Abdominoplasty with Combined Surgery



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KEYWORDS

- Abdominoplasty Hernia repair Lipoabdominoplasty Lower body lift Mommy makeover
- VTE prophylaxis Surgical safety

KEY POINTS

- Abdominal contouring surgery as a combination procedure is common, and driven by deformities resulting from issues that systemically impact individuals, including aging, weight loss, and pregnancy.
- Breast surgery is often performed at the time of abdominoplasty; combining breast surgery and abdominal surgery must take opposing forces of lift into consideration.
- Body lifts including lower back lift and thigh lift are often performed in conjunction with abdominoplasty as a lower body lift for individuals with aged, lax tissues or for individuals who have sustained massive weight loss.
- Combination procedures may be safely performed, with a focus on efficiency in the operating room, limiting blood loss and hypothermia, and attending to potential need for venous thromboembolism prophylaxis.

INTRODUCTION

Abdominoplasty is one of the top 5 cosmetic plastic surgery procedures performed in the United States.¹ Many individuals consult with a plastic surgeon for abdominal contouring needs related to lax, redundant skin, stretch marks, abdominal muscle laxity, umbilical deformities, and unsightly scars. Pregnancies, abdominal surgeries, aging, and significant weight loss are causes for presentation and result in more global contour issues extending beyond the abdomen alone.

Abdominoplasty is therefore often requested and performed in combination with surgery on other body regions. The abdomen serves as a central focal area, stimulating interest in addressing adjacent areas for more global improvement. In our published series of patients undergoing body contouring for weight loss, abdominal improvement was the most prevalent reason for presentation, with 92% of patients in our series undergoing abdominal surgery, often in addition to other procedures.² Abdominoplasty may be combined with breast surgery, particularly for women who are post partum, for men with gynecomastia, or for men and women who have sustained massive weight loss through diet or bariatric surgery. Abdominoplasty is also often combined with surgery on the lower back and/or thigh regions, defined as belt lipectomy and lower body lift, for individuals who have lost significant weight or have lax tissues related to aging and sun exposure. Abdominoplasty is most commonly performed with liposuction, including contouring of the back, waist, and upper and lower extremities. Fat transfer to the buttocks and breast has gained increasing popularity in combination with liposuction and abdominoplasty. Abdominoplasty also may be combined with intra-abdominal procedures such as hernia repair and gynecologic procedures.

Liposuction is the procedure most commonly performed in conjunction with abdominoplasty. Lipoabdominoplasty has become increasingly mainstream, with increasingly greater volumes of lipoaspirate proven to be safe.³ Matarasso⁴

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Clin Plastic Surg 47 (2020) 365–377 https://doi.org/10.1016/j.cps.2020.02.001 0094-1298/20/© 2020 Elsevier Inc. All rights reserved. published the circulation zones of the abdominal skin when liposuction was becoming a more popular adjunct to abdominoplasty in 1995, and this article still serves as a guide to safe liposuction performance in conjunction with abdominoplasty. In more contemporary literature, Saldanha and associates⁵ advocate for a more aggressive approach, performing liposuction of the abdominal skin, tolerated by limiting undermining of the skin between the xiphoid notch and umbilicus and with preservation of Scarpa's fascia on the abdominal wall.

Combining cosmetic plastic surgery procedures is appealing. If there are multiple body region concerns, combining surgery allows for 1 recovery period and reduced surgical costs. The overall result can also be appreciated with 1 procedure, improving a more encompassing physical landscape, as opposed to addressing 1 area that is adjacent to another region that, left untreated, takes away from the aesthetics of the overall result. The outcome of combined surgery on adjacent areas is often more than just the sum of the parts, because each area may further enhance adjacent areas (Fig. 1). There have been no formal studies on quality-of-life impact with abdominoplasty combination procedures, but it only seems logical that the outcome of safely performed combination procedures is greater than the abdomen treated in isolation. The Body Q outcomes tool will certainly aid in performance of such a study.⁶

More extensive cosmetic plastic surgical procedures are not for everyone. Medical and surgical history must be considered. Medical comorbidities such as diabetes, cardiovascular disease, pulmonary disorders, sleep apnea, morbid obesity, and autoimmune conditions present contraindications to more complicated surgical procedures that present greater challenges to optimal recovery. Tobacco use and vaping also forecast significant healing challenges. Rather than perform combination procedures, staging may be offered to patients presenting with red flags to limit exposure to risk of one larger surgical procedure. Further, hospital-based surgery with overnight observation might be considered over ambulatory surgical center.

