved a 36-year-old woman who had laparoscopic bariatric surgery in October 2022. Initially, the patient weighed 126 kg with a height of 173 cm, resulting in a BMI of 42.09 kg/m², indicating third-degree obesity (morbid obesity). At the time of abdominoplasty, the patient weighed 71.5 kg, with a BMI of 23.88 kg/m² (normal weight).

The patient had been pregnant twice, one of which ended in a cesarean section in 2016. Due to caring for two children, the patient opted against circumferential abdominoplasty (360-degree abdominoplasty), which would have involved a longer and more cumbersome recovery. To achieve satisfactory results, classic abdominoplasty was complemented with liposuction.

Results

Step 1: Consultation and preparation

Figure 1. Drawings - surgery plan (own work).

Before the procedure, a detailed consultation was conducted with the patient, including an assessment of overall health, medical history analysis, and verification of the patient's expectations. The consultation was essential to confirm the absence of contraindications for surgery. Necessary diagnostic tests (including blood tests such as morphology, ionogram, TSH, FT4, ALT, AST) and abdominal ultrasound to exclude hernias were performed, along with pre-operative photographs.

The surgical plan was developed in the form of drawings on the patient (photo 1) marking the midline and planned incision sites. Many surgeons also order Doppler ultrasound of the lower limb vessels to exclude thrombi that could cause pulmonary embolism.

Step 2: Anesthesia
Abdominoplasty is performed under general anesthesia. The patient was put into a deep sleep with anesthetic drugs, ensuring painlessness during the operation.

Step 3: Liposuction of fat tissue from the sides
Liposuction of the fat tissue from the sides (photo 2) was performed using Klein's solution (a bicarbonate solution) and thin cannulas (lipoaspiration). This step aimed to reduce the level of fat tissue on the sides of the patient's abdomen to avoid post-operative folds at the ends of the incision, known as dog-ear deformities.

