BEAULI™

Breast Augmentation
and Reconstruction
by Lipotransfer

MADE IN GERMANY

PROTOCOL

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The BEAULI™ Protocol describes a method for autologous fat transfer and was developed after a series of pre-studies by Dr. Klaus Ueberreiter, Department of Plastic Surgery of the Asklepios Klinik Birkenwerder in 2008. It has been scientifically proven in a prospective, MRI controlled, multi-center clinical trial (Birkenwerder, Starnberg/Finckenstein and Rouen/Surlemont). Since 2010 it has been practiced in numerous centers – first as part of a study and then becoming an established routine procedure over the years.

1 General INFORMATION

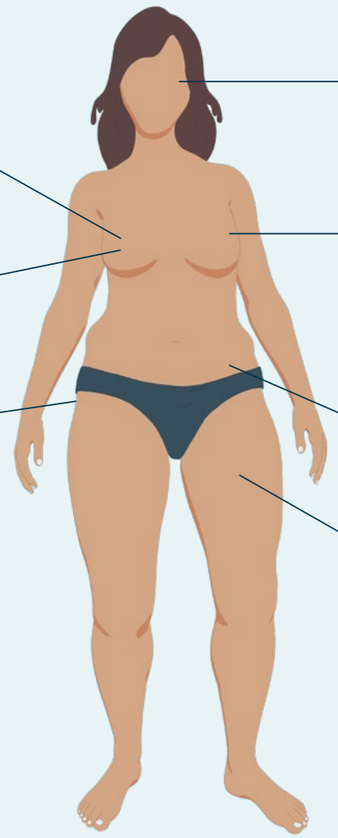
1. Successful transfer of fat has been described in literature since 1893 (Neuber) and has come a long way since the first methods were introduced. Today the harvesting of large quantities of fat in adequate quality is possible without long surgery hours.

2. Scientific studies have shown that the transferred fat cells should not exceed 1 mm in diameter to ensure their connection to the vascular system and their subsequent survival.

3. Smaller amounts of transferred fat per procedure ensure sufficient nutrition at the recipient site and successful retention rates.

The fat cell extraction by means of water-jet assisted technology yields harvested fat of consistent quality and small aliquots for immediate re-injection without additional centrifugation or washing processes. Therefore, the average surgery time with our method is around one hour.

1.1 *Indication* (SELECTION)



SUITABLE PATIENTS

- BMI 18 - 30
- Non-smokers
- Patients with lipodystrophy in the trunk region and smaller breasts

NON-SUITABLE PATIENTS

- BMI below 17 and above 30
- Lipedema diagnosis
- Smokers
- Desire for augmentation of more than one cup size in one session
- Undergoing cancer treatment
- High-risk patients (anesthesia)
- Diabetes mellitus (not or poorly controlled)

Considerations

As a rule of thumb, a harvest volume of about 600 ml supranatant fat in the LipoCollector® will yield about 250 ml per breast. As there still is some excess fluid from the aspiration included (15-30 %), the net amount of fat will be about 180 ml per breast in one transfer.

Considering a final survival rate of 80 %, this corresponds to 150 ml or **half a cup size per breast**. To achieve larger sizes the procedure can be repeated after three months.

The procedure is not recommended for women who desire the greatest possible breast augmentation in a **single surgical procedure**. Whereas women who benefit from liposuction and do not primarily wish a large breast augmentation are ideal candidates/patients.

1.2 PRE-OP EXAMINATION

- Gynecological breast examination (ultrasound) as a basis is recommended.
- Optional: mammography if patient is over 40 years old.

1.3 INFORMATION AND CONSENT

- General information about possible cyst formation or calcification.
- An increased risk of cancer has not been recorded to date.
- Possibility of dimples/irregularities forming at harvesting sites.

1.4 ANESTHESIA AND PRE-MEDICATION

- For primarily aesthetic augmentation, local anesthesia and sedation (e.g. Propofol).
- For breast reconstruction, particularly in combination with further procedures such as balancing reduction of the opposite breast or reconstruction of the nipple-areola complex, general anesthesia is recommended.
- For implant removal surgery with pronounced capsular fibrosis, general anesthesia.
- General pre-medication depending on the anesthetic to be chosen.
- Optional antibiotic prophylaxis (cephalosporine).

