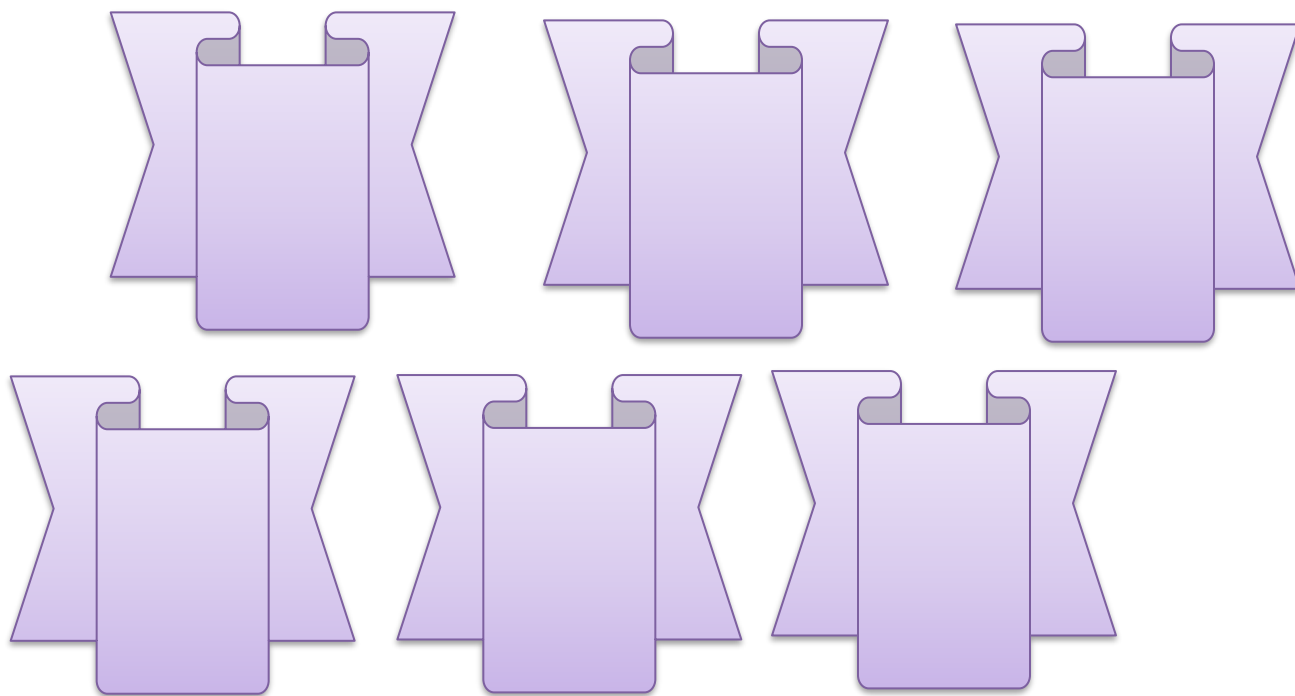


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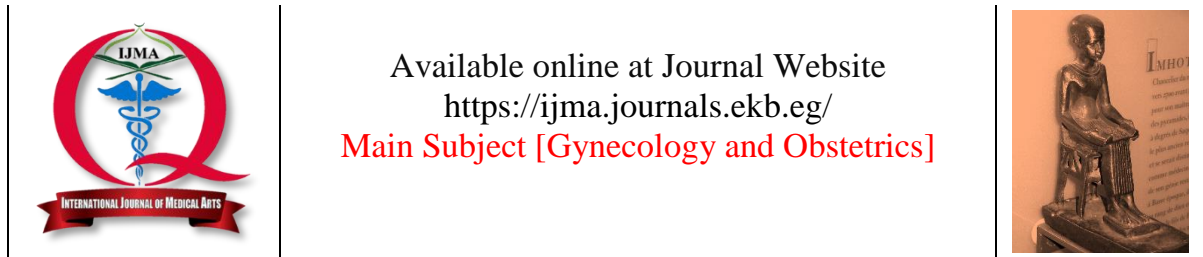
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Original Article

