

Ultrasound-Assisted (Vaser) Liposuction For Gynecomastia, Does It Add To The Skin Remodeling?

Ashraf El-Sebaie Mohamed, M.D. # and Amr Abdel-Monem El-Naggary M.D. ##

Department of surgery, plastic surgery unit. Cairo University.

Department of surgery. Fayoum University.

Abstract

Introduction:

Gynaecomastia is a benign enlargement of male breast with a prevalence of 38% in young patients. VASER-assisted high-definition liposculpture is an aggressive approach to body contouring that enables the surgeon to perform superficial liposculpture to define the 3-dimensional surface musculature. However, it is a difficult and time-consuming procedure with a high learning curve that is appropriate only for highly experienced surgeons.

Patients and methods:

Twenty patients of fatty gynaecomastia Simon grade II-B or III were operated upon between March 2008 and March 2010. Patients included in this study were between 20-50 years of age. The first stage of the operation consists of infiltration of the tumescence anesthesia, then debulking mode for fat emulsification, then aspiration, at last the step of the © mode in the device to stretch the redundant skin usually for 30 minutes. Closure is done without drainage. Finally elastic garment is used, which is maintained for 4-8 weeks.

Results:

The time needed with the Vaser liposuction (150-180 minutes) was almost the double time. The post operative pain was remarkably decreased in patients with Vaser use. The complications were minor and required no surgical intervention.

Conclusion:

Ultrasound-assisted (VASER) lipoplasty is a safe and effective technique for treatment of gynaecomastia, despite the amount of breast tissue and the degree of breast ptosis associated. Results have been extremely gratifying for patients and the surgeon.

The main difference of VASER is the skin tightening mode (c mode) that allows plastic surgeons to go for superficial liposuction that helps for marked skin redistribution and stretching, even in grade III & II-B cases.

Key words: Gynecomastia, Ultra-sound assisted liposuction (Vaser).

Introduction

Gynaecomastia means abnormally large breasts of men. This benign enlargement of male breast has a prevalence of 38% in young patients. Gynaecomastia is a common condition in adolescent males, 10% of them are burdened with a social handicap that causes a complex shame, and puts the relationship of the patient with the surrounding community at risk.⁽¹⁾

This problem may be caused by an increase in the effective oestrogen-testosterone ratio, which can be either physiological or pathological. There are several potential causes of gynaecomastia, including; puberty, steroid abuse, obesity, tumours, genetic disorders, chronic liver diseases, side effect of many drugs, castration, klinefelter syndrome, Gilbert syndrome and aging.⁽²⁾

Male gynaecomastia can be pure, fatty, or mixed. The pure type is exclusively glandular type hypertrophy due to overgrowth of the gland during the puberty period, connected to temporary impairment of male-female hormones. The fatty type is predominant in younger patients, with problems of overweight or obesity during their growth. Obesity is becoming a severe problem in the more advanced and accidental countries. The "mixed" type is probably the commonest in clinical practice to be found.⁽³⁾

Mild breast hypertrophy is combined with excess of local fat deposition typically in the younger male patient with a slight hormone-related breast hypertrophy that presents with a tendency to overweight, increasing the fat deposits in the thorax and mammary region together with an increase of the abdominal panniculus. The gynoid type with associated obesity can be treated with UAL to the breast and abdominal contouring can also be utilized in elderly. ⁽³⁾

The options of treatment are medical therapy or surgical treatment, many techniques are available for surgical correction of gynaecomastia; non scarring sparing methods are preferred. ⁽⁴⁾The minimally invasive therapy by using liposuction for the treatment of the fatty gynaecomastia, particularly gynaecomastia Simon grade one and two (Table 1), is much preferred as the males usually are more conscious about scarring in the chest area, in addition avoiding of the several side effects of open surgery as wound infection, long recovery period and ischemia of nipple and areola complex. ⁽⁵⁾

Grade 1	Is minor but visible breast enlargement without skin redundancy
Grade 2 A	Is moderate breast enlargement without skin redundancy.
Grade 2 B	Is moderate breast enlargement with minor skin redundancy.
Grade 3	Is gross breast enlargement with skin redundancy that simulates a pendulous female breast.

