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Combined Abdominoplasty with Intra-Abdominal Gynecological Procedures

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Abstract

Combined abdominoplasty with abdominal gynecological procedures is becoming increasingly popular. The safety and guidelines for patients' selection are not well defined in the literature. The objectives of this study are: to examine the relative safety of the combined procedures, and to examine the effect of combining the two procedures on reducing the total operative time, operative blood loss and the duration of hospital stay.

We retrospectively reviewed the medical charts of 51 patients operated upon at Jordan university hospital, between June 1997 and June 2008. Patients were divided into 3 groups of 17 patients each. The first group consisted of patients who underwent combined abdominoplasty and one of various abdominal gynecological procedures. The second group

had gynecological procedures matched to those of the combined procedure group. The third group had abdominoplasty as a single procedure.

The three groups were compared to each other in regards to age, weight, parity, co-morbidities, operative time, and intra-operative blood loss, post-operative complications, and hospital stay. Results showed no mortality or life threatening complications in any of the three groups. Post-operative minor complication rates were comparable in the three groups. The results also showed a significant reduction in total operative time, total operative blood loss, and total hospital stay in the combined group compared with the sum of the gynecological procedure and the abdominoplasty groups. The study supports the view of relative safety of combining abdominoplasty with abdominal gynecological procedures, and demonstrates its value in reducing total operative time, operative blood loss and duration of hospital stay.

Keywords: Abdominoplasty, combined procedures, complications, gynecological procedures, safety.

1. Introduction

Following the first report on combining abdominoplasty with abdominal gynecological procedures by Grazer in 1973 (Grazer, 1973), the following decades witnessed an increasing number of women scheduled for elective gynecological procedures undergoing concomitant abdominoplasty (Grazer, 1977; Savage, 1982; Freedom, 1983; Perry, 1986; Voss, 1986; Hester et al, 1986; Germperli et al, 1992; Kaplan, 2005). Women presenting for elective gynecological procedures, may have redundant abdominal wall, ventral hernias, stretch marks resulting from repeated pregnancies, or scars of previous surgical operations (Freedom, 1983; Shull, 1988). These women frequently ask for concomitant abdominoplasty for cosmetic and functional benefits (Freedom, 1983; Perry, 1986; Hester, 1989). The combined procedure has been attractive to both surgeons and patients due to its several theoretical advantages, such as reducing the risks of two anesthetic exposures, decreasing the duration of hospitalization and convalescence periods, as well as reducing the financial cost (Grazer, 1973; Voss, 1986; Shull, 1988; Perry, 1986; Hester, 1989; Kaplan, 2005; Kryger, 2007). No matter what potential advantages the combined procedures may have; patient's safety should be the surgeon's primary concern and should not be compromised (Hester, 1989; Kaplan, 2005; Kryger, 2007). Although the combined procedure has been frequently practiced, the relative safety of the combined procedures, and the guidelines for patient's selection were not adequately evaluated and defined in the literature (Savage, 1982; Voss, 1986; Kaplan, 2005; Kryger, 2007). Identification of the safety of the combined procedure remains a crucial issue for the surgical teams performing the combined procedure to help them in accurate patient selection and counseling, and to consider adopting prophylactic measures to improve safety.

2. Research Objectives

Firstly, to determine the relative safety of combining the two procedures, as measured by the complications rate in the combined group compared with the other groups.

Secondly, to examine the effect of combining the two procedures on reducing total operative time, total intra-operative blood loss, and total hospital stay.

3. Research Methods

3.1. Study Subjects

The study was approved by the Institutional Review Board (IRB) and ethical committees at the University of Jordan. The study subjects consisted of 51 patients operated upon at Jordan University hospital, Amman, Jordan, between June 1997 and June 2008. Patients were grouped into three groups with seventeen women in each group. The first group (n=17) consisted of women who had abdominoplasty combined with one of various intra-abdominal gynecological procedure. This study group was designated as the combined group (CG). Two other groups matched for age, weight, and parity, were selected for comparison with the combined group. The first group (n=17) consisted of patients who had undergone gynecological procedures similar to that in the combined group. This group was designated as the gynecological procedures group (GPG). The second group (n=17) consisted of patients who had abdominoplasty as a single procedure, and was identified as the abdominoplasty group (APG). The gynecological procedures were performed by one of three gynecologic surgeons, while the abdominoplasty procedures were performed by the same plastic surgeon.

3.2. Data Collection

Medical records of the 51 patients (the three groups) were reviewed, and the following variables were collected: age, weight, parity number, and comorbidities. The collected operative data included the surgical procedures performed, operative time (in minutes), estimated intra-operative blood loss (in ml), requirement for blood transfusion (in units), and length of hospital stay (in days). Post-operative major complications (death, pulmonary embolism, serious infections, and morbid blood transfusion), and minor complications such as wound complications, and urinary tract infection were all recorded.