Overall optimization of safety is critically important. A surgical team including an experienced anesthesia provider, first assistant, and surgical technician to more expertly aid in exposure and closure help to decrease distractions, shorten procedural duration, and lessen the morbidity of a large multistage surgical procedure. Attention to positioning is critically important to avoid complications associated with nerve compression and stretch, as well as pressure issues, vascular compromise, and vision. Warming the patient with fluids, blankets, and ambient room temperature decreases the risks of anemia, wound healing issues, and infections. Prophylaxis against venous thromboembolism (VTE) is particularly important in the abdominoplasty procedure given the relatively high incidence reported in the recent plastic surgery literature. A modified Caprini scale helps to guide the choice of providing anticoagulation.⁷ Work by Pannucci and associates⁸ to more precisely determine the effective dosage of anticoagulants is ongoing. As they have described, a strict daily dosage does not necessarily provide effective prophylaxis for every patient.⁸

TECHNIQUES IN COMBINING ABDOMINOPLASTY WITH OTHER PROCEDURES

Abdominoplasty and Hernia Surgery

Most plastic surgeons have trained in general surgery so they understand basic principles in straightforward hernia repair, taking techniques of plication repair of the rectus diastasis 1 step further. It is not recommended for plastic surgeons with little experience in hernia repair to perform such repairs nor is it advocated that the plastic surgeon approach incarcerated and/or complex hernia presentations if not properly schooled in such techniques. Many times hernias such as umbilical hernias and incisional hernias from laparoscopic procedures are incidentally encountered during what is expected to be a routine abdominoplasty. Repairing hernias while they are exposed assists in best care for the patient, preventing incarceration issues or a more difficult dissection in the future.

It is better to treat umbilical hernias at the time of abdominoplasty rather than at a separate setting, because umbilical hernia repair is particularly problematic if performed before abdominoplasty. As a standalone procedure, umbilical hernias are typically approached by detaching the umbilicus from the abdominal wall, repairing the hernia, sometimes with mesh, then reattaching the umbilicus after repair, leading to decreased circulation from the abdominal wall to the umbilicus. This strategy will not present a problem for later miniabdominoplasty lacking a circumumbilical incision; however, when abdominoplasty requires an incision around the umbilicus, comprising the majority of abdominoplasty cases, circulation to the umbilicus will be totally cut off with incisions under and around the umbilicus. Umbilical hernias are therefore best treated at the time of abdominoplasty. When approaching these hernias, the umbilical stalk may be incised at the most prominent



Fig. 1. (A-C) Frontal, oblique, and lateral views of a 27-year-old post partum woman who presented with the typical sequelae of pregnancy, including breast deflation and pseudoptosis, and abdominal laxity with stretch marks, lax abdominal muscles, and incongruity at the junction of the pubis and thigh. (D-F) Frontal, oblique, and lateral views 8 months after submuscular breast augmentation with silicone gel implants and abdominoplasty with plication of abdominal muscles and waist liposuction with power-assisted liposuction. Without surgery on her breasts, she would not have had as pleasing a result.

location of the umbilical hernia, allowing entrance into the stalk, reduction of the hernia contents (which is almost always omentum), and closure of the base of the umbilical stalk with permanent suture to block future herniation of the omental fat (**Fig. 2**). The incision on the umbilical stalk is closed and plication of rectus diastasis will then follow.

When encountering incisional and ventral hernias during elevation of the abdominal skin off the abdominal wall, the hernia must be dissected free, with reduction of hernia contents and approximation of the abdominal wall edges with permanent suture, preferably interrupted figure of 8 sutures to avoid potential unraveling of the hernia repair (**Fig. 3**). In patients with a prior midline incision and underlying ventral hernia, excision of the midline scar and adjacent skin using a fleur-delis approach will improve exposure, scar, and contour outcome.