Table 1 : A classification described by Simon in 1973 groups the patients into categories according to the size of the gynaecomastia. ⁽⁶⁾

Massaging the skin in general either manually or by computerized machines, is very helpful for the enhancement of the skin blood supply and hence the elasticity and power of contraction following its expansion, even for a long time. ⁽⁷⁾

Aim of the work:

The aim of this work is to treat the fatty gynaecomastia grade III and Grade II B by Vaser lipolysis system and applying skin tightening mode at the end of the operation to help skin remodelling by observing the degree of skin excess 6 months postoperatively.

Patients and methods:

Twenty patients of fatty gynaecomastia Simon grade II-B or III were operated upon between March 2008 and March 2010. Patients included in this study were between 20-50 years of age; their BMI was between 25-40 kg/m². Ten cases were Simon grade II-B, of fatty gynaecomastia. And the other ten patients are of grade III. patients aged below 20 years or above 50 years , BMI below 25 kg/m², or above 40 kg/m², were excluded . Other patients were excluded due to presence of chronic illness as DM or hypertension or abnormalities in liver or kidney functions and bleeding tendency.

Patient evaluation was done by; full medical history of the patient, routine laboratory tests; including CBC, AST, ALT, creatinine, fasting blood sugar, prothrombin time and concentration.

Surgical technique:

Vaser liposuction (figure 1) was applied to the twenty male patients presented with gynecomastia. With a 1.0-cm skin incision at the inframammary crease; it is possible to treat all the male breast tissue. Infusion of tumescence Klein solution is mandatory in these cases to allow ultrasound energy to be delivered efficaciously. A typical Klein solution for pure local anesthesia has been modified as follows:

1,000ml of Ringer's lactate, 1mg of epinephrine, 500–1,000 mg of lidocaine. The fibrosis of the male breast often requires a higher concentration of local anesthesia in order to be really effective ⁽⁸⁾.



Figure 1



Figure 2

Figure 1: VASER lipolysis system from Sound Surgical Technologies (Louisville, CO).

Figure 2: VASER probes of 3.7, 2.9, and 2.2 mm with two grooves.

The technical advancements of Vaser in comparison with the previous technologies are as follows:

1. Power of the device that is nearly half of the previous devices. This reduced consistently the rate of complication connected with an excess of unnecessary energy utilized in the past ⁽⁹⁾
2. Efficiency of the device, connected with the new solid probes that are all grooved. One, two, and three grooves are located at the tip of the shaft increasing the surface of emission of the US energy, which means more fat emulsification in unit of time.
3. Optimization of power to prevent excess US.
4. Role of pulsed delivery of US energy that cuts by 50% the energy delivered in the unit of time, thereby decreasing unnecessary power, which rather becomes heat ⁽¹⁰⁾
5. Marked reduction of post operative oedema.
6. Decrease the pain remarkably postoperative.

The first stage of the operation consists of infiltration of the tumescence anesthesia. From 500 to 1.500 ml of tumescence solution, depending on the breast size and the extent of the fatty component, is necessary to obtain a real super wet tumescence in the thorax. After completing the infiltration, the “port” of entry is stopped with a new device. This skin port protector includes a stopper, which prevents the

fluids from refluxing back. It is necessary to wait for between 20 - 30 min to allow for the local anaesthesia and the adrenaline to be effective.

After deep and superficial infiltration, emulsification was performed using VASER technology in continuous mode for high debulking and in pulsed mode at lower power for more delicate areas and the immediate sub-dermal plane. Debulking was performed using ventilated cannulas, beginning in the deep layers and continuing to the mid-lamellar layer. Superficial emulsification was performed to define the relevant anatomy for the muscle groups in each treatment area. Transitioning was then performed to define the superficial anatomy landmarks by debulking some of the remaining fat over the muscles.

With the VASER pulsating device (Sound Surgical, Denver, CO, USA), we often utilize the 3.7-mm titanium cannula at 70% of the total power (**Figure 2**). The grooves on the lateral part of the tip of the solid probes increase the efficacy of the system. The number of the grooves (two to three) depends on the kind of tissue encountered. When utilizing the Sculpture ultrasound device, we place the total power setting at 55–60% of the total, and utilize the 5.1-mm solid titanium probe.⁽¹¹⁾ The amount of fibro-fatty tissue which can be emulsified is variable and 100–200 ml of fat is obtainable in 2–3 min of cavitation, with both devices.

After the application of ultrasound energy (**Figure 3-a**) for the hypertrophy of the gland, the “cleaning” of the emulsified, fragmented tissues begins. Normally, the emulsion that flows away and is aspirated is clear, yellow, with really small blood content. Every surgeon who has experienced the “bloody” fibrotic male gland well understands the advantage of a smooth, bloodless procedure, with nice contouring of the thorax not just limited to the glandular tissue, but also extended to the lateral axillary component that is often hypertrophic.