3.3. Surgical Technique

The combined procedure was performed by a team of a plastic surgeon (The first author) and one of three gynecological surgeons (the second, third and forth authors). Pre-operatively, patients were counseled, and written consents were obtained. The patients were examined for abdominal wall laxity, diastases of recti and ventral hernias. Marking of the surgical incisions was done in the standing position to determine the amount of excess tissue to be excised. All procedures were performed under general endotracheal anesthesia. Patients were covered by prophylactic sub-cutaneous Heparin 5000 IU, three times daily, started pre-operatively and continued till the patient was fully ambulated. The combined procedure was started by the plastic surgeon, using lower abdominal “W” incision technique. The upper abdominal flap was raised up to the sub-costal margins. The umbilicus was preserved in all patients. The excess lower abdominal skin and fat was excised. After meticulous hemostasis the gynecologist performed laparotomy and the intended gynecological procedure. The plastic surgeon then completed the abdominoplasty procedure. The umbilicus was brought through a hole created in the upper abdominal flap and fixed by interrupted 3:0 Prolene sutures. The abdominal incision was closed in two dermal layers using 3:0 Vicryl sutures. Two closed suction drains were left in the sub-cutaneous area and removed after 3-5 days.

3.4 Statistical Analysis

Statistical analysis was carried out using the Statistical Package for Social Sciences (SPSS), Windows software package version 16.0. (SPSS, Chicago, IL, USA). Due to the small number of patients, non-parametric tests were used. The analysis of variance ANOVA was used to compare means of the three groups regarding age, weight, and parity. Kruskal-Wallis test was used when appropriate. Chi-Square test was used to compare the complications among the three groups. And finally Mann-Whitney test was used to compare the differences between the means of the operative time, intra-operative blood loss and duration of hospital stay in the combined group, and the sum of each of these variables in the two control groups. Statistical significance was set at $P \leq 0.05$.

4. The Results of the Research

4.1. Sample Characteristics

Table (1) summarizes patients' data for the three study groups. It shows that the three groups were comparable regarding age, weight, and parity. In the CG group, three patients were hypertensive, and one patient was diabetic. In GPG group, two patients were hypertensive and none was diabetic, while in APG group one patient was hypertensive and another patient was diabetic.

Table 1: Summary of patients' data

	Combined Group CG (n=17)	Gynecological procedure group GPG (n=17)	Abdominoplasty group APG (n=17)	P value
Age (years)	43.8 (7.0)	42.9 (6.6)	42.6 (7.0)	0.873
Weight (kg)	73.1 (10.5)	72.1 (8.8)	71.5 (7.5)	0.883
Parity number	4.8 (2.5)	4.7 (2.5)	4.5 (1.7)	0.9301
Hypertension	3	2	1	
Diabetes mellitus	1	0	1	

P value: significant at 0.05 levels
Values are expressed as Mean (SD) and numbers when appropriate.

4.2. Surgical procedures performed:

Table (2) shows the frequency of the surgical procedures performed. Abdominal hysterectomy, with or without salpingooopherectomy was the most frequently performed procedure, 26 out of 34 patients (76.5%).

Table 2: Summary of surgical procedures

Procedure	Combined Group CG (n=17)	Gynecological procedure group GPG (n=17)	Abdominoplasty group APG (n=17)
TAH*	6	6	0
TAH&SO**	7	7	0
Tubal ligation	1	1	0
Ovarian cystectomy	2	2	0
Myomectomy	1	1	0
Abdominoplasty	17	0	17

Values are expressed as numbers
TAH*: Total abdominal hysterectomy
TAH&SO**: Total abdominal hysterectomy and salpingo-oopherectomy

4.3. Post-Operative Complications

There was no mortality, pulmonary embolism, or other major life threatening complications in any of the patients in the three groups. The minor post-operative complications are shown in table (3). The overall minor complication rate was 35.3% in CG group, 23.5% in GPG group, and 29.4% in APG group. The difference was not statistically significant. (p=NS)

Three patients (17.6%) in the CG group received blood transfusion (2 units each), while in GPG group and APG group, only one patient in each group (5.9%) had blood transfusion. No morbidity was related to blood transfusion.

