

Post Abdominoplasty Seroma Reduction with Fibrin Sealant Use

By: Amr Abd El Monem El-Naggary MD.Fayoum University,Sherif Maher Abo El Maty
MRCS,MSC Fayoum University.

Abstract

Seroma formation is a common postoperative complication in the field of plastic and reconstructive surgery, resulting in significant patient morbidity. The incidence of seromas is particularly high in abdominoplasty where it is reported to occur in 10% to 57% of the patients.[3]

The origin of postabdominoplasty seroma fluid is not well understood, and studies on its cause and composition are scarce. The name serum (Latin for “whey”) and oma (root for “tumor”), meaning “tumor from the collection of serum.[4]

Fibrin glue (FG) is used to control bleeding, to adhere tissues together, and to seal tissue defects. FG is prepared from platelet-rich plasma or by mixing concentrated fibrinogen solutions with thrombin. Concentrated fibrinogen solutions are produced by cryoprecipitation or by chemical precipitation of plasma.⁴

In this study we compared the difference in post abdominoplasty results using the fibrin glue and without using it. Twenty patients were divided in two groups,20 patients in each group ,abdominoplasty was done using the fibrin sealant in the first group and traditional abdominoplasty was done without using the fibrin sealantin the second group.

We compared the amount of the fluid collected in the drains and the period needed for drain removal and compared the rate of complications.Our results showed superior effect of fibrin glue for reduction of post abdominoplasty seroma with higher efficacy.

Key Words:*seroma ,fibrin glue,abdomino plasty*

Patient and Method:

-Inclusion criteria: Patients included in this study were between 30-50 years of age, their BMI was between 25-35kg/m²,and patients complaining of Presence of redundant fatty apron.

*-Exclusion criteria :*The patients age below 20 or above 50 years are

excluded BMI below 25 kg/m², or above 35 kg/m², were excluded . Other patients were excluded if smokers or presence of chronic illness as DM or hypertension or abnormalities in liver or kidney functions and bleeding tendency.

The study was done in Fayoum university from February 2008 to June 2010 by the authors.

Twenty patients were divided in two groups:

Group1: abdominoplasty was done using the fibrin sealant.

Group2: traditional abdominoplasty was done without using the fibrin sealant.

The collected data included: the age, the sex, the height, the weight, the Body Mass Index (BMI), previous abdominal surgery, the weight of resected apron, the amount secreted in the drains (drainage total) and, the time needed for drains removal, occurrence of complications, tobacco use.

Abdominoplasty was done by the authors for resection of an abdominal fatty apron in patients with good general condition.

In all cases standard abdominoplasties were performed including the marking and all patients under general anesthesia with elevation of abdominal flaps just above the muscles and resection of the redundant part. In group II, after completing the resection of the lower redundant part of the abdominal flap and positioning the umbilicus, the sealant spray was applied while an assistant held each side of the abdominal flap (Fig.1). The flap was

brought down, compression applied for five minutes over the abdominal flap (Fig.2). Final skin closure was completed at the end of the compression period. Small ¼ inch suction drains were left at each end of the skin closure.

The fibrin glue obtained by mixing 10 cc of cryoprecipitate from the hospital blood bank and 1 ml. of activated thrombin mixed together for 30 seconds and sprayed on the abdominal wall.



Fig1 :spraying the fibrin glue.



Fig2 Compression on the abdominal flap.

Concentrated fibrinogen solutions are produced by cryoprecipitation (fig.3a,b) or by chemical precipitation of plasma.



Fig.3a cryoprecipitate is used after cross matching



Fig 3b:equipments used for preparation of fibrin glue.

Post operative the amount of fluids collected in the drains are measured every 12 h until the drains are removed. The need for post operative stay at home is evaluated ,The re-examination period amounted 12 weeks. The presence of seroma was evaluated by the use of ultrasound and the appearance of a sonographic provable liquid aggregation after distance of the drainages was evaluated as a seroma.