Efficacy of Panniculectomy with Cesarean Section

Neama Mohamed Anwar ^{*1}, Abd Elraouf Mohammad Oun ¹, Mahmoud Ahmed Amin ², Ahmed Mahmoud Elshorbagy ¹

¹ Department of Obstetrics and Gynecology, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt

² Department of Plastic and Burn Surgery, Damietta Faculty of Medicine, Al-Azhar University, Damietta, Egypt

ABSTRACT

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*Corresponding author

Email:
drneamamohamed3141369@gmail.com

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Background: A panniculectomy helps contouring the abdomen by removing the panniculus. Patients with large overhanging abdominal panniculus should benefit from this treatment. Pregnancy changes the size and contour of the abdomen; so, abdominoplasty is often requested during a Cesarean delivery. In late pregnancy, especially in multiparous women, the abdominal wall muscles are subjected to increased strain, and the rectus muscles divaricate in the midline, generating diastasis recti. Panniculectomy is a popular women's aesthetic surgery. It can be long-lasting if maintained with exercise and a balanced diet.

Aim of the work: The goals of this study are to assess the advantages, disadvantages, cosmetic outcomes, and complications of combining panniculectomy with Caesarean Section.

Patients and Methods: A prospective randomized clinical controlled trial where 50 of Gravid women shared and equally distributed to two groups, each group includes 25 pregnant women who had already made the decision to have an elective Cesarean section at Al-Azhar University's Department of Obstetrics and Gynecology.

Results: In terms of time needed to complete a procedure, there was a massive gap between the two groups. The two groups did not differ significantly with respect to wound complications, post-operative body mass index. The Panniculectomy with CS group had a mean of 8.72 ± 1.24 . [range: 5-10] in terms of patient satisfaction.

Conclusion: There's an argument that doing both operations at once would save time and money. It does not appear to be in the best interests of most patients, however, due to the higher risk of postoperative complications and un-esthetic outcomes. More research is needed to determine how the surgery affects long-term recovery, future obstetric outcomes, and other medical issues.

Keywords: Cesarean Section; Panniculectomy; Abdominoplasty.



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INTRODUCTION

Abdominal flab forms what is known as a panniculus, which looks like an apron. The anterior thighs, hips, and knees can occasionally be covered by this additional skin and fat that develops as a result of weight increase. A huge panniculus can have a significant effect on daily living, which is a serious problem. Patients with a big panniculus frequently get skin infections and rashes as a result of the continual itching and sweating ^[1]. Cosmetic procedure, usually involving facial placcation ^[2].

A panniculectomy is a surgical operation for modifying the appearance of the abdominal wall. Patients who have a big, protruding abdominal panniculus are candidates for this surgery ^[3].

When carrying a child and giving birth, a woman's body goes through numerous transformations. Sagging or stretched skin is possible, especially in the belly area. It is only by surgical removal that this troublesome tissue can be eliminated ^[4]. Combining an abdominoplasty with a C-section increases the risk of complications and often fails to produce the desired cosmetic results ^[5].

Panniculectomy is, and always has been, one of the most popular treatments for cosmetic surgeons to perform. Especially if coupled with a sustained effort to exercise regularly and eat healthily, it has the potential to yield gratifying and long-lasting results. Patient can regain her pre-pregnancy body, have her scar tissues from a CS and stretch marks removed, have her low-hanging excess pouch of skin removed, have her midsection and waist sculpted and toned, and have her loose and separated abdominal muscles tightened if she undergoes Panniculectomy surgery once she has fully recovered from pregnancy and Caesarean delivery. Enhancing patient's sense of body pride and self-esteem by correcting postural flaws and mending umbilical faults. Combining pannicul-ectomy and cesarean section is not well studied ^[6].