At the end of surgery, manual remodeling of the region is required to check symmetry, new NAC position, and NAC projection, in this step we use the © mode in the device to stretch the redundant skin usually for 30 minutes (figure 3-b) . Closure is done without drainage. Finally elastic garment is used, which is maintained for 4–8 weeks.

Patients are examined for degree of bruises or ecchymosis on the 5th day postoperatively, operative time, postoperative pain, postoperative oedema, degree of redundancy of skin and the blood content of the aspirate for that patients are photographed at 5th day, 10th day, 3 wks then after 2 months, and 6 months postoperatively. Also complications are noted.



3-a



3-b

Figure 3: a- Debulking mode for emulsification of breast tissue and fat which is done in layer from deep to superficial. b- Application of c-mode to stretch the redundant skin

Postoperative care:

Daily use of collagen repairing creams (after 5 days of pressure garment application), vitamin C capsules and pressure vests.

Two weeks after surgery, a cycle of intensive massaging with LPG is begun twice a week, for smoothing and softening the local edema and fibrosis.

Results

Twenty patients of fatty gynaecomastia, 10 patients were grade II-B and 10 cases were grade III were operated upon between March 2008 and March 2010. Patients included in this study were between 20-50 years of age. All cases had bilateral gynaecomastia with 12 cases of them had significant difference in size between both sides.

The post operative pain was remarkably decreased in patients with Vaser use and the need for post operative stay was less than patients with traditional liposuction. The skin redundancy improved in patients with ultrasound usage and the oedema was less than patients with the traditional liposuction.

The time needed with the Vaser liposuction (150-180 minutes) was almost the double time needed with the traditional way due to the addition of 2 steps, the first was fat emulsification (fat emulsification mode) with ultrasound and the second for skin tightening (skin tightening mode). All the patients had minimal bruises and swelling in the immediate post operative period, which was resolved over the following 10-14 days post operatively.

During the follow up period the encountered complications following the procedure (**Table 2**) were minor and required no surgical intervention There were no haematomas, infection or other early postoperative complications apart from one case of seroma and moderate bruising in 3 cases. Late complications included slowly resolving hypoesthesia in 2 cases, residual lumps in 2 patients (belonging to Simon grade III group) who had palpable irregularities in the liposuction area ,which were improved completely with the post operative massage over 3 months. No case of skin burns or skin necrosis was observed in our experience. Local areas of induration were found in 3 cases due to localized fibrosis is due to an internal small, limited burn of the fibro-fatty tissue. An impairment of the symmetry of the two breasts may still be present at the end of surgery was encountered in 2 cases , usually one month after, when the re-absorption of the edema is completed.

Complication	Number of cases
Haematomas	-
Seromas	1
Infection	-
Moderate bruising	3
Hypoesthesia	2
Residual lumps and irregularities	3
Skin burn	-
Skin necrosis	-
Breast asymmetry	2
Local area of induration	3

Table 2 postoperative complications, and its incidence.

All the patients had improvement of the shape and contour of the chest area following the Vaser liposuction and none were dissatisfied with the results. (Figures 4 and 5)



A



B

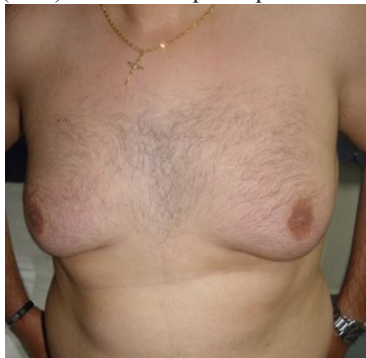


C



D

Figure 4: a case of 33 years old male with gynecomastia Simon grade II-B treated with VASER liposuction. (A-B) = preoperative anterior and lateral views. (C-D) = 4 months post operative same views.



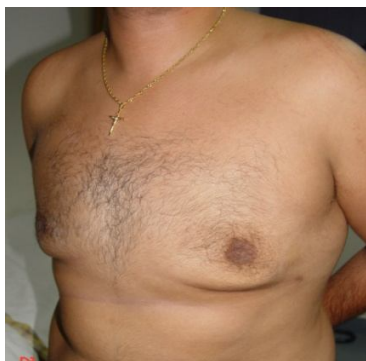
A



B



C



D



E



F

Figure 5 : a case of 31 years old male with grade III gynecomastia done by Vaser. A-B-C= preoperative views showing anterior ,oblique and lateral views. D-E-F= 6 months postoperatively same views showing the results with little skin redundancy.