2 *Surgical* PROCEDURE

The body-jet® devices for water-jet assisted liposuction are an essential part of this surgery. A fine fan-shaped water-jet applied by the surgeon gently removes the fat cells from the connective tissue while the fat cells are simultaneously being aspirated under low suction by the same cannula. The gentle liposuction and the dimensions of the irrigation/aspiration cannula allow for the harvesting of viable fat clusters at the optimal size of <1 mm in diameter.

It is important to ensure that only small fat clusters are used for transfer. When injecting larger quantities into individual spots, it can lead to necrotic fat cells which cannot be absorbed and potentially result in the formation of oil cysts or calcifications. **The even distribution of the fatty tissue in thin layers in well-vascularized tissue is essential for the success of the procedure.** It is self-evident that this also implies a limit on the maximum transferred volume.

2.1 TECHNICAL PREPARATION

In addition to the body-jet® device a WAL (or Biofill) applicator and the LipoCollector® (or FillerCollector®) are required to harvest and collect the fat. A WAL (or Biofill) cannula of 3.8 mm RAPID should be used for the liposuction with the suction pressure set to -0.5 bar (500 mbar/ 375 mmHg).

The LipoCollector® has a filter basket that removes larger fibers and tissue strains from the aspirated fat. During harvesting of the fat, the fluid is continuously removed from the collector via a suction pipe. When the sufficient amount of fat is collected, the remaining fluid and oily debris are manually drained through the bottom valve while the fat is held back in the collector by a fine filter mesh.
The infiltration solution is dispensed according to the following formula: add 500 mg lidocaine and 1 ml Suprarenin (1:1000) to each liter of 0.9 % saline or Ringer solution.

Note

The use of at least 3-liter containers/bags of infiltration solution is recommended in order not to have to replace the bottles too frequently. 3 liters of solution is generally sufficient for an average breast augmentation. It is very important to pre-warm the solution to a temperature of 37 °C. This increases the patient‘s comfort, as well as preventing cooling and an additional loss of temperature-sensitive adipocytes.

2.2 PLANNING OF SURGERY/SURGERY DESIGN

- The aesthetic breast augmentation generally requires two fat grafts at an interval of at least three months in order to achieve a full cup size or more in increase.
- In case of a capsular fibrosis and implant removal, most patients are satisfied with a single transplant.
- Reconstruction after cancer may require several transplants
- For safety reasons buttocks should not be filled with more than 350/400 ml per side in one session.

The surgeon must consider beforehand how often lipofilling may be necessary and then plan the **areas for removal accordingly**. Extracting small quantities from all operating fields during each intervention is not recommended. It is much easier to decide on the operating fields for each particular surgery, e.g. first operation: liposuction of the abdomen and the hips, second operation: liposuction of the thighs. Ultimately, it is also the decision of the patient concerned.

3 *Fat Harvest* WITH LIPOSUCTION

3.1 INFILTRATION

After the stab incision, the 2.5 mm WAL (or Biofill) infiltration cannula is slowly pushed forward, **following the water-jet**. The **spray intensity (RANGE) for infiltration** should be set to **3-4 on the body-jet® and LONG, 3-4 on the body-jet® evo**. This yields the greatest infiltration depth of the fluid of about 4-5 cm. At a lower RANGE (1) the infiltration proceeds very slowly. It is absolutely vital to make sure that the water-jet penetrates a few centimeters into the tissue in order to anesthetize this zone, so that the cannula can subsequently be pushed forward into it. It results in discomfort for patients if the cannula is pushed forward first and then the water-jet is triggered. The infiltration should be done with **slow and steady movements**.

It is important to point out that the described procedure is not a standard tumescent technique but rather a base infiltration of the superficial and deep fatty tissue only. For example, between 300 and 500 ml of fluid are generally injected for the lower abdominal region.

The **total exposure time** of the injected fluid should be at least 10 to 20 minutes to ensure that the lidocaine and the suprarenine can take effect. This time is generally reached after the infiltration of the field to be suctioned is completed.

3.2 LIPOSUCTION

The simultaneous **rinsing even during suction** is a special feature of the water-jet assisted technique. For the purpose of harvesting fat, the spray (RANGE) set to **RANGE 1** is best and a **3.8 mm RAPID (honed)** WAL (or Biofill) **irrigation/aspiration cannula** should be used. The **suction is set to -0.5 bar** and activated when the cannula has already been inserted into the patient. In order to apply the suction, the opening (the bypass hole) on the hand piece must be closed. A fluctuation of up to a maximum of -0.6 bar is acceptable here.