Abdominoplasty and Liposuction

During abdominoplasty, liposuction may be performed on the upper and lower back and lateral



Fig. 2. (*A*) Preoperative photo of umbilicus with a visible hernia. The patient is a candidate for abdominoplasty and her options would have been limited if she underwent umbilical hernia before abdominoplasty. (*B*) Intraoperative photo in which the stalk of the umbilicus was opened longitudinally along the axis of the stalk. With this access, the omentum in the hernia sac was reduced and the base of the stalk internally closed to block recurrent herniation. The midline fascia is then plicated after the hernia is reduced and repaired.

waist to improve circumferential aesthetics of the torso, as long as the patient has good quality skin that would benefit more from deflation and subcutaneous fat reduction, and less from skin removal. Circumferential liposuction takes the result of traditional abdominoplasty to a much higher level, improving and smoothing the waist, flank, and bra line, and creating a sleeker junction with the pubis and upper thigh (**Fig. 4**).



Fig. 3. (*A*) Preoperative photo of a 40-year-old woman who sustained massive weight loss through open gastric bypass surgery. After losing more than 100 lb, she has bulge from ventral hernia and excess abdominal skin. (*B*) After midline elliptical skin excision as marked, the hernia edges are freed, and a loose running Prolene suture from bypass surgery is removed. (*C*) The hernia is primarily fixed, and the rectus abdominal plication will follow in the lower abdomen to adequately reapproximate rectus abdominis muscles from xiphoid to pubis. The skin will be closed as a fleur-de-lis.



Fig. 4. (A–C) Frontal, oblique, and lateral views of a 31-year-old woman who had 4 pregnancies and was left with deflated pseudo ptotic breasts, severe laxity of her abdominal skin and muscles, and loss of shape in her gluteal region. (D–F) She is photographed more than a year after her surgery, which included abdominoplasty with muscle repair and mesh reinforcement of her plication, augmentation mastopexy, and liposuction of her back with gluteal fat transfer. This restored her prepregnancy model body.

Intraoperatively, the patient is first positioned prone with careful padding, and positioning of the head and neck and arms so that liposuction may be completed on the back. Careful attention is paid to safe positioning, placing gel rolls under the upper chest/axilla and across the lumbar region. Axillary regions are supported. Arms are positioned perpendicular to the body and at the elbow. Arms and legs are placed on cushioned surfaces. The face should be placed in a prone pillow, avoiding any pressure on the eyes and maintaining the neck in neutral position. Sequential compression devices are in place and active throughout the surgery (**Fig. 5**). Fat grafting to the buttocks might also be performed at that time if indicated.

The patient is then turned supine. Before starting the abdominoplasty, tumescent solution is infused to the waist to allow the hemostatic effect of the solution to work. Abdominoplasty is then Α



Fig. 5. (*A*) After intubation, the patient has protective eye goggles and prone pillow placed in preparation for prone positioning. (*B*) In the prone position, multiple protective measures have been taken. The neck is in neutral. There are gel rolls, one under the sternum supporting the axillary regions, and the other across the lumbar region. Arms and elbows are positioned at 90° to avoid traction on nerves. The patient is well-padded and warmed. She has a foley catheter and sequential compression devices in place and functioning.

performed, and liposuction of the waist and hip takes place after skin removal and temporary closure of the abdominal wound to allow adequate time for hemostatic effect of the tumescent solution. Augmented liposuction technologies such as power-assisted liposuction or ultrasoundassisted liposuction (vibration amplification of sound energy at resonance) create smoother results than traditional suction-assisted lipectomy.