Discussion

Alfredo et al, 2007 reported that, the use of VASER- assisted high-definition liposculpture does not only improve body contour but also to highlight the 3-dimensional muscular anatomy in a wide variety of patients. They concluded that VASER-assisted high-definition liposculpture is an aggressive approach to body contouring that enables the surgeon to perform superficial liposculpture to define the 3-dimensional surface musculature. However, it is a difficult and time-consuming procedure with a high learning curve that is appropriate only for highly experienced surgeons. ⁽¹³⁾

Di Giuseppe 2009 stated that Vaser is a solid technology with high standard of quality and safety. Three types of alarms are present in case of technical failure (never experienced in 4 years) or wrong use of probe or elevation of skin temperature. So burns, seroma, and skin slough that were a serious potential complication in previously used technologies are not really an issue with the present technology. In his experience two small hematomas that required aspiration and ten cases of residual central bud that required secondary touch up revision under local anesthesia occurred in a series of 200 patients. With the new technology, Vaser UAL is safe and effective in all forms of gynecomastia. ⁽¹⁴⁾

In our study the results showed same effect of Vaser on fatty gynaecomastia grade II-B and III as regards the marked reduction of post operative pain that necessitate analgesic use for only 2-3 days postoperatively.

The operative time is much prolonged in Vaser liposuction due to the addition of two more steps; the emulsification step and the skin tightening step. This usually doubles the time needed by conventional liposuction. Approximately the operative time was between 150-180 minutes.

In our study, the skin tightening showed in grade II-B and grade III cases was very remarkable after complete liposuction of the gynaecomastia. The final result was very satisfactory for both the surgeon and the patient. Even the little skin excess left in grade 3 cases was not a problem for all the 10 patients if compared to the marked chest wall scarring after different techniques of excisional surgery mentioned to correct huge gynaecomastia (grade II-B & III) cases. Needless to say that, this little skin excess is easily correctable by minor procedures with minimal scarring if asked for ,later on by highly demanding patients.

Vaser liposuction of gynaecomastia showed low rate of complications with higher efficacy. The incidence of seroma is low. Having always utilized a solid titanium probe with a high efficiency for cavitation and thus tissue fragmentation, the amount of thermal energy dispersed through the tissues is minimal, and does not cause long-lasting seroma or fluid accumulation. Seroma has to be attributed to an inside burn with consequent liquefaction of tissue, and interruption of lymphatics draining the area. Localized fibrosis is due to an internal small, limited burn of the fibro-fatty tissue. Postoperative early massaging and eventually an intra-lesional cortisone injection are advised to prevent and treat occasional areas of induration. An impairment of the symmetry of the 2 breasts may still be present at the end of surgery, or 1 month after, when the re-absorption of the edema is completed. When the asymmetry is conspicuous, the patient may require a secondary revision. Usually this is an office procedure, under local anesthesia. Loss of sensation has always been temporary, limited to the first 3–6 weeks after surgery. ⁽¹²⁾

In our study also the complications were minor and required no surgical intervention; there were no haematomas, infection or other early postoperative complications apart from one case of seroma and moderate bruising in 3 cases. Late complications included slowly resolving hypoesthesia in 2 cases, residual lumps in 2 patients (belonging to Simon grade III group) who had palpable irregularities in the liposuction area ,which were improved completely with the post operative massage over 3 months. No case of skin burns or skin necrosis was observed in our experience. Local areas of induration were found

in 3 cases due to localized fibrosis is due to an internal small, limited burn of the fibro-fatty tissue. An impairment of the symmetry of the two breasts may still be present at the end of surgery was encountered in 2 cases (appeared usually one month postoperative, when the re-absorption of the edema is completed).

Conclusion

Ultrasound-assisted (VASER) lipoplasty is a safe and effective technique for treatment of gynaecomastia, despite the amount of breast tissue and the degree of breast ptosis associated. Results have been extremely gratifying for patients and the surgeon.

The main difference of VASER is the skin tightening mode (c mode) that allows plastic surgeons to go for superficial liposuction that helps for marked skin redistribution and stretching, even in grade III & II-B cases.

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