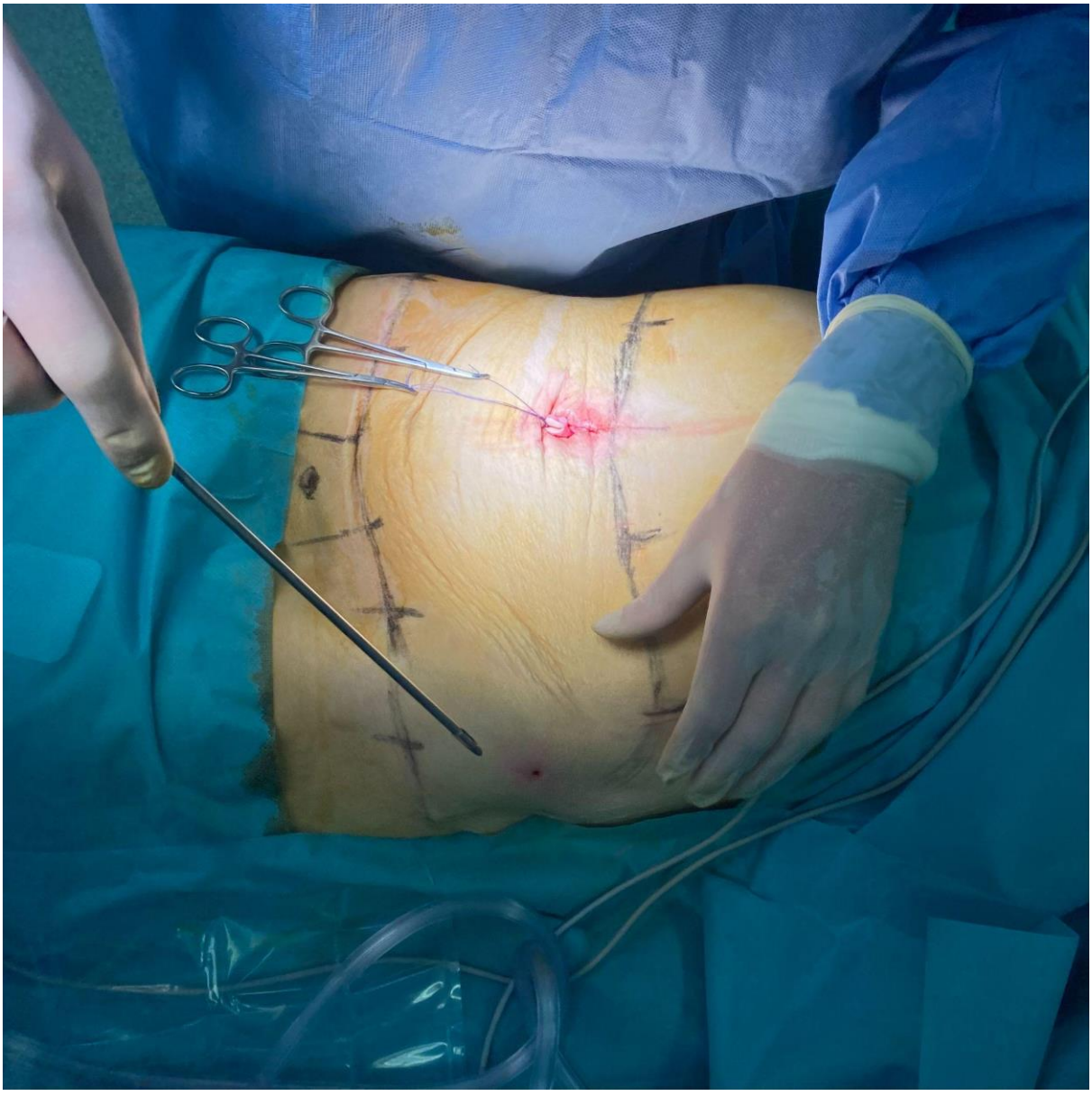

Figure 2. Liposuction. Visible dissected navel (own work).

Step 4: Making the incision

After anesthetizing the patient, the navel was first dissected (photo 2), and its upper and lower poles were marked with different lengths of thread for correct orientation during reattachment. A horizontal incision was made 7 cm above the pubic line, extending from one iliac spine to the other, following the pre-drawn lines. An additional parallel incision above the pubic area was made (photos 3, 4, 5).