Although liposuction of adjacent areas improves aesthetic outcome of abdominoplasty, liposuction may also be performed in other areas to improve patient satisfaction. Such areas include the neck, arms, and lower extremities. The surgeon must be mindful about potential blood loss, operating room time, systemic hemodynamic effects associated with greater amounts of liposuction, and protection against VTE. Volume limits are not rigidly set and publications demonstrate safety with greater amounts of lipoaspirate.³

Abdominoplasty and Breast Surgery

Patients often desire combining surgery of the abdomen and chest. The breast and abdomen are adjacent and viewed in continuity, so the lack of surgery on one of these areas may detract from the results of surgery on the other area. Individuals most apt to pursue combination abdomen and breast surgery include men with gynecomastia, men with massive weight loss leading to excess skin of the chest with ptotic nipple position, and women who are post partum or who have sustained massive weight loss with deflation and sagging of their breasts. In men with straightforward gynecomastia requiring liposuction and subareolar gland removal, there is no impact between the chest and abdomen that will impair results at either site. Conversely, when chest skin reduction and management of the breast crease come into play with breast lift, breast reduction, breast augmentation, and gynecomastia procedures in men with significant skin excess from massive weight loss, forces involved in improving the abdomen and chest might work against each other. Vectors of tension required to lift the chest oppose those needed to tighten the abdomen, so these opposing vectors of pull may negatively impact outcome, resulting in poor contours, thickened scars, and/or wound healing problems.

The inframammary fold (IMF) descends with weight loss and with aging. IMF descent is also common with macromastia. In combined abdominal and breast surgical procedures, this author advocates for performing breast surgery first. If abdominoplasty is performed before breast surgery in patients with descent of the IMF, breast aesthetics are more apt to be negatively impacted by abdominoplasty before setting the crease. With suspension of the IMF in breast reduction or lift with either vertical or Wise pattern approaches or in breast augmentation, not only is the breast crease set, but also a secondary reverse abdominoplasty results. This upper abdominal lift actually improves the results of the abdominoplasty, addressing the highest region of the abdomen that might not be adequately addressed from the inferior approach of the standard abdominoplasty (Fig. 6).



Fig. 6. (A-C) Frontal, oblique, and lateral views of a 62-year-old woman who presented with severe ptosis of her breasts with descent of her IMF, as well as significant abdominal muscle and skin laxity. She has significant abdominal deformity with a high umbilicus with skin excess above and below. (D-F) Frontal, oblique, and lateral views after breast reduction with inferior pedicle and Wise pattern, with abdominoplasty with muscle plication and waist and back liposuction with power-assisted liposuction. She is photographed 10 months after surgery. Setting her breast fold helps secondarily to elevate the upper abdomen, enhancing the aesthetics of her overall result.

Setting the IMF in breast procedures requires suturing of the deep Scarpa's fascia of the upper abdominal skin flap, or superficial fascial system as described by Lockwood⁹, to the breast skin flaps. A 3-way permanent suture further stabilizes the incision placement to the chest wall. With breast augmentation, particularly with larger profile implants, when using an IMF approach fixing the crease by suturing the deep fascia of the lower aspect of the incision to the chest wall with permanent sutures avoids distortion of the crease or bottoming out of the implant when combined with opposing tension associated with the abdominoplasty.

Abdominoplasty and Lower Back Lift

Abdominoplasty and lower back lift comprise the belt lipectomy. This procedure is effective for individuals who have sustained significant weight loss, or for thin, athletic individuals who are body conscious and dissatisfied with lax tissues unresponsive to exercise. Abdominoplasty without addressing the back skin in individuals with significant skin excess and laxity will lack optimal outcome in their body lift procedure, leaving them with excess hip tissue, outer thigh laxity, and buttock ptosis and deflation. A back lift performed in conjunction with abdominoplasty provides more than the sum of its parts, creating global lift and reduction of the lower torso.

Belt lipectomy must be marked with the patient standing. The abdominoplasty marks are connected to the back markings, allowing for lift of lax outer thigh skin, bowing out the markings at the junction area between the back and abdomen laterally at the hip. Conversely, planned skin excision in the midback is minor, because the skin in this location is adherent and typically less redundant. The back midline also does not suffer tension well and is not uncommonly the site of wound healing issues. To minimize risk, a conservative excision is marked in the midline of the back, and the excision may be tailored and increased as a V in the mid upper gluteal cleft once safe tension is determined after excision of the back tissue is completed and the wound is temporarily approximated. Cross-hatch marks are also recommended within back markings to help guide closure and avoid bringing a dogear into the abdomen (Fig. 7).

