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What is This?
Aesthetic and Functional Satisfaction After Monsplasty in the Massive Weight Loss Population

Jacob M. P. Bloom, MD, MS; Emily Van Kouwenberg, BS; Michael Davenport; Peter F. Koltz, MD; Robert B. Shaw Jr., MD; and Jeffrey A. Gusenoff, MD

Abstract

Background: The mons region is often affected by massive weight loss (MWL), with descent of the pubic area and residual adiposity. Thinning and resuspension are often performed concomitantly with abdominal contouring procedures.

Objectives: Assess patient satisfaction, as well as functional and aesthetic results, after monsplasty in the MWL population.

Methods: The authors identified 54 consecutive female MWL patients (≥50 lbs) who had undergone abdominal contouring and completed at least 3 months of follow-up as potential subjects. Subjects were asked to complete a Mons Satisfaction Survey, either by phone or in person. Demographic and procedural data were collected from our prospective registry. Descriptive statistics were calculated with significance set at P value <.05.

Results: Thirty-one patients (57.8%) completed the survey. Average patient age was 46 ± 11.3 years. Mean maximum body mass index (BMI) was 52.0 ± 8.81 kg/m², mean current BMI was 31.0 ± 6.22 kg/m², and mean delta BMI was 20.7 ± 6.00 kg/m². Average pannus resection weight was 3.25 ± 2.03 kg. Visualization of the genitalia improved from 25.8% to 100% (P < .01). Patients rated the appearance of their mons as 3.18 ± 2.11 prior to surgery and 8.58 ± 1.73 after surgery (P < .001) on a scale of 1 to 10. Hygiene improved in 61.3% of patients, and sex life improved in 51.6%, with 32.3% of patients reporting increased genital sensitivity. Incontinence decreased from 22.6% to 12.9%, and 6 patients reported a change in urinary stream.

Conclusions: Monsplasty at the time of abdominal contouring yields significant improvement in patient satisfaction levels and functional scores. With proper incisional design, monsplasty can be performed safely during abdominal contouring with high patient satisfaction to improve both form and function of the pubic region.

Level of Evidence: 4

Keywords

body contouring, massive weight loss, abdominoplasty, monsplasty

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hooding of the genital region and restores a youthful contour. Variations in the monsplasty technique have been described in the literature; however, outcomes, including patient satisfaction, have not been measured.1,5

Neglecting to treat the mons area during abdominal contouring may leave the patient with residual contour irregularities, ultimately affecting the aesthetic or functional result. We investigated whether there were significant improvements in patient satisfaction, functional outcomes, and aesthetic results in women who underwent abdominal contouring surgery with monsplasty after MWL.

METHODS

We selected 54 consecutive female MWL patients (≥50 lbs) who had undergone either abdominoplasty or panniculectomy at the University of Rochester Life After Weight Loss Program as potential subjects for this study. All patients were retrospectively recruited from our registry database, as approved by the Institutional Research Studies Review Board at the University of Rochester.

Of the 54 potential patients, 31 completed the survey. Of the 23 patients who did not participate, 12 declined participation, 10 were unreachable by phone, and 1 patient placed us on the “Do not call” list. We did not have an opportunity to inquire about the reasoning behind the declined participation for the 12 patients who elected not to complete the survey. Each patient who did respond was surveyed after a postoperative period of at least 3 months. All potential subjects were asked to complete a 15-question Mons Satisfaction Survey by phone or at routine follow-up. This survey was created by the PI and lead author. It is not a validated tool nor had it been used previously. The initial questions on the survey assessed patients’ preoperative and postoperative satisfaction with the aesthetic appearance of their mons region. Satisfaction scores were rated using a 10-point Likert scale (0 = very unsatisfied, 5 = neutral, and 10 = very satisfied). The remaining survey questions sought to identify functional changes after monsplasty. Additional demographic and procedural data were collected from the database, including patient age, body mass index (BMI), and pannus resection weight. Body mass indices were defined as maximum BMI, current BMI, and delta BMI (maximum − current BMI).

Our technique for monsplasty has been described previously.2,6 In the preoperative area, with the patient lying supine, the lower abdominal incision was marked. With the tissues at maximal upward stretch, the incision for the lower margin of resection was placed 6 cm above the anterior vulvar commissure. To properly reapproximate the pubic hairline, the incision was designed to fall just above the pubic symphysis and, if needed, could be extended past 6 cm. The patient was then asked to stand, and the rest of the abdominal markings were completed. Guided by the aforementioned markings, a wedge resection of adipose tissue (Figure 1A) was excised to the level of the pubic symphysis and performed as appropriate to achieve a similar thickness to the upper abdominal flap (Figure 1B,C). By staying cephalad to the pubic symphysis, injury to the genital anatomy was avoided. The mons was then resuspended to the abdominal wall fascia using 3 horizontal mattress 2-0 Vicryl sutures (Ethicon, Inc, Somerville, New Jersey) placed in the deep layers of the mons superficial fascial system (SFS), which is contiguous with the deep Scarpa’s fascia layer (Figure 1D,E).