In general, during the suction process the thumb should remain on the opening (the bypass hole) on the hand piece in order to **avoid large fluctuations of suction.**

Usually, the fat begins to be aspirated with the fluid and gathers in the LipoCollector® **after a few minutes.** As a rule of thumb, the harvesting takes between 15 and 45 minutes depending on the patient and training of the physician.

It is crucial to bear in mind that the fat is being collected for re-use and that, due to the small cannula diameter and the low suction, this process takes more time because of the careful approach in comparison to a simple liposuction when the fat is only being removed.

Note

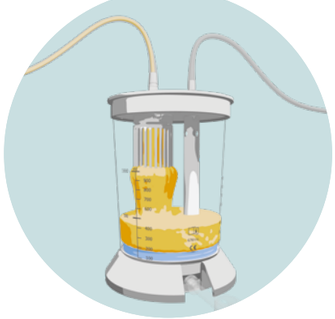
For bilateral breast augmentation approx. 600 ml fat should be collected.

3.3 EXPLANATORY VIDEO

A long-lasting result requires the fat to attach to the existing tissue, becoming part of it, and depends on several criteria such as the technique, quality of fat, and recipient site. Watch this video explaining how fat is characterized and what good fat quality means.

4 *Preparation* FOR RE-INJECTION

After having harvested enough fat and prior to the removal of the fat from the LipoCollector®, the tube attached to the lid on the PATIENT port of the LipoCollector® is removed. The tube connected to the SUCTION port is connected to the bottom valve. The suction must then be reduced to -0.4 bar to avoid folding of the filter mesh. First fluid, then oil will be drained. The process is finished when the fluid level in the container stops decreasing. **Leave the valve open but remove the tube! The yellow fluid draining contains only oil and no valuable cells!!!**



Note

It is helpful to remove the fat using 50 ml syringes initially and to arrange these in two even groups (one for each breast) on the operating table in an upright position. This avoids miscounting which could result in uneven quantities of fat being transferred. The upright position allows for an even further separation of the fat and fluid by sedimentation.

5 *Lipotransfer* TO THE BREAST

A base infiltration of the breast is always recommended. From the injection site the entire outer periphery of the breast is infiltrated with solution using the 2.5 mm WAL (or Biofill) infiltration cannula. Usually, about 100 ml of solution is sufficient.

The injection site for the BEAULI infiltration cannula should be about **2-4 cm below and lateral to the sub mammary fold.** It is important not to place the injection site too close to the sub mammary fold as it usually shifts caudally after the first or after the second transfer the latest. Incisions too close to the injection area can lead to leakage of the fatty tissue from the injection site and the closest area is thus sculpted with difficulty.

Once the **infiltration of the subcutaneous fatty tissue starts,** the cannula can almost always be seen through the skin and the resistance when moving the cannula is very low. The difference compared to the glandular tissue is easily felt as the cannula can only be advanced with great resistance here. In general, infiltration around the parenchyma is avoided but in selected cases fat can also be filled in here.

After filling the subcutaneous area, the closest rib should be felt for using the cannula and from there again to the next rib to be certain of being in the muscle tissue.

At this point, it is crucial to **proceed cautiously** to ensure that fat is not inadvertently injected below the ribs or the pleura is perforated.

In tight breasts infiltration under the skin can lead to skin elongation. If more ptosis correction is wanted in the larger part, the fat grafts should be placed retro-glandular/intra-muscular.

The process is completed when the breast is **filled firmly overall;** however, it should **not feel too hard. Adipocytes perish under pressure** and the result deteriorates.

6 *Post-Op Care* AND CHECKING RESULTS

The injection site is closed afterwards with a small plaster strip and a circular absorbent bandage is placed around the chest to **avoid further local cooling.** The bandage can be removed after one to two days. We recommend that patients **avoid wearing a bra completely if possible.** If this is not possible, a wide nursing bra or bikini without any compression is recommended.