Wound infection, wound dehiscence, and distal skin necrosis were the reported postoperative complications. The increased rate of infection may be explained by the prolonged surgical time and contamination from the vaginal lochia. Distal abdominal skin necrosis was the most serious complication despite limited liposuction and limited undermining of the abdominal flap ^[5].

PATIENTS AND METHODS

The research was done at the Al-Azhar University Obstetrics and Gynecology Hospital [New Damietta]. Fifty pregnant women who voluntarily had a cesarean section are part of this prospective clinical trial.

In this study, patients were randomly assigned to one of two groups: Group A consisted of 25 women who had a Panniculectomy in addition to their Cesarean section, and Group B consisted of 25 women who just had a Cesarean section. Each participant in this prospective study gave their informed agreement, and the project was approved by the ethics committee at Al-Azhar University.

Inclusion criteria: Pregnant female who were undergo elective Cesarean section, Age from 20 till 40 years, Women were overweight or obese [BMI from 25 to 39.9] and Women with lower abdominal obesity [excess fat in panniculus].

The Exclusion criteria were: Chronic disease [Diabetic, hypertensive], Anemic patients, Eclampsia and pre-eclampsia, Placenta previa and accrete, Patients on anti-coagulant, and Risky patients for post-partum hemorrhage [PPH].

All of the women in the study will be given an explanation of the procedure. All patients received information about the study's potential benefits and risks before giving their informed consent.

All patients are expected to be full term at the time of delivery, and ultrasound examinations have shown that their babies are fully developed. Patients were warned that the outcome of their panniculectomy might not be ideal, standard pre- and post-op photographs were taken, and cases were selected using a random, simple-sample method.

Operative procedure for panniculectomy: The marking for panniculectomy is performed preoperatively, with intraoperative adjustments made as indicated. The patient is marked in the standing position to observe the draping of the panniculus, and the lower incision is marked first. As in abdominoplasty, the low point of the incision should be at least 7 cm above the anterior vulvar commissure to avoid vertical displacement and changes to micturition angle.

The marking is then continued laterally and superiorly toward the anterior superior iliac spine, using existing folds as much as possible. The planned incision can appear to be very inferior due to the descent of the tissues; however, this is corrected after excision and suspension. After the lower incision is marked, a provisional upper incision is planned using bimanual palpation to assure that the incision lines will approximate with minimal tension. The patient should then lie supine to confirm markings and the ability to approximate without tension. The marking become fusiform shape. Prior scars should be included in the resection if possible. No muscle plication during panniculectomy.

Ethical Consideration: The Institutional Review Board [IRB] of the School of Medicine at Al Azhar University gave its approval after reviewing the study protocol, participants gave their informed verbal agreement, and their anonymity was protected at all times.

Statistical analysis: Data were collected, coded, entered and analyzed using Microsoft Excel software. Data were then imported into Statistical Package for the Social Sciences [SPSS version 21.0] [Statistical Package for the Social Sciences] software for analysis. According to the type of data qualitative represent as number and percentage, quantitative continues group represent by mean \pm SD, the following tests were used to test differences for significance; Difference and association of qualitative variable by Chi square test [X²]. Differences between quantitative independent groups by t test. P value was set at <0.05 for significant results.

RESULTS

There was no statistically significant difference [p= 0.141] between the ages of the

people in the Panniculectomy with CS and the CS only groups; the former had a mean SD of 30.48 ± 6.4 , while the latter had a mean SD of 27.96 ± 5.47 [Table 1].

Hemoglobin in Panniculectomy with CS group ranged from 10 to 13 with mean \pm SD = 10.72 ± 0.75 while in CS only group the HB ranged from 10 to 13 with mean \pm SD = 10.92 ± 0.87 with no statistically significant difference [p= 0.37] among the 2 groups [Table 2].

Post-operative hemoglobin in CS with Panniculectomy group ranged from 9.3 to 12.1 with mean \pm SD = 10.26 ± 0.68 while in CS only group the HB post operation ranged from 9.3 to 12.1 with mean \pm SD = 10.38 ± 0.79 with no statistically significant difference [p= 0.555] among the 2 groups [Table 3].