Statistics

Pre- and postoperative (body contouring) functional outcomes ratings were compared using Student t test and χ² tests as appropriate. A multiple regression was carried out to examine the association between body mass indices and resection weight as predictors for improvement in Mons Satisfaction Survey scores. Linear regressions were performed to individually examine whether maximum BMI, current BMI, delta BMI, and resection weight predicted improvement in patient satisfaction of the mons area. This analysis was performed using the statistical software SPSS, version 17.0 (IBM, Inc, an IBM Company, Chicago, Illinois). Statistical significance was set at a P value of <.05.

RESULTS

Thirty-one of 54 patients (57.8%) completed the Mons Satisfaction Survey. Average patient age was 46 ± 11.3 years. Mean maximum BMI was 52.0 ± 8.81 kg/m², mean current BMI was 31.0 ± 6.22 kg/m², and mean delta was BMI 20.7 ± 6.00 kg/m². Average pannus resection weight was 3.25 ± 2.03 kg. Just over half of the patients (51.6%) underwent abdominoplasty, whereas 48.4% had a panniculectomy (Table 1). Prior to surgery, 25.8% of respondents reported that they had been able to see their genital region, compared with 100% postoperatively (P < .01). Patients rated the appearance of their mons as 3.18 ± 2.11 prior to surgery and 8.58 ± 1.73 after surgery (P < .001). Hygiene was problematic for 48.4% of patients but improved in 61.3% of patients following surgery. Sex life improved for 51.6% of patients; however, 32.3% reported not being sexually active. Approximately one-third of patients (32.3%) reported an increase in genital sensitivity, while 67.7% had no change. Most patients (77.4%)
Figure 1. (A) A wedge resection of adipose tissue is planned after completion of rectus plication. (B, C) Excision is carried out to the level of the pubic symphysis and performed as appropriate to achieve a similar thickness to the upper abdominal flap. (D, E) The mons is then resuspended to the abdominal wall fascia using 3 horizontal mattress 2-0 Vicryl sutures placed in the deep layers of the mons superficial fascial system, which is contiguous with the deep Scarpa’s fascia layer.
reported the current position of their mons pubis to be at the right level; 9.7% of patients thought it was positioned too high and 12.9% were unsure of its new position. Rates of bladder incontinence were reported to decrease from 22.6% to 12.9%; however, this was not significantly different ($P = .319$). Six patients (19.4%) reported a change in their urinary stream, and only 1 of these patients identified this as problematic (she felt that it was difficult to control the direction of her urine). Of the 6 patients who identified a change in urinary stream, 5 stated their stream was more horizontal. Two patients (6.5%) reported incisional or pubic pain after surgery. Nearly all of the patients (96.8%) reported that they would both undergo this procedure again and recommend it to a friend.

The multiple regression analysis assessing the effect of body mass indices and pannus resection weight on change in patient satisfaction was not significant. Mons satisfaction scores are not predicted by maximum BMI, current BMI, delta BMI, or pannus weight. In addition, linear
regressions show that patients’ maximum BMI ($P = .57$), current BMI ($P = .88$), delta BMI ($P = .47$), and pannus resection weight ($P = .51$) were not predictive of change in Mons Satisfaction Survey scores (see Table 2). Representative cases of the highest and lowest monsplasty satisfaction score results are presented in Figures 2 to 5.

**DISCUSSION**

As the number of patients undergoing body contouring procedures after MWL grows, further outcomes data on new or established techniques are necessary to optimize patient safety and aid in patient education. We demonstrate that monsplasty, which is frequently performed during abdominal contouring procedures, improves patient satisfaction and functional outcomes in this population. The low abdominal incision allows direct access to the mons area for appropriate contouring, so it matches the thickness of the upper abdominal wall and also allows direct removal of excess skin. Although many techniques have been described in the literature, most improvements in satisfaction and functionality have been reported anecdotally.\(^1\)\(^-\)\(^5\)

Prior to beginning our study, we placed permanent Ethibond sutures (Ethicon, Inc, Somerville, New Jersey) to secure the pubic region to the abdominal wall. A few patients developed problematic suture granulomas, so this technique was abandoned. Of note, we observed similar problems when placing this suture material in the axilla for brachioplasty or the groin for thighplasty procedures. One patient required a return to the operating room to remove a sinus tract which had formed from the skin to the underlying permanent suture material. Several other patients had delayed suture extrusion several months after the procedure. Replacement of these sutures with Vicryl material has eliminated this complication and has not altered the long-term results of the monsplasty procedure. A head-to-head comparison of the 2 suture materials has not been performed due to the small number of patients in whom we placed Ethibond initially.