Apart from the antibiotics mentioned above, no additional medication is administered. Generally, patients only experience pain at the suction site which is described as a sensation similar to muscle cramps after sport or light bruising. Standard analgesics such as paracetamol are therefore adequate. Patients are typically discharged about 4-5 hours after the procedure. The next check-up is usually scheduled 2-4 days after the procedure. The patients should leave all medical plasters on the injection sites for 10 days.

After about one week the swelling reaches its peak and then the breast volume gradually declines again. At the end of the fourth week the final volume is almost reached; there is, however, tissue loss of about 10 % up to three months afterwards. After the third month, the result is permanent. It is very **important to explain this development beforehand** to prevent disappointment due to post-operative dwindling volumes.

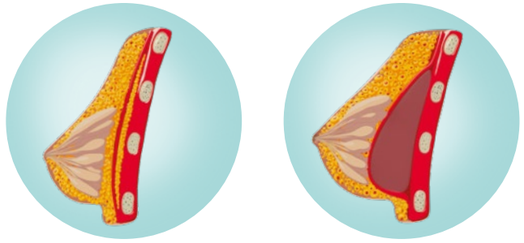
Note

Suggest to your patients to take a selfie after 10 days. That shows more or less the permanent result to be expected after a second lipofilling.

7 *Special Case –* REMOVAL OF SILICONE IMPLANTS

An ideal indication is the final removal of silicone and fat graft in one single session. Two or three possible layers of fat are appropriate for infiltration. Initially the pectoralis major muscle is filled under visual control. It is important that the capsule is not removed. Do not fill the capsule cavity! After filling the musculature, a drainage is inserted into the capsule in case some fat has accidentally been injected and after, the wound is closed using a multiple-layer closure technique. Only then the subcutaneous area is filled with fat, generally via an additional separate incision. The drainage can generally be removed after 2-4 days. The post-operative procedure is the same.

Autologous fat vs. synthetic implant



ADVANTAGES OF AUTOLOGOUS FAT

Natural feel and appearance: Autologous fat transfer uses the patient‘s own fat cells, making the augmented area feel more natural compared to implants. The fat integrates with surrounding tissues, providing a more natural look and feel.
Lower risk of complications: Since autologous fat transfer utilizes the patient‘s own tissue, there is a reduced risk of rejection, allergic reactions, or complications associated with foreign materials.

Long-term results: The transferred fat cells can potentially provide long-lasting results, as they become integrated into the body‘s tissues.
Versatility: Autologous fat transfer can be used in various areas of the body, including the breasts, buttocks, face, and hands, offering versatility in aesthetic procedures.
Dual benefit: In addition to enhancing the target area, autologous fat transfer also involves liposuction, allowing patients to remove unwanted fat from other areas of the body, such as the abdomen or thighs.

Ultimately, the choice between autologous fat transfer and silicone implants depends on factors such as patient preference, anatomical considerations, desired outcome, and the expertise of the surgeon.

8 *Trouble–* SHOOTING

During suction the **suction holes on the cannula can** occasionally **become blocked.** They are easily unblocked by grasping the hand piece with the closed opening (the bypass hole) with one hand, withdrawing the cannula just above the rubber ring with the other hand and then re-attaching it.

In cases where **insufficient suction** is generated, systematic problem diagnosis is necessary. Begin by briefly kinking the silicone tube that goes from the body-jet® device to the large suction container. If the suction increases as a result, the system is fully functional up to this point. Then the tube of the hydrophobic filter between the body-jet® device and the suction container is kinked as leaks can also occur here. In addition, a loose lid or, rarely, a crack in the outer container may also be the cause.

In those cases where **increased suction** is generated even though the opening of the bypass hole is not closed, systematic problem diagnosis is also necessary. Begin with detaching the tube between the LipoCollector® and the cannula. If the suction stays increased, then the problem lies with the LipoCollector®. If it decreases, the problem is most likely a blocked hand piece. Generally, with a little practice one develops a feel for whether the hand piece is clogged or not and to recognize this problem is a matter of routine. In the area of the LipoCollector®, the problems may be due to seals that are improperly placed/installed. It usually suffices to turn the lid of the LipoCollector® back and forth a little to achieve a tight seal.

Note

It is very important to ensure that the LipoCollector® is well fixed, preferably by taping the tubes to the table, to prevent it accidentally tipping over.

Your Notes

Contact

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For more information on the products used for water-jet assisted lipoharvesting and fat transfer, please contact:

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