Panniculectomy plus CS patients had a mean body mass index [BMI] of 32.27 ± 2.98 [range: 29.1 to 38.6], whereas those in the CS-only group had a BMI of 30.62 ± 2.94 [range: 26.7% to 37.4%], with no significant difference [p= 0.08] [Table 4].

Operation time in Panniculectomy with CS group ranged from 61 to 88 with mean \pm SD = 75.24 ± 6.88 while in CS only group the operation time ranged from 46 to 60 with mean \pm SD = 52.72 ± 3.46 with highly statistically significant difference [p= <.001] among the two groups [Table 5].

Two patients in the panniculectomy with cs group and one patient in the cs only group experienced complications due to superficial surgical site infections, although this did not differ significantly between the two groups [p= 0.552]. There was no requirement for supplementary sutures in any of the three cases. [Table 6].

Table [1]: Demographic characteristics among the study groups.

Age [years]	Panniculectomy with CS group [n = 25]	CS only group [n = 25]	Test	p
Mean \pm SD.	30.48 \pm 6.4	27.96 \pm 5.47	t = 1.497	0.141
Median [IQR]	30 [25 - 35]	28 [23 - 31]		
Range [Min-Max]	20 [20 - 40]	17 [20 - 37]		

Table [2]: Measurements of hemoglobin pre operation among the study groups.

Pre-operative hemoglobin [g/dl]	Panniculectomy with CS group [n = 25]	CS only group [n = 25]	Test	p
Mean \pm SD.	10.72 \pm 0.75	10.92 \pm 0.87	t = -0.905	0.37
Median [IQR]	10.4 [10.3 - 11]	10.6 [10.3 - 11.5]		
Range [Min-Max]	3 [10 - 13]	3 [10 - 13]		

Table [3]: Measurements of hemoglobin post operation among the study groups

Post-operative hemoglobin [g/dl]	Panniculectomy with CS group [n = 25]	CS only group [n = 25]	Test	p
Mean \pm SD.	10.26 \pm 0.68	10.38 \pm 0.79	t = -0.595	0.555
Median [IQR]	10 [9.8 - 10.6]	10 [9.8 - 11]		
Range [Min-Max]	2.8 [9.3 - 12.1]	2.8 [9.3 - 12.1]		

Table [4]: Measurements of BMI among the study groups

Body Mass Index	Panniculectomy with CS group [n = 25]	CS only group [n = 25]	Test	p
Mean \pm SD.	32.27 \pm 2.98	30.62 \pm 2.94	t = 1.798	0.08
Median [IQR]	32.3 [29.48 - 33.58]	30.1 [28 - 31.5]		
Range [Min-Max]	9.5 [29.1 - 38.6]	10.7 [26.7 - 37.4]		

Table [5]: Operation time among the study groups

Operation time [min]	Panniculectomy with CS group [n = 25]	CS only group [n = 25]	Test	p
Mean \pm SD.	75.24 \pm 6.88	52.72 \pm 3.46	t = 14.62	<0.001
Median [IQR]	76 [73 - 79]	53 [51 - 55]		
Range [Min-Max]	27 [61 - 88]	14 [46 - 60]		

Table [6]: Wound Complications among the study groups

Wound Complications	Panniculectomy with CS group [n = 25]		CS only group [n = 25]		Test	p
	No.	%	No.	%		
Positive	2	8%	1	4%	X ² = 0.355	0.552
Negative	23	92%	24	96%		