Table 3: Post-operative complications

Post-operative complications	Combined Group	Gynecological procedure group	Abdominoplasty group
	CG (n=17)	GPG (n=17)	APG (n=17)
Wound infection	1 (5.9%)	2 (11.8%)	2 (11.8%)
Wound seroma	1 (5.9%)	0 (0%)	1 (5.9%)
Wound hematoma	1 (5.9%)	0 (0%)	0 (0%)
Minimal skin necrosis	1 (5.9%)	0 (0%)	2 (11.8%)
Urinary tract infection	2 (11.8%)	2 (11.8%)	0 (0%)
Total	6 (35.3%)	4 (23.5%)	5 (29.4%)

Values are expressed as numbers (percentages %)

4.4. Operative time, intra-operative blood loss and hospital stay

Comparison of the operative time, intra-operative blood loss and hospital stay among the three groups: is shown in Table (4), with the levels of significance indicated. The mean operative time in CG group (174 minutes) was significantly greater than that of GPG group (113 minutes) and APG group (157 minutes) (p=0.000). The mean intra-operative blood loss in CG group (450 ml) was greater than that in GPG group (297ml), and APG group (371 ml); however, this difference was not statistically significant. The mean hospital stay duration was (9.1 days in CG group, 6.3 days in GPG group, and 7.3 days in APG group). The difference was not statistically significant.

Table 4: Operative data and hospital stay

	Combined Group	Gynecological Procedure Group	Abdominoplasty Group	P value
	CG (n=17)	GPG (n=17)	APG (n=17)	
Operative time (minutes)	174 (28.7)	113 (33)	122 (28.1)	<0.0001
Intra-operative blood loss (ml)	450 (218)	297 (163)	371 (157)	0.0583
Number of patients required blood transfusion	3 (17.6%)	1 (5.9)	1 (5.9%)	
Hospital stay (days)	9.1 (3.6)	6.3 (2.9)	6.9 (2.3)	0.0197

P value significant at 0.05 levels
Values are expressed as Mean (SD)

4.5. Comparison of Study Variables between the Combined Group and the Sum of the Same Variable in the GPG and APG Groups

To study the effect of combining abdominoplasty with abdominal gynecological procedures on reducing the total operative time, total intra-operative blood loss, and total hospital stay; we compared these variables in the CG group with the sum of the same variable in the two other groups GPG+APG groups (summated group) as shown in Table (5). Results showed a statistically significant reduction in total operative time, intra-operative blood loss, and total hospital stay. Total operative time 174 minutes in the CG group vs. 235 minutes in the summated group (p=0.000). Total intra-operative blood loss was 450 ml in the CG group vs. 668 ml in the summated group (p=0.008). And total hospital stay was 9.1 days in the CG group vs. 13.2 days in the summated group (p=0.001).

Table 5: Comparison of study variables between the combined group and the sum of the same variable in the GPG and APG groups

Study variable	Combined Group	Sum of Gynecological and Abdominoplasty Groups (Summated Group)	P value
Mean operative time (minutes)	174	113+122=235	0.000
Mean intra-operative blood loss (ml)	450	297+371=668	0.008
Mean hospital stay (days)	9.1	6.3+6.9=13.2	0.001

P value significant at 0.05 levels

5. Discussion

Combining abdominoplasty with intraabdominal gynecological procedures has become increasingly popular. Surgeons are stimulated to combine the two procedures by its theoretical advantages, such as reducing the risks of two anesthetic exposures, decreasing the duration of hospitalization and convalescence periods, as well as reducing the financial cost (Grazer, 1977; Savage, 1982; Freedom, 1983; Hester et al, 1986; Voss, 1986; Perry, 1986; Germperli et al, 1992; Kaplan, 2005). Although there is a general consensus that patient's safety is a main priority in the combined procedures, the literature however, is deficient in solid data regarding the safety and the guidelines for patient selection. Prospective controlled studies are lacking (Kryger, 2007). Only a small number of retrospective reports discussed these issues. Some of these reports were case series (Freedom, 1983; Perry, 1986; Germperli et al, 1992; Kaplan, 2005). Other reports were case-control ones (Voss, 1986; Shull, 1988; Hester et al, 1986, Hensel, 2001). Perry (Perry, 1986) combined abdominoplasty with total abdominal hysterectomy in twenty patients. Adhering to strict selection criteria, 3 patients (15%) developed minor wound complications and only one patient required blood transfusion. Gemperli (Germperli et al, 1992) performed abdominoplasty combined with intraabdominal gynecological procedures in 101 patients, only two patients had minor complications and three patients needed autologous blood transfusion. Freedom (Freedom, 1983) combined abdominoplasty with intra-abdominal gynecological procedures in 129 patients; he reported 3% morbidity with no major complications. Recently Kaplan (Kaplan, 2005) and Bar-Meir presented 15 patients underwent combined abdominoplasty with total abdominal hysterectomy, one patient had a wound infection and four patients had minor complications Voss et al, in a well designed case-control study, reviewed their results of 76 patients who underwent abdominoplasty combined with various gynecological procedures. They compared this study group with two control groups. The first control group consisted of 76 patients who had matched gynecological procedures. And the second control group consisted of 70 patients who had abdominoplasty as a single procedure. Although he demonstrated that combining the two procedures decreased the total operative time, and operative blood loss, the combined group had significantly greater febrile morbidity and post-operative blood loss which required more blood transfusion. More seriously, five patients (6.6%) of the combined group had documented pulmonary embolism. The study showed that 80% of the complications occurred in patients over 50 years of age or with weight above 70 kg, so they considered these as risk factors for combining the two procedures. The authors cautioned on the need to carefully select patients for the combined procedures (Voss et al, 1986). Shull and Verheyden reported a case control study of 33 patients with combined gynecological and plastic surgical procedures. These patients were compared with two matched groups for the plastic surgical (n=33), and the gynecological procedures (n=33). The requirement for blood transfusion was significantly increased (P=0.01) in the combined group. No other complications, however, were increased in the combined group (Shull, 1988).