When performing belt lipectomy, a foley catheter is placed to carefully monitor hemodynamics and fluid status. Prone procedure is performed first. Safe prone positioning precautions are followed. A back lift is most safely performed with tailor tacking technique, creating the upper incision and dissecting inferiorly toward the buttock, leaving a layer of lymphovascular fascial tissue over the deep muscular fascia that will later aid in reduction of seromas and edema development. More tissue may be maintained on deep fascia to allow for autoaugmentation of deflated buttocks. In cases of more severe gluteal deflation, flaps based on the superior and inferior gluteal arteries may be designed to augment gluteal fullness. The aesthetics of the back closure are aided by careful tailoring of the midline as a V to guide perception of a more optimal gluteal shape. Drains should be placed to minimize risk of seroma. Tissue glue is placed on the incision closure to seal it and ease dressings.

The patient is then carefully turned supine onto a roller placed on a stretcher and the patient is transferred back to the operating table. Abdominoplasty is then performed with careful tailoring of the lateral junction region between the back and abdomen, completing the belt lipectomy.

Abdominoplasty and Thigh Lift

Abdominoplasty or belt lipectomy optimize the outcome of a thigh lift by providing upward forces of tension that secondarily benefit thigh positioning, particularly in weight loss patients. A thigh lift is performed after the lower back lift because the back lift elevates the buttocks and infragluteal crease directly, and the thighs indirectly, so that markings may need to be adjusted downward for the planned thigh lift. Similarly, abdominoplasty is performed before the anterior thigh lift, because secondary lift of the thigh occurs. A thigh lift may either be performed proximally circumferentially as in the anterior proximal extended thigh lift, or as a vertical extended thigh lift classically performed for massive weight loss patients.^{10,11} The anterior proximal extended thigh lift is this author's preferred approach for patients undergoing belt lipectomy because the impact of the thigh lift is compounded by the back lift, and the incisions are well-hidden in bathing suits and underwear. Patients with good skin quality and skin redundancy to the upper half of the thigh have excellent results with lower body lift using the anterior proximal extended thigh lift (Fig. 8).

The prone portion of the surgery starts first, with the lower back lift. After the lower back lift is done, infragluteal marking might need to be placed lower for the thigh lift, and the posterior portion of the thigh lift proceeds, removing a hemicrescent of skin at the infragluteal crease, maintaining deep fascia over the hamstring muscles, and fixing the skin up to the ischial periosteum to fix the infragluteal crease.

The patient is then turned supine, completing the abdominoplasty first, followed by completion of the anterior portion of the thigh lift. If a vertical thigh lift is planned, this is done in the anterior position after abdominoplasty is completed.

Abdominoplasty and Gynecologic Procedures

Abdominoplasty performed in conjunction with the gynecologic service requires a collaborative effort in terms of staging, positioning the patient, and determining the best approach for intraabdominal access for the gynecologist, while also working together to manage a safe postoperative recovery. The patient should be marked by the plastic surgeon preoperatively. Although typically the gynecologist operates first, ideally the plastic surgeon will be present at the beginning of the case to assist the gynecologist in access using incisions planned for the abdominoplasty, possibly creating the incisions to ensure the plan for abdominoplasty is not thwarted by



Fig. 7. (*A*–*C*) Preoperative markings of the back, side, and abdomen of a 40-year-old woman for a circumferential lower body lift. Markings are also present in preparation for autologous gluteal augmentation flaps and anterior proximal extended thigh lift. On the back, hatch marks are created to guide approximation of the closure intraoperatively. Planned skin excision is far less on the midback relative to the outer thigh, as the markings flare from medial to lateral. (*D–F*) Postoperative photos were taken 2 months after surgery. She has global improvement in her torso and thigh regions provided by the circumferential approach.

incision markings disappearing during the gynecologic procedure. Once the gynecologic portion of the procedure is done, the abdomen undergoes a second sterilizing preparation and requires a new table of instruments to combat potential postoperative infection and wound healing problems. The plastic surgeon should be engaged in early postoperative care to optimize healing. Postoperative VTE anticoagulation prophylaxis may need to be introduced with a longer surgery or procedures that increase the VTE risk score. Conversely, anticoagulation may not be advisable from a plastic surgery perspective, but routinely implemented by the gynecologist, so this factor should be discussed with the gynecologist to determine the safest plan to balance minimization of VTE risk with the risk of undesired hematomas.