Age and BMI of the patients are presented in the following tables:

Age	Group 1	Group 2
mean	38.6	40.2
From 20-25	0	1
From 25-30	2	2
From 30-35	4	3
From 35-40	6	4
From 40-45	4	6
From 45-50	2	3
Above 50	2	1

BMI	Group 1	Group 2
mean	32.6	32.9
BMI 25-27	2	3
BMI 27-29	3	2
BMI 29-31	3	2
BMI 31-33	8	8
BMI 33-35	4	5

RESULTS:

Drains out come in both groups in first 3 days:

Mean drain output	Group 1	Group 2
Drain 1st 12h	73	164
Drain 2nd 12 h	42	112
Drain 3rd 12 h	35	105
Drain 4th 12 h	34	92
Drain 5th 12 h	30	71
Drain 6th 12 h	27	59
Total in drains	241	603

Our results indicated a reduction in seroma formation and decreased drain output Drains were removed an average of 3 days post operative in experimental groups with the fibrin glue use in comparison with the traditional way in which the drain was removed after 5 to 6 days.

Regarding the complications the rate was less in the first group including hematoma formation in one case in the first group and seroma in one case, on the other hand there was seroma formation in 4 cases in the second group and wound dehiscence in 2 cases..

Complications	Group1	Group2
Hematoma	1	0
Seroma	1	4
Wound dehiscence	0	2

Discussion:

Estimates of incidences of seroma vary from 1% to 57%, with an accepted standard of 10%. Usually, it is a self-limited phenomenon, but occasionally it may cause significant problems.^[7]

Many trials were done to reduce the incidence of seroma following abdominoplasty as adequate placement of drains and leaving them in place until the drainage decreases to less than 50 cc/day is recommended, complete bed rest after the operation. Elastic compression garments and the use of quilting sutures during surgery described by **Baroudi R** et al 1996,^[1] and fibrin glue have also been used to prevent this problem.

The higher incidence rates are reported in obese patients, in men, and when liposuction is performed in addition to the surgery. Since fibrin sealants have been reported to decrease the incidence of seromas and

hematomas in various types of surgery, extending its use to plastic surgery procedures known to have these problems, is reasonable. ^[6]

Norma C. et al 2005 tried to reduce the incidence of seromas in abdominoplasty we evaluated the use of a commercial fibrin sealant (Tisseel, Baxter Corporation, Deerfield, IL) in a clinical study. Ninety-one patients underwent abdominoplasty performed by one surgeon, and the potential benefit of using a fibrin sealant was analyzed. Patients were randomized prior to surgery into one of two groups: in group I (n=43) the sealant was not used, and in group II (n=48) the aerosolized sealant was used. The results of the study demonstrated that the groups were not significantly different in mean age (39 vs. 40), body mass index (26 vs. 26), and amount of tissue removed (990 grams vs. 928 grams). Prolonged drainage and seromas, however, were significantly reduced by use of the fibrin sealant.

	Group (Control) I	Group (Tisseel) II
Drainage > 3 days	30%	5%
Seroma/Hematoma	19%	4%

(Norma C et.al., 2005.)

Burt M. et al 2006 tried the use of fibrin sealant on 72 patients evenly divided into three groups was studied. An aerosol sealant (Tisseel:Baxter) and a topical viscous sealant were (Vitagel:Orthovita) was compared against controls and came with the

following results: their results indicated a (1) reduction in seroma formation (2) decreased drain output with a statistical P value (<0.05; (3) no difference in aerosol versus topical applications. Drains were removed an average of two days earlier in experimental groups.^[2]

Our results showed superior effect of fibrin glue for reduction of post abdominoplasty seroma with higher efficacy.

CONCLUSION: We recommend fibrin sealant as an adjunct in abdominoplasty leading to remarkable decrease in rate of seroma formation and earlier drain removal by one week than the traditional method and discuss future studies and applications in plastic surgery.

The use of fibrin sealant is a safe and simple procedure and has a low cost that can solve the problem of seroma formation in abdominoplasty patients but it increased the risk of small haematoma formation due to increasing the clotting of blood in the dead space and also it may lead to obstruction of the drains and blood clotting in them so continuous care and observation of the drains should be done.

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