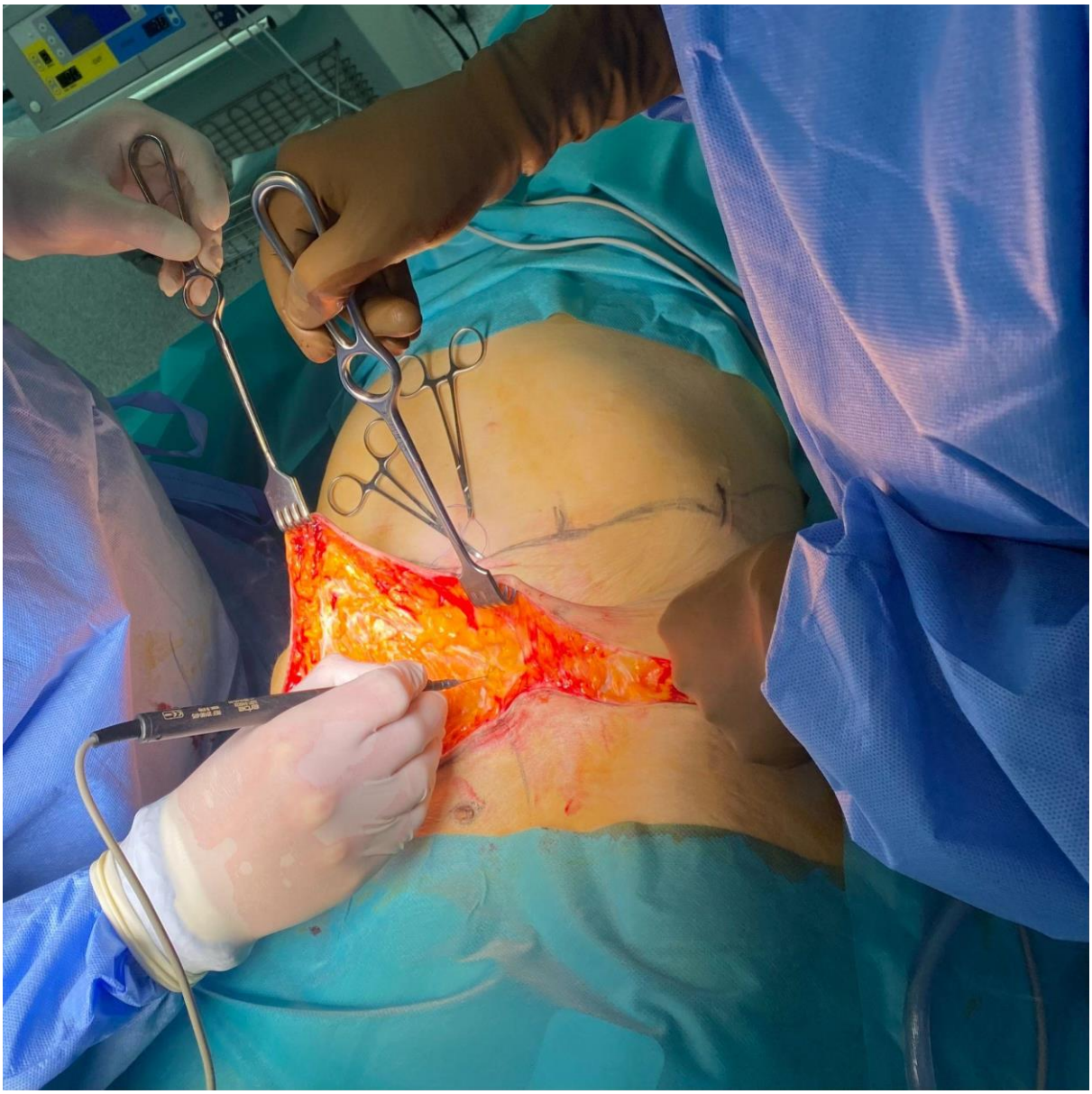

Figure 3. Dissecting tissues according to the pre-established surgical plan (own work)