Fig. 8. (A-C) This 50-year-old woman presented after massive weight loss from bypass performed through upper transverse abdominal incision. She had lax skin and muscle of her abdomen, thighs, and back, with deflation. (D-F) She is photographed 9 months after lower body lift. The belt lipectomy enhances the impact of the hidden incision in the anterior proximal extended thigh lift.

DISCUSSION

Combining plastic surgery of multiple body regions including the abdomen has been a subject of great interest in the literature. Much of the literature has focused on outcomes, with a primary focus on safety and risk of complications, including VTE risk.

Matarasso and Smith¹² shared their experience combining abdominoplasty with cosmetic breast surgery, in addition to performing a review of their own practice and a review of the literature. They found it was more common than not in their practice to combine abdominoplasty with an additional procedure. They did not believe that any specific alterations were necessary in performing abdominoplasty in combination with breast surgery because they believe that the abdomen and breast are 2 distinct regions that do not impact each other. They did not alter their approach to the breast procedure (augmentation, reduction, masaugmentation/mastopexy) when topexy, or combining it with abdominoplasty. They endorse combining breast and abdominal surgery, placing important safety measures into practice.

Chaput and colleagues¹³ responded to this paper in a Letter to the Editor, citing their review of the literature of abdominoplasty combined with breast procedures. They found that, of 4 relevant studies. 2 studies determined significantly elevated risk of major complications when combining abdominoplasty and breast surgery, with odds ratios of 5.35 and 14.71. Major complications included death, VTE, cardiac events, flap necrosis, need for transfusion, and infection. Chaput and colleagues disagreed, as this author does, that the abdomen and breasts are distinct body regions that do not impact the other, citing problems with IMF positioning in breasts requiring lowering of the fold, as well as wound healing issues of inverted T incisions owing to tension from the abdominoplasty in combined breast abdominal procedures. One suggestion they posit is to stage the abdomen and breast into 2 separate procedures.

Looking at body lift procedures for weight loss patients, Coon and colleagues¹⁴ found that performing multiple procedures in the same operative setting increases the total number of complications for a given number of trips to the operating room, but the absolute number of complications was no greater than would be expected if all procedures had been performed individually.

Vieira and colleagues³ studied more than 11,000 patients who underwent abdominoplasty with (n = 9638 [86.1%]) and without (n = 1553 [13.9%]) truncal liposuction within the Tracking Operations and Outcomes for Plastic Surgeons database and actually found a decreased risk of seroma and overall complications (10.5%) when adding liposuction to abdominoplasty procedures when performed by board-certified plastic surgeons. The reduced risk was theorized to be related to careful surgical technique with limited undermining. Furthermore, volumes of lipoaspirate corresponding to 100 mL per unit of body mass index did not confer an increased risk of morbidity in this study. This finding is particularly interesting and informative because states like Florida have mandated limits to the amount of liposuction performed at the time of abdominoplasty, based on no concrete data.

Pereira and Sterodemus¹⁵ studied their patients undergoing abdominoplasty combined with liposuction of the back and fat transfer to the buttock or thigh. In their database of 64 consecutive patients with over an average follow-up of 3 years, they found a 5% risk of early complications, including infection and hematoma, with a 14% prevalence of late complications, including scarring and contour deformities. Appearance was self-reported to be very good to excellent in 63% of their patients. The authors concluded that there was high patient satisfaction with a single operation combining abdominoplasty with liposuction and gluteal fat grafting.