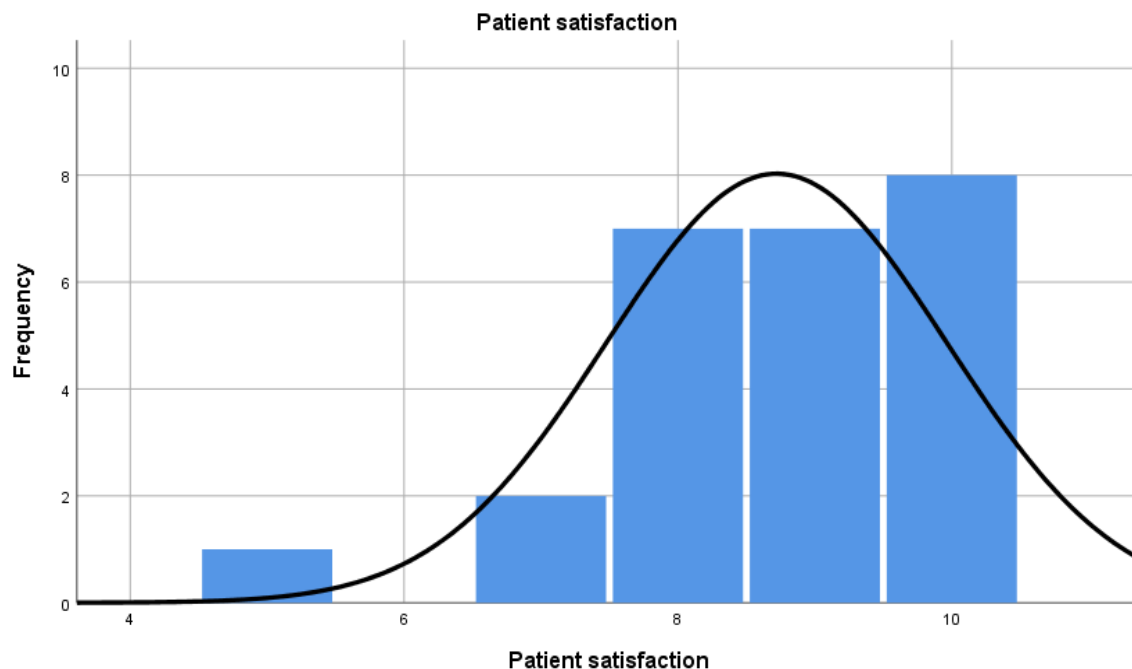
**Figure [1]:** Histogram showing Panniculectomy with CS group data regarding Patient satisfaction.



Figure [2]: Pre-operative [before panniculectomy]



Figure [3]: Post-operative [after panniculectomy]



Figure [4]: Patch of skin and fat removed(panniculus).

DISCUSSION

Many pregnant women choose a panniculectomy at the time of their cesarean section [CS] in order to get rid of the excess skin and stretch marks that inevitably appear. The abdomen of a pregnant woman is significantly larger and rounder than that of a nonpregnant person. Understanding the transformation of the abdominal wall in the final stages of pregnancy is important [7].

CS is performed for maternal or fetal causes, or both. The leading indications for CS are previous CS, malpresentation, labor dystocia, multiple gestation, and fetal distress. These causes account for 90% of all cesarean deliveries. CS causes a scar in the lower transverse abdomen with degrees of weakness of the abdominal wall muscles, especially if repeated. These changes lead directly to developing of a disfigured abdominal contour [8,9].

In the current study, the age varied from 20 to 40 in the Panniculectomy with CS group, with a mean of 30.48 ± 6.4 , while it was 20 to 37 in the CS only group, with a mean of 27.96 ± 5.47 , and there was no statistically significant difference between the two groups [$p=0.141$].

Elsharkawy et al. [10] tried to do the same thing by comparing panniculectomy and cesarean section. The 66 participants were split evenly between two groups: those who had elective CS alone [33 in Group C] and those who received panniculectomy plus CS [33 in Group C+P]. None of the demographic variables [such as age, lab values, or body mass index] were significantly different between the two groups.