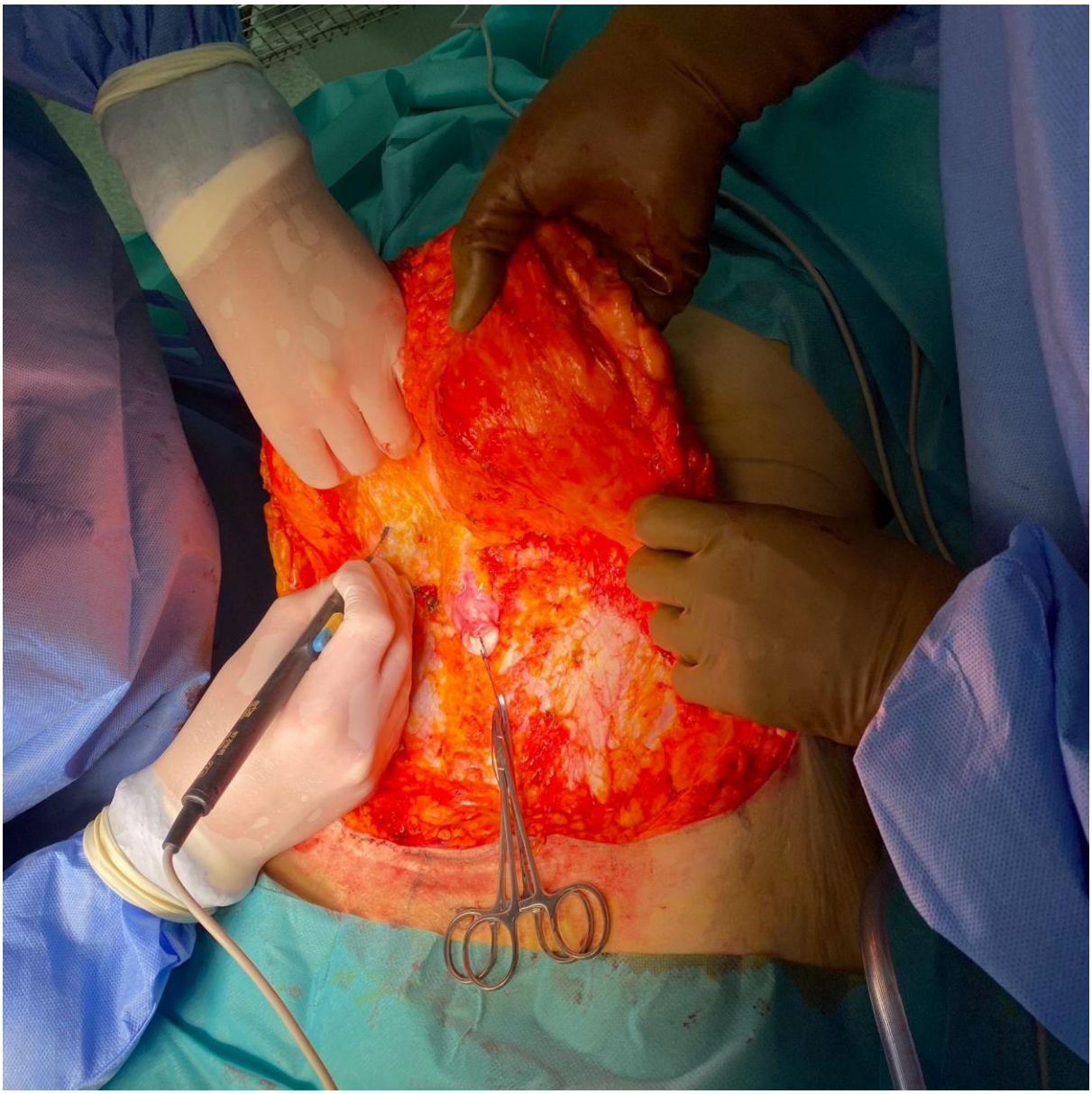

Figure 4. Further separation of the skin-subcutaneous flap (own work).

Step 5: Removal of excess fat tissue and skin

The skin-subcutaneous flap was separated up to the ribs and sternum, exposing the weakened abdominal muscles. Excess fat tissue and skin were surgically removed, requiring precision to ensure a uniform abdominal contour. A skin flap weighing over a kilogram was removed during the procedure (photo 5).

Figure 5. Weighing the resected skin flap (own work).

Step 6: Muscle correction

This part of the procedure is crucial for restoring the function and aesthetics of the abdominal wall. It is especially important for individuals who have experienced significant weight loss or for women after pregnancy who want to return not only to their previous appearance but also to physical activity, which had been hindered by muscles stretched or separated due to substantial body mass.

In the next stage of the procedure, the edges of the separated linea alba were marked and sutured, with a two-layer suture technique. The excess abdominal tissue was also identified and resected (Photo 6).

