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Is Plastic Surgery Combined with Obstetrical Procedures Safe?

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Abstract In the existing reports on combined procedures of abdominoplasty with Cesarean section or natural delivery, a high incidence of complications and poor aesthetic results are reported. We conducted a survey with the participation of 61 plastic surgeons who performed this procedure in 808 patients, with an average of 13.24 procedures per surgeon. In 783 procedures (96.9% of the cases), the combination was with Cesarean section and 25 procedures (3.13% of cases) were combined with vaginal delivery. The plastic surgery procedures were as follows: 242 abdominoplasty procedures (29.95%), 210 abdominoplasty plus liposuction procedures (25.99%), 18 mini abdominoplasty procedures (2.22%), 121 mini abdominoplasty and liposuction procedures (14.97%), and 217 liposuction procedures (26.85%). The following complications were reported: seroma in 255 cases (31.57%), thrombosis in 212 (26.23%), infection in 170 (21.03%), skin necrosis in 127 (15.71%), and hematoma in 42 (5.19%). There were three deaths due to thrombosis (0.4%). There were redundancy skin abdominal wall defects in 336 (41.66%) cases, unaesthetic scars in 291 (36.11%), abdominal wall defects in 134 (16.58%), unpleasant contours in 22 (2.72%), and rotational folds in 22 (2.72%). Fifty-five (90.16%) surgeons decided to stop delivering babies with these practices. The combination of abdominoplasty with Cesarean section or natural delivery has a high incidence of complications and poor aesthetic results; therefore, we make a strong recommendation to avoid this practice before the patient reaches sixth month postpartum.
Level of Evidence IV This journal requires that authors assign a level of evidence to each article. For a full description of these Evidence-Based Medicine ratings, please refer to the Table of Contents or the online Instructions to Authors www.springer.com/00266.

Keywords Abdominoplasty · Postpartum · Cesarean section · Obstetric patients · Combined procedures with abdominoplasty · Body contouring

Introduction

Abdominoplasty is one of the most common procedures performed by plastic surgeons. This is an aesthetic procedure with many complications, and the incidence increases when combined with liposuction or any other procedure [1–3]. The worst complication known that can even lead to death is thrombosis. An extensive abdomen and low-extremity tumescent liposuction in addition to long-term sedentarism can stop venous return and release prothrombotic factors that can contribute to thrombogenesis [4–6]. The number of papers published about abdominoplasty performed on obstetric patients is lacking; in the existing publications, most authors mention a high incidence of complications and poor aesthetic results [7]. In Mexico, we have detected an increase in this procedure, which leads to the need for the Committee of Safety to conduct a study with the objective of obtaining information about the way in which the combination of abdominoplasty and Cesarean section or natural delivery is approached to compare and contrast their results with the findings of international literature. With the conclusions of this research, the

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committee proposes the creation of safety measures regarding these procedures.

Methods

We executed a survey, validated in content and consensus, and sent it to the members of the Mexican Association of Plastic Surgery in the months of May and June 2016. At that time, we solicited 1520 plastic surgeons and obtained participation from 434 surgeons (28.55%). We used an e-survey. Incomplete surveys were eliminated. We sent the survey four times. Table 1 shows the questions from the survey. We focused on determining the number of plastic surgeons familiar with this type of procedure, the types of procedures performed, the number of patients operated on, the complications related to the procedures, and the preference of the surgeons about these types of procedures.

Variables used included simple frequencies, ratios, central tendency measures, and distribution of quantitative variables.

Ethical Aspects

This study is a statistical study based on a survey, answered by plastic surgeons who are members of the Mexican Association of Plastic, Aesthetic and Reconstructive Surgery, without the direct participation of patients to avoid risk. In addition, the confidentiality of patients and surgeons is maintained.

Results

The survey was answered by 434 surgeons (28.55%), and 61 surgeons performed a combination of abdominoplasty and Cesarean section or natural delivery. The total number of procedures reported was 808, with an average of 13.24 procedures per surgeon, varying between 1 and 41 procedures per surgeon.