On the basis of the statistical analysis, we were unable to identify which factors influenced satisfaction scores. The multiple regression analysis assessing the effect of body mass indices, pannus resection weight, maximum BMI, current BMI, and delta BMI did not reveal any significant influence on satisfaction scores. Perhaps by increasing our patient population, we could have achieved...
Correct placement of the lower abdominal incision is critical to obtaining an optimal result. In our study, 77.4% of patients believed that their pubic region was repositioned at the right level. Approximately 1 of 10 patients thought that their genital region was raised too high as a result of their monsplasty. We typically rely on our own intraoperative judgment to determine where the tacking sutures should be placed to resuspend the mons region. The thick tissues of the SFS are held up to an area at or slightly above the pubic symphysis and the contour is assessed; the surgeon is careful to not expose the clitoral hood. The final resting position of the mons region is likely also influenced by the balance of opposing forces occurring at the incision line. There is no obvious explanation for why almost 10% of our patients thought that the final position of the pubic area was “too high.” This subjective self-evaluation may be influenced by a number of factors. Of note, in this small group (n = 3), the average patient satisfaction score was 6, as compared with 8.58 in the rest of the group. Further studies will aim to add objective measures to the subjective grading system, such as a postoperative measurement from the vulvar commissure to the superior border of the hairline and from the umbilicus to the pubic hairline. In addition, we have found that it is easier to overcorrect thinner patients undergoing body contouring. Each of the patients reporting a high pubic region had a BMI of 31 or lower at the time of body contouring surgery, which may have played a role in the final aesthetic result. The work by Seitz et al in defining the proportions of the mons region as a subunit to help intraoperative redraping of this area may someday aid in further guiding surgeons with optimizing the aesthetics of the mons region.

Patients’ changing perceptions of the appearance of the mons region were accompanied by many functional improvements as well. All patients were able to visualize their genitalia postoperatively, representing a 75% increase in the number of patients who were able to do so. In addition, over half of the patients experienced improvements in hygiene and sex life. Again, although the urinary stream

Figure 3. (A) This 35-year-old woman presented with a chief complaint of bilateral macromastia and symptomatic pannus after a 161-lb weight loss following gastric bypass surgery. (B) Three months after panniculectomy and mammaplasty reduction, the patient reported an increase in Mons Satisfaction Survey score from 1 to 10.
was altered in some patients, this was largely not problematic in our study. A prior report by Michaels et al examined over 400 MWL patients and noted that this was a potential complication but did not quantify the incidence in their patient population. Patients also reported improvements in bladder incontinence; however, the change was not statistically significant. Although we do not have an explanation for this improvement, we hypothesize that it may be related to other factors such as concomitant abdominal wall plication. Future studies will investigate how these factors influence changes in bladder incontinence.

Multiple methods of approaching the mons region in the MWL patient have been described in the literature. The Pittsburgh Rating Scale is a validated tool for assessment of and treatment planning for mons ptosis and fullness after MWL. Although authors have cited different combinations of liposuction and fat excision, it is universally recognized that resuspension using the SFS is imperative in achieving long-lasting results and improving both early and late wound healing. Liposuction may be used to thin the thick fibrofatty tissue of the mons region, but we have not utilized this technique. Liposuction has been theorized to contribute to genital lymphedema in this region, especially if it is carried into the inguinal area. Although edema usually resolves after direct excision, we did not directly ask our patients if they felt they had residual edema from the procedure. There may still be a role for liposuction in patients who have undergone a monsplasty procedure with inadequate tissue resection.

Concomitant procedures in body contouring after MWL are common. When monsplasty is combined with a medial thighlift, preoperative marks are placed 4 cm from the midline to define the border of the mons region and keep the scar off the thigh. The lipectomy, completed while thinning the mons region, does not usually extend past these borders during our standard monsplasty. This allows us to combine these procedures safely. All dissection performed lateral to the mons region over the femoral region is kept superficial in the subdermal plane to avoid damage to the lymphatics.

Body mass indices and pannus resection weights were not predictors of satisfaction scores in our population. It is possible that with a larger sample size, these variables would have become more significant. Our study is limited by the subjective nature of the responses from our surveyed population.

Figure 4. (A) This 63-year-old woman presented with a chief complaint of skin laxity after a 172-lb weight loss following gastric bypass surgery. (B) Three months after fleur-de-lis abdominoplasty, brachioplasty, and mastopexy, the patient reported a minimal increase in Mons Satisfaction Survey score from 5.5 to 6.5.
patients. Unfortunately, we were unable to establish full participation of our identified patient population. However, the opinions expressed by our patients in this study consistently displayed improvements in both aesthetic and functional properties after monsplasty. Another limitation is that each monsplasty is carried out with slight variations in technique. The difference in the thickness of the upper flap as compared with the mons region dictates how much thinning is undertaken. Future long-term follow-up is warranted to examine the durability of the monsplasty technique. In addition, we plan on examining similar functional and aesthetic outcome measures in our male population.

**CONCLUSIONS**

With proper incisional design, monsplasty can be performed safely during abdominal contouring with a high rate of patient satisfaction to improve both form and function of the pubic region.

**Disclosures**

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