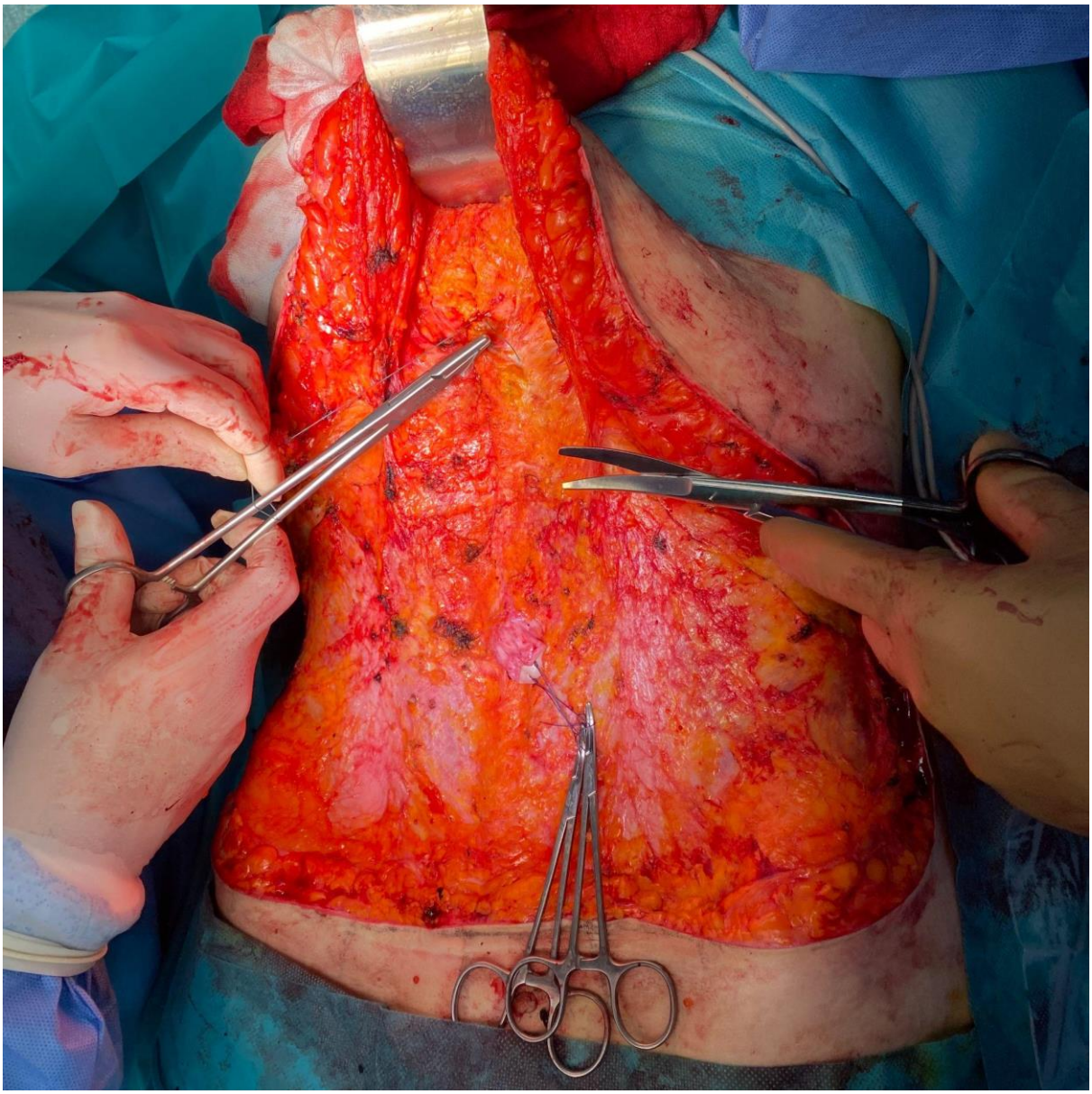

Figure 6. Strengthening the abdominal muscles (own work).

Step 7: Repositioning the navel

The next step involved the relocation of the navel, preceded by marking its new position. An opening was made in the tightened abdominal skin (photo 7), and the navel was repositioned and sutured in place (photo 8) to maintain a natural abdominal appearance.