Hester et al reported their 10-year experience with 563 abdominoplasties divided into three groups: abdominoplasty alone (n=117), abdominoplasty with intra-abdominal or pelvic procedures (n=230), and abdominoplasty combined with non-abdominal aesthetic procedures (n=216). In that report, there was no mortality, but six patients had pulmonary embolism, all in the two combined groups. However when the incidence of pulmonary embolism was analyzed, obesity rather than the complexity of the surgical procedure was the significant risk factor. The study showed a significant increase in the rate of blood transfusion in the combined groups compared with the abdominoplasty group. The incidence of minor complications, however, was not different among the three groups (Hester et al, 1988). Hensel et al found that complication and revision rates in patients undergoing intra-abdominal procedures combined with abdominoplasty were not significantly different from those patients undergoing abdominoplasty alone (Hensel et al, 2004).

The results of the present study showed absence of mortality and major complications. The complication rate in the combined group (41%) was not significantly different from that of the two control groups, and compares favorably with the complication rate of abdominoplasty reported in recent series ranging from 23.5% to 65% (Floros, 1991; Vastine et al, 1999; VanUchelen et al, 2001;

Hensel et al, 2004). Our results support the view of relative safety of the combined approach as shown by other authors (Kaplan, 2005; Grazer, 1973; Savage, 1982; Freedom, 1983; Voss et al, 1986; Perry, 1986; Gemperli et al, 1992; Shull, 1988; Hester et al, 1989; Hensel et al, 2001). Our finding of increased rate of blood transfusion in the combined group is similar to that noted by others (Voss et al, 1986; Hester et al,1989).As expected, this may be explained by the magnitude of surgery, and the longer operative time in the combined procedure. Although none of our patients or the patients in the previous studies had complications related to blood transfusion, the risk could not be ignored, and measures to minimize them should be considered, including meticulous hemostasis, and use of autologous blood transfusion whenever needed. To minimize the rate of blood transfusion in our patients, we limited blood transfusion to symptomatic patients, while others with moderate blood loss were treated by iron and folic acid supplements.

Incident pulmonary embolism in the combined procedure, reported by some authors (Voss et al, 1986; Hester et al, 1989), should not be overlooked, and would emphasize the importance of establishing safe selection criteria for the combined approach, as well as applying prophylactic measures against this grave complication, especially in the older, and obese patients as these are well-recognized major risk factors (Voss et al, 1986; Hester et al, 1989).

Our study showed that the operative time, blood loss, and duration of hospital stay were greater in the (CG) compared with either (APG) or (GPG). This is consistent with the findings of others (Gemperli, 1992). However the total operative time, operative blood loss and duration of hospital stay were significantly less in the (CG) compared with the sum of these variables in the (APG) and (GPG). These findings, also noted Voss (Voss et al, 1986), would support one of the theoretical advantages of the combined approach in reducing the effort and cost.

6. Conclusion

This study supports the view of other authors regarding the relative safety of combining abdominoplasty with an elective intra-abdominal gynecological procedure. However, studies reporting major complications as pulmonary embolism in the combined approach should not be ignored. We agree with Goldwyn that abdominoplasty is a major operation and not merely a “tummy tuck” (Goldwyn, 1986). Proper planning, and approved selection criteria should be carefully followed, particularly in elderly and obese patients. When the combined procedure is decided, the patient should be carefully counseled, and the procedure should be performed by senior, well trained surgeons who are aware of the magnitude of the combined procedures. The increased incidence of blood transfusion noted in this study as well as other studies should be considered. Appropriate precautions against this significant risk include meticulous hemostasis, and preparation of autologous blood. Prophylactic antibiotics and anticoagulants must be considered when indicated. As all the studies so far are retrospective series, prospective randomized studies on larger number of patients are needed to standardize the procedure and set up safe selection criteria. Whatever the advantages of the combined approach may be, patient’s safety should come first, and should not be compromised.

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