The plastic surgery procedures were as follows: abdominoplasty (242 cases, 29.95%), abdominoplasty plus liposuction (210 cases, 25.99%), mini lipectomy (18 cases, 2.22%), mini lipectomy plus liposuction (121 cases, 14.97%), and liposuction (217 cases, 26.85%). In 783 cases (96.9%), the combination was with Cesarean section and in 25 cases (3.13%) with vaginal delivery (Table 2).

The following complications occurred, in order of prevalence: seroma (255 cases, 31.57%), thrombosis (212 cases, 26.23%), infection (170 cases, 21.03%), skin necrosis (127 cases, 15.71%), and hematoma (42 cases, 5.19%). There were three deaths due to thrombosis (0.4%). There were redundancy skin abdominal wall defects in 336 cases (41.66%), unaesthetic scars in 291 cases (36.11%), abdominal wall defects in 134 cases (16.58%), unpleasant contours in 22 cases (2.72%), and rotational folds in 22 cases (2.72%) (Table 3).

Fifty-five surgeons (90.16%) decided to stop delivering with these practices.

Discussion

A survey is a way of obtaining relevant data by asking questions to understand the issue, create a hypothesis, and develop solutions and recommendations. Through this work, one can see all the risks patients go through when undergoing combined abdominoplasty with Cesarean section or natural delivery. Ali and Essam compared two groups of patients: one group of 50 females who underwent both abdominoplasty and Cesarean section and another group of 80 women who underwent only abdominoplasty [8]. Among the first group, 36% had complications, and in the second group, 11.3% of the patients had complications. Abdominoplasty is the aesthetic procedure with the highest incidence of complications, which increases when combined with other procedures [9, 10]. The incidence of complications that we found was 11.75%, and it increased when combined with other surgeries.

Table 1 Survey plastic surgery and obstetrical procedure

Have you performed plastic surgery procedure during vaginal delivery or C-section? Yes/no
If the answer is yes, what type of procedure have you done? C-section/vaginal delivery, abdominoplasty/mini lipectomy/liposuction/combination
How many procedures have you done of each?
Do you have complications with the procedure? Yes/no
If the answer is yes what type of complications have you seen? Seroma, infection, hematoma, thrombosis, pulmonary embolism, skin necrosis, wound dehiscence, or death
How many procedures have been complicated?
Do you still doing the combination of procedures? Yes/no

Table 2 Type of procedures

Type of aesthetic procedure	
Abdominoplasty	242 (29.95%)
Abdominoplasty plus liposuction	210 (25.99%)
Mini lipectomy	18 (2.22%)
Mini lipectomy plus liposuction	121 (14.97%)
Liposuction	217 (26.85%)
Type of obstetric procedure	
C-section	783 (96.9%)
Vaginal delivery	25 (3.13%)

Table 3 Type of complications

Seroma	255 (31.57%)
Thrombosis	212 (26.23%)
Infection	170 (21.031%)
Skin necrosis	127 (15.71%)
Hematoma	42 (5.19%)
Abdominal wall redundancy	336 (41.66%)
Unaesthetic scars	291 (36.11%)
Abdominal wall defects	134 (36.11%)
Not pleasant contour	22 (2.72%)
Rotational folds	22 (2.72%)
Mortality	3 (0.4%)

Benn and Spera allude to the physiological changes that occur during pregnancy and right after postpartum; these changes include physiological anemia, hypercoagulability, and loss of blood during the postpartum period [11]. Patients with these changes are not ideal candidates to undergo combined procedures.

Matarasso and Smith indicate that the best time to realize a body-contouring procedure is when the patient has returned to her normal physiological status, which is reached around the sixth week after delivery [7]. Jackson mentions that the risk of thrombosis increases 21.5–84 times postpartum and then decreases rapidly [12]. In hospitalized and surgical patients, symptomatic thrombosis is present in 1.4–1.8% of patients and mortal thrombosis is present in 0.8% [13, 14].

The most significant cause of death in patients who undergo combined abdominoplasty or liposuction is pulmonary thromboembolism [2, 15]. When both procedures are combined, the risk is higher [9, 10]. We found a high incidence of thrombosis (26.31%) in patients with combined procedures. Other authors found that the combination of abdominoplasty with Cesarean section or natural delivery leads to a high incidence of postsurgery complications and poor aesthetic results [16]. Surgeons who were part of this research reported cutaneous redundancy, unaesthetic scars, defects of the abdominal wall, and an unpleasant contour.