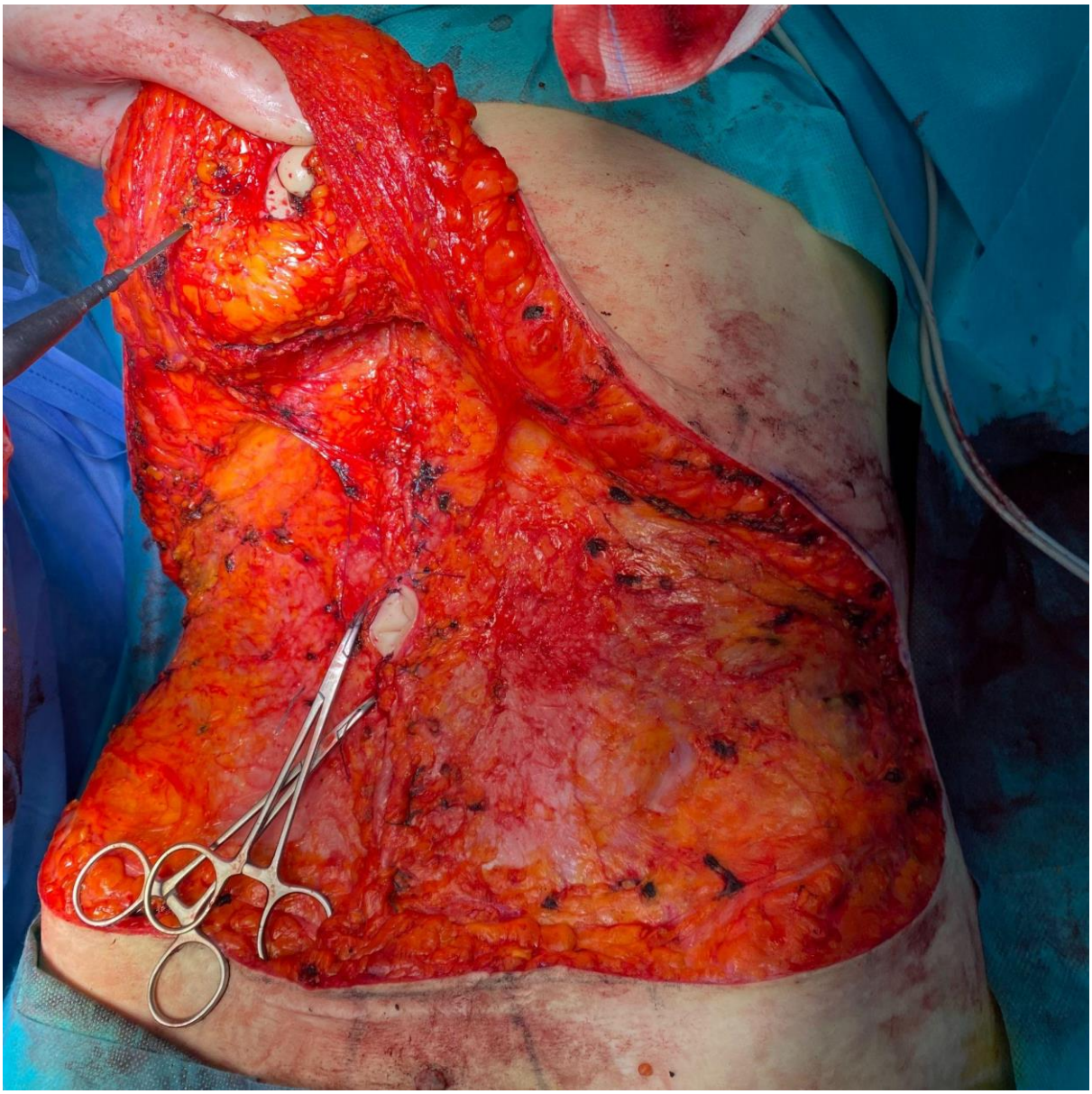

Figure 7. Preparing the opening for repositioning the navel (own work).

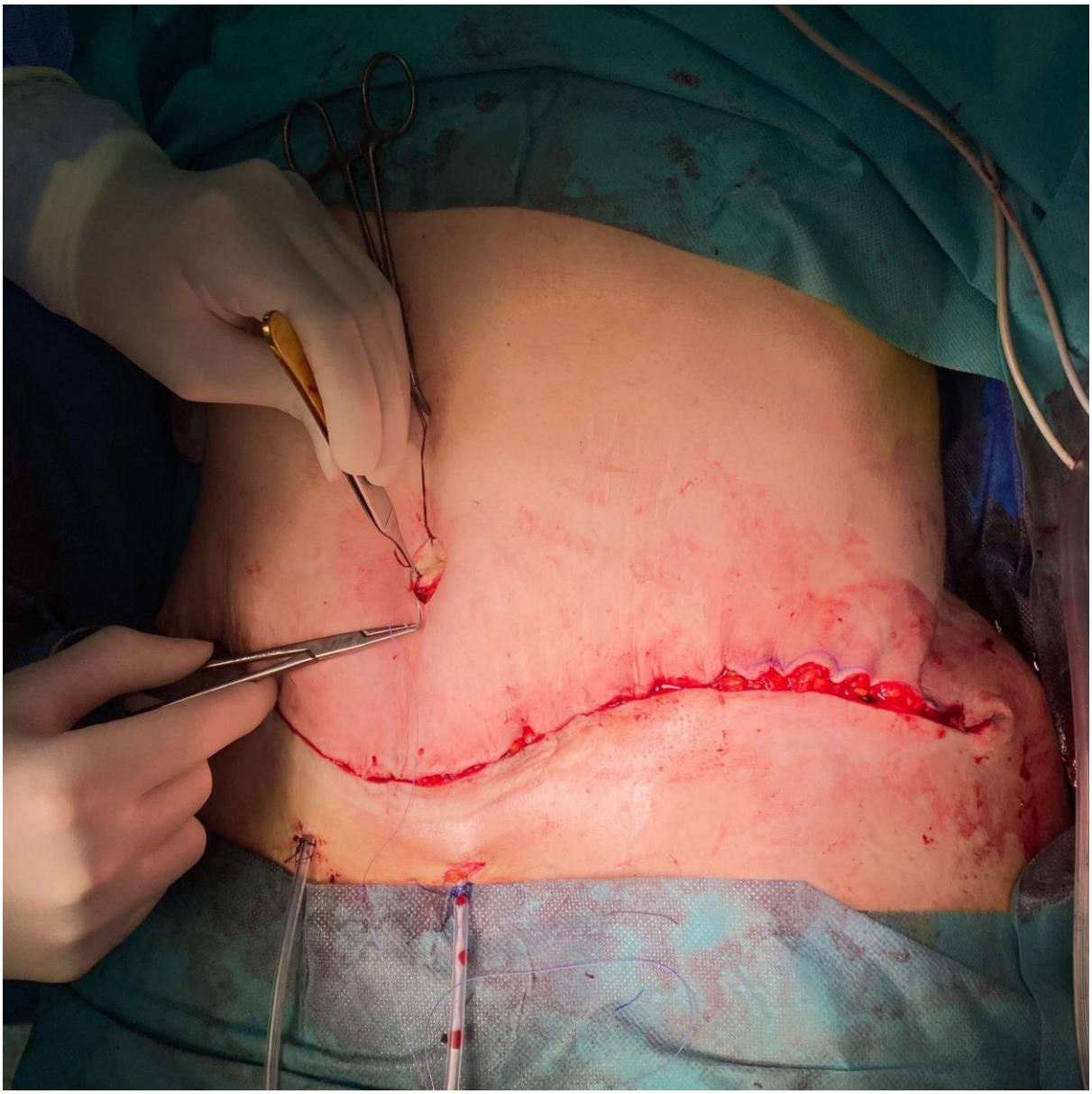

Figure 8. Suturing the navel into its new position. Surgical stitching (own work).