As reported by Winocour and colleagues,¹⁶ who used the CosmetAssure database to assess outcomes, combining procedures with abdominoplasty increased the risk of complications. The complication risk of abdominoplasty alone was 3.1%, whereas adding procedures increased overall risk: liposuction, 3.8%; breast procedure, 4.3%; liposuction and breast procedure, 4.6%; body contouring procedure, 6.8%; and liposuction and body-contouring procedure, 10.4%. These authors concluded that combined procedures can significantly increase complication rates and should be considered carefully in higher risk patients.

CosmetAssure data are limited in that outcomes are only captured if patients self-report. Saad and colleagues¹⁷ were able to capture data from California Office of Statewide Health Planning and Development Ambulatory Surgery Database and reliably track 477,741 patients from the outpatient setting to the inpatient setting from 2005 to 2010 without relying on self-reported data. Patient medical history, hormone use, previous pregnancy, and hypercoagulable conditions were described as well. The authors found some combinations of elective outpatient procedures conferred an additive, and sometimes more than additive, VTE risk. Although combining 2 procedures did not confer a greater risk of 30-day hospital admission, emergency department visit, or mortality rates, the authors found that VTE risk had a greater than additive 30-day and 1-year risk with concurrent abdominoplasty and liposuction, and a greater than additive 1-year risk with concurrent abdominoplasty and hernia repair.

Hatef and colleagues¹⁸ performed a meta analysis literature review investigating VTE risk with procedures combined with abdominoplasty. Thirty papers qualified to provide data for their analysis, which demonstrated that the highest rates of VTE followed circumferential abdominoplasty at 3.40% and abdominoplasty combined with an intraabdominal procedure at 2.17%, relative to VTE rates of abdominoplasty alone at 0.35% and abdominoplasty with concomitant plastic surgery at 0.79%.

Iribarren-Moreno and colleagues¹⁹ studied combining abdominoplasty with obstetric procedures. They found that the morbidity of abdominoplasty increases when performed in combination with obstetric procedures. There is a high risk of infections, thrombosis, and skin necrosis, and sometimes fatal VTE. Furthermore, aesthetic outcome is less assured with risk of redundant skin, unsatisfactory scars, abdominal wall defects, poor contour, and unaddressed skin folds when combining abdominoplasty with obstetric procedures. Ali and Essam²⁰ found that combining abdominoplasty with cesarean section led to higher complication rates and inferior aesthetic results secondary to distorted local anatomy and compromised healing because of contamination. Voss and colleagues²¹ demonstrated higher morbidity, longer operative times, and protracted hospital stays when abdominoplasty was combined with common gynecologic operations. In this study, 6.6% of patients undergoing combined procedures had a pulmonary embolism, versus no patients undergoing a single procedure.

The literature is replete with studies looking at large existing datasets of patients undergoing abdominoplasty combined with other procedures. More commonly, these studies are identifying complications with emphasis on VTE outcomes. There are currently no papers in the literature presenting prospective data on patients undergoing these combined procedures. Further, there are no data on aesthetic outcomes or quality-of-life indicators. With a validated instrument available, BodyQ, plastic surgeons are well-positioned to conduct this type of study in the future.

SUMMARY

There is a great societal appeal for abdominal combined surgical procedures. Abdominoplasty is one of the most sought after cosmetic plastic surgery procedures, and consultation for abdominoplasty serves as a gateway to discussing extension of contour outcome and amplification of aesthetic outcome by adding surgery on other body regions. Combination surgery has become the norm and more common that isolated abdominoplasty in many practices, with an appeal that is galvanized by lower costs and one recovery period. Attention to the impact of surgery on body regions adjacent to the abdomen is important, and regional lifts serve to help or hinder outcomes, depending on tension forces that work in concert or opposition. Surgical planning must take patient factors into consideration, particularly those that will challenge healing and recovery. Staging and hospital-based surgery are alternatives that may need to be incorporated into surgical planning. VTE risk and avoidance has become the most studied variable in these combination procedures. VTE is the most common poor outcome and is particularly important because it may be fatal. Strategies have been discussed to minimize this risk as well as others, while also optimizing aesthetic results.

DISCLOSURE

There are no commercial or financial conflicts of interest or any funding sources to report.

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