There were no significant advantages reported, and 90% of surgeons who performed both procedures abandoned the technique. During pregnancy, women go through physiological changes in all of their organs and functions; breathing changes occur starting at the fourth week of gestation, and edema may occur in the upper respiratory tract, which favors infectious processes. The mucous epithelium becomes friable and can be easily damaged when placing an orotracheal tube for general anesthesia [17]. Additionally, a pregnant uterus elevates the diaphragm and the heart and can lead to changes in the electrocardiogram, arrhythmias, and functional murmurs. In extreme situations, it can also lead to pericardial effusion: circulatory volume increases from 30 to 50% with a dilution of hemoglobin to supply for the metabolic processes of the fetus and to compensate for the blood lost during delivery [12]. Progesterone induces changes in the digestive tract, increases salivation, changes the pH in the oral cavity, increases cavity formation, pyrosis, and gastric acids, and stimulates the formation of gallstones and cholecystitis. Changes in the position and function of the stomach and esophagus are present, which leads to regurgitation and increases the risk of bronchial aspiration. Fibrinogen and factors VII, VIII, X, and XII prevent hemorrhage during delivery but can simultaneously increase the risk of thrombosis [4, 13].

For some surgeons, the increase in uterus volume and the secondary effects of a Cesarean section cause skin flaccidity with crease formation and a loose abdominal wall. These are the most common reasons to proceed with both an abdominoplasty and a Cesarean section; additionally, the authors consider this to avoid a new surgery meaning another anesthetic procedure. Usually, during the immediate postpartum period, it is common to observe persistent abdominal bulges, lack of a defined waistline, and redundant skin in the lower abdomen; these body disturbances are due to the persistent uterus growth that stretches the abdominal skin and hinders the surgeon's ability to estimate the adequate cutaneous resection. A few months later, the uterus involutes, the skin loosens out, and the abdominal flaccidity becomes more obvious. Infections, wound dehiscence and necrosis are frequent complications that are usually attributed to contamination of vaginal exudates and disturbances in abdominal tissue irrigation [1, 12]. Time in the operating room should also be considered a risk factor for complications. Combining obstetrical procedures with plastic surgery results in a longer time in the operating room. The obstetrical

procedure is not free of complications, as we mentioned. If combined with other procedures, such as any plastic surgery, there are greater possibilities of risk due to a longer procedure time.

We should not forget that there is a strong association between pathological scars and pregnancy. If patients have a predisposition to this type of condition, there is a greater chance of having an unsatisfactory result. In addition, patients with keloid or hypertrophic scars can have a recurrence of these problems [18].

Conclusions

The combination of abdominoplasty with Cesarean section or natural delivery has become more frequent; surgeons justify this practice because it is less expensive, avoids inducing the patient to anesthesia twice, and gives a pleasant recovery of body contour on patients. Abdominoplasty is an aesthetic procedure with major complications, and morbidity increases when merging it with other procedures. Other findings in this study have demonstrated that it is a high-risk procedure and has a high incidence of infections, thrombosis, and cutaneous necrosis, and it can sometimes lead to death due to pulmonary thromboembolism. Additionally, the aesthetic results are usually not satisfactory for most patients due to redundant skin, unaesthetic scars, abdominal wall defects, unpleasant body contour, and rotational skin folds. We did not find an overwhelming advantage that encourages doctors to utilize the combined procedure.

Therefore, due to the current evidence and as long as no additional information suggests a different approach for this clinical situation, the Safety Committee from AMCPER (Mexican Association of Plastic, Aesthetic and Reconstructive Surgery) firmly recommends avoiding the combination of obstetrical procedures with abdominoplasty or any other corporal contour surgery.

Compliance with Ethical Standards

Conflict of interest The authors declare that there are no conflict of interest that may influence the results.

Ethical Approval The study was approved by the Committee of Safety of Asociacion Mexicana de Cirugía Plástica, Estética y Reconstructiva.

Informed Consent This was a survey directed to plastic surgeons who are members of Mexican Association of Plastic Surgery. They answered without direct participation of the patients. Therefore, there was no risk to any patient, and the confidentiality of patients and surgeons was maintained.

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