Step 8: Closing the incisions

The surgeon performed layered suturing of the wound in three layers with surgical sutures. A suction drain was placed (Photo 9) and removed once less than 30 ml of fluid accumulated in the operated area within 24 hours. The patient had 15 ml of fluid, so she was discharged the day after surgery without a drain.

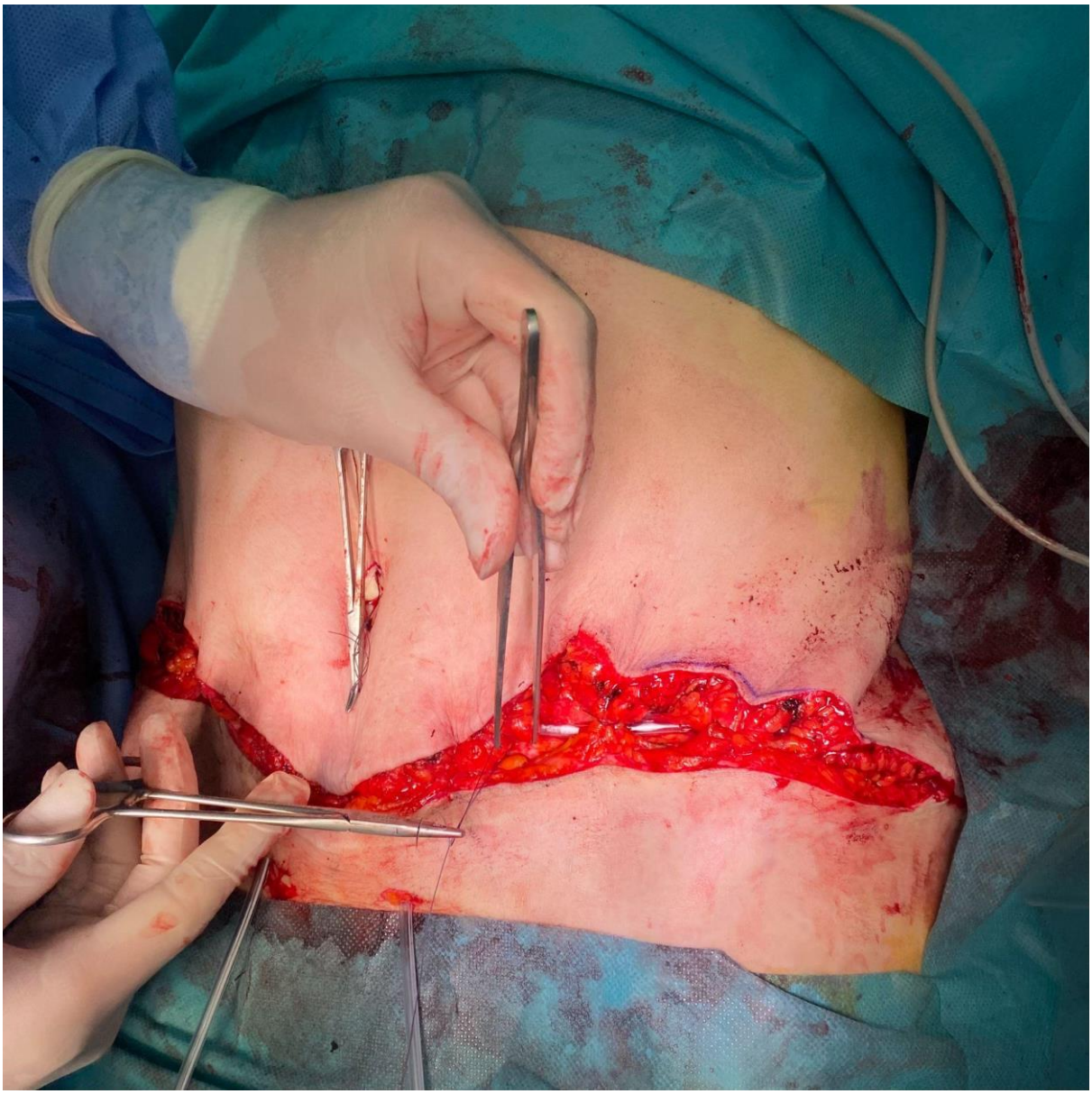

Figure 9. Placing drains (own work).