Regarding measurements of preoperative Hb among the study groups, HB in Panniculectomy with CS group ranged from 10 to 13 with mean \pm SD = 10.72 ± 0.75 while in CS only group the Hb extended from 10 to 13 with mean \pm SD = 10.92 ± 0.87 with no statistically significant difference [$p=0.37$] among the two groups. Postoperatively, Hb in Panniculectomy with CS group ranged from 9.3 to 12.1 with mean \pm SD = 10.26 ± 0.68 while in CS only group, the Hb post operation ranged from 9.3 to 12.1 with mean \pm SD = 10.38 ± 0.79 with no statistically significant difference [$p=0.555$] amongst the two groups.

Our results showed that both procedures resulted in similar and non-significant impact on Hb level. However, no studies in literature have

estimated the change in Hb in patients underwent Panniculectomy with CS. **Żyła et al.** [11] reported that the utilization of panniculectomy in morbidly obese cases undergoing gynecological surgery resulted in non-significant change in Hb which support our results.

The present research revealed that the operative time in Panniculectomy with CS group ranged from 30 to 47 with mean \pm SD = 38.84 ± 4.72 while in CS only group the operation time ranged from 32 to 49 with mean \pm SD = 38.72 ± 4.22 with no statistically significant difference [$p=0.925$] between the two groups. In agreement with the current research **Fennimore et al.** [12] revealed that there was no difference amongst the two groups in the operative time.

On the other hand, **Elsharkawy et al.** [10] found a significant difference in operating time and intraoperative hemorrhage between the groups they compared. Surgery took [43.25 ± 8.46 [min]] in Group [C] and [126.73 ± 15.32 [min]] in Group [C+P], while intraoperative bleeding was [82.41 ± 25.36 [cc]] in Group [C] and [107.5 ± 36.72 [cc]] in Group [C+P]. Seven patients in Group [C] and more than a dozen patients in Group [C+P] required a blood transfusion. Possible causes for this discrepancy between our findings and those of others include differences in sample size and in the incidence of intraoperative hemorrhage.

Regarding wound complications, there wasn't a significant difference amongst the two studied groups [$p=0.552$]. Our findings are consistent with those of **Fennimore et al.** [12], who found that 3% [$n=1$] of patients who underwent surgery experienced an infection that necessitated readmission. Twenty-four percent [$n=7$] of the control group experienced an operating site infection [$p=0.026$], and ten percent [$n=3$] of them required readmission [$p=0.35$]. Neither group had significantly different rates of intraoperative blood loss or birth times for their infants following delivery.

In addition, **Abdelaty and Taha** [7] stated that nine patients, or eighteen percent, experienced wound infection, and three patients, or six percent, experienced wound dehiscence [gapped]. According to the results of the culture and sensitivity tests, the infected wound was treated with frequent dressing changes and antibiotics, while the gaping wound was closed with secondary sutures.

Regarding patient satisfaction among the Panniculectomy with CS group it was ranged from 5 to 10 with mean \pm SD = 8.72 ± 1.24 . To counter this, Elsharkawy *et al.* [10] stated that both patients and surgeons were pleased with the cosmetic results. Surgeon satisfaction was higher in Group [C] [31 cases, 94%] than in Group [C+P] [24 instances, 72.7%], but patient satisfaction was higher in Group [C] [15 cases, 45.5%].

Abdominal skin necrosis was the most serious complication despite limited undermining of the abdominal flaps. This may be explained by intraoperative blood loss during panniculectomy and the normal blood loss of CS, leading to postoperative anemia, which may be an aggravating factor. Ischemia reperfusion injury could be a contributing factor [5].

Conclusion: There's an argument that doing both operations at once would save time and money. It does not appear to be in the best interests of most patients, however, due to the higher risk of postoperative complications and unesthetic outcomes. More research is needed to determine how the surgery affects long-term recovery, future obstetric outcomes, and other medical issues. Further research is needed to corroborate our findings and uncover risk factors of poor outcome; ideally, this would involve comparison studies with bigger sample sizes and longer follow-up periods.

Conflict of Interest and Financial Disclosure: None.

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