Step 9: Healing

Non-absorbable sutures were removed 8 days after the procedure, while intradermal sutures dissolve over time. Four weeks post-surgery, photographic verification of the results was conducted (photo 10).

Figure. 10 Effect after 4 weeks. The patient is wearing a special stabilizing belt, which causes temporary indentations on the skin. Once healed, the scar will be easy to conceal along the underwear line (own work).

Discussion

Abdominoplasty is a procedure that allows patients who have lost significant weight to remove excess skin. While weight loss after bariatric surgery is a significant success, many patients are not fully satisfied with their appearance due to remaining fat tissue and loose skin. However, abdominoplasty is another extensive surgery following bariatric surgery, raising questions about its effects and potential complications.

Hunecke et al. (2019) [6] evaluated clinical outcomes, complication rates, and risk factors for complications after abdominoplasty without liposuction in patients who lost a significant amount of weight. The median BMI of these patients was 32.3 kg/m², indicating that they were still overweight (grade I obesity). There were no recorded deaths related to the procedure, and severe complications like tissue necrosis occurred in 1.7% of patients. Wound infections affected slightly more patients (3.3%), indicating that abdominoplasty is a safe surgical procedure. However, patients with diabetes and cardiovascular diseases had higher complication risks. The overall complication rate after liposuction is around 13%, with the most common complications being seromas and wound dehiscence [2].

A study on nearly 900 patients who underwent bariatric surgery and abdominoplasty showed a general complication rate of about 30%. However, half of these complications were minor wound issues, with only 10% requiring medical intervention. Patients with higher removed tissue mass, longer intervals between surgeries, and higher pre-abdominoplasty BMI were more likely to experience complications. Smoking significantly increased the risk of complications [2]. Schlosshauser et al. found that higher BMI (above 30 kg/m²) was associated with a greater risk of wound healing problems, with older age also being a factor [5]. Despite these risks, abdominoplasty remains a safe procedure for patients.

When planning abdominoplasty procedures, it also seems appropriate to consider both the BMI and age of the patient undergoing the surgery.

The aim of the study published in 2019 in the Aesthetic Surgery Journal was to examine the thickness of fat layers within the abdominal wall in different age groups, as well as various BMI ranges, using ultrasound imaging. A higher patient BMI was associated with greater total fat tissue thickness in the abdominal wall area. A similar correlation was found with age, although the superficial fat layer was shown to be thinner with age [3]. However, the study was conducted on individuals of Caucasian race of Brazilian origin, which limits the ability to extrapolate these results to representatives of other ethnic groups.

It seems appropriate to look at post-bariatric patients in a much broader context, evaluating the performed abdominoplasty not only in terms of potential complications but also its impact on the psyche. Nielsen et al. [1] in their study decided to examine the symptoms of depression severity in patients before and after abdominoplasty, as well as to analyze the relationships between these symptoms, quality of life, and the experience of excess skin. One of the questionnaires used was the Beck Depression Inventory (BDI), and it was on this scale that a significant change was observed in patients after abdominoplasty - the average score before surgery was 5.8 ± 6.8; one year after surgery, it was 3.0 ± 4.8 ($p = .037$). Their feelings regarding excess skin after weight loss also changed. The questionnaire assessing these experiences included questions about the occurrence of rashes, itching, inability to find appropriate clothing, or the impact of excess skin on sexual life. In this case, the average total score before surgery was 17.3 ± 7.6, and one year after surgery, it dropped to 6.5 ± 5.6 ($p < .001$). At the same time, the results obtained in the quality of life assessment questionnaire (SF-36) indicated that although the removal of excess skin in post-bariatric surgery patients reduced symptoms of depression, it did not affect the overall quality of life of the patients.

Conclusions

Abdominoplasty performed on patients after bariatric surgery allows them to eliminate health problems caused by excess skin tissue remaining after significant weight loss. The multi-stage abdominoplasty procedure not only effectively improves the appearance of patients but also enhances their quality of life by facilitating a return to physical and sexual activity. The surgery requires the techniques and procedures used to be tailored not only to the patient's health condition but often also to their lifestyle. Therefore, the experience of the specialist and the team performing the abdominoplasty on post-bariatric patients is crucial.

Disclosures

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