



# Injection Lipolysis for Effective Reduction of Localized Fat in Place of Minor Surgical Lipoplasty

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**Background:** The use of injections to reduce localized fat deposits, first discovered in Italy in the 1980s, was popularized in South America and further developed by the author.

**Objective:** The objective of this study was to demonstrate the efficacy of injection lipolysis in the reduction of localized fat deposits.

**Methods:** A study group of 441 patients received from 1 to 4 injections of a phosphatidylcholine mixture developed by the author for treatment of localized fat deposits in the upper and lower abdomen, hips, thighs, upper arms, and face.

**Results:** After treatment with injection lipolysis of up to 100 mL of injectable mixture, containing a maximum of 2500 mg phosphatidylcholine, fat deposits showed an average circumferential reduction per application f.i. upper belly 3.7 cm, lower belly 3.9 cm, thighs 1.9 cm, upper arms 1.6 cm. Very good success was seen in facial treatments. No patient showed irregularities, dimples or any serious side effect after treatment. No re-enlargement of fat deposits was reported during the time of the study.

**Conclusions:** All patients showed remarkable reductions of fat deposits treated with injection lipolysis. Using the correct technique, injection lipolysis is a safe and efficacious alternative to lipoplasty on smaller areas for patients objecting to, or unable to undergo, surgery. It is not a replacement for a necessary change of lifestyle, nor is it a method of weight reduction or a treatment for obesity. The ideal patient is one with small to medium fat deposits that cannot be reduced by exercise and diet. (Aesthetic Surg J 2006;26:125-130.)

Although lipoplasty is still the most popular and effective method for correction of unwanted localized fat deposits, some patients object to or are unable to undergo surgery. Both scientific studies and clinical experience indicate that injection lipolysis provides a safe and efficacious means of correcting localized fat deposits, and may be used independent of surgery to treat minor to medium fat deposits, or in combination with surgery to improve the final surgical outcome. This study was undertaken to evaluate the efficacy of injection lipolysis as a nonsurgical treatment in such cases.

## Patients and Methods

The study included 441 patients (388 women, 53 men) between the ages of 18 and 83 years. Informed consent was obtained from all individuals. Preoperative evaluation confirmed that all patients were in good health and had no chronic disease or serious allergy.

Before treatment began, 27 of these patients (23 women, 4 men) were excluded because of general obesity or omental fat. These persons received counseling with respect to changing their lifestyle.

Each patient received treatment in a single specific area, with each course of treatment including 1 to 4 treatment sessions. The number of sessions was determined by the degree of satisfaction with results expressed by both the patient and the physician. The areas treated were the hips, waist, inner and outer thighs, knees, arms, calves, flanks, belly (upper, lower), buttocks, back, and male breast (Table 1). Any given treatment area could include more than one treatment site, such as the left and right hip or the upper and lower part of the belly. The size and location of the fat deposits were examined, and the circumference was measured. Care was taken to ensure that the measurement of fat deposits before and after application was conducted on exactly the same points. In addition,

**Table 1. Treatment areas**

Group	Area treated or problem	No. of patients treated
Group 1	Upper and lower abdomen	122
Group 2	Gluteofemoral adiposity	111
Group 3	Love handles, iliac crest	64
Group 4	Inner thigh	29
Group 5	Double chin and face	20
Group 6	Inner knee joints	20
Group 7	Buttocks (gluteal banana)	20
Group 8	Lipoma	12
Group 9	Other areas (cheeks, neck, male breast, upper arms, calves)	43

**Table 2. Number of treatment sessions**

Group	1 session	2 sessions	3 sessions	4 sessions
Group 1	17	88	15	2
Group 2	8	81	15	7
Group 3	17	44	3	—
Group 4	15	9	5	—
Group 5	6	14	—	—
Group 6	—	18	2	—
Group 7	—	20	—	—
Group 8	2	9	1	—
Group 9	3	36	2	2

**Table 3. Patient satisfaction**

Group	Very satisfied	Satisfied	Less satisfied
Group 1	110	11	1
Group 2	94	15	2
Group 3	57	6	1
Group 4	25	4	—
Group 5	19	1	—
Group 6	14	5	1
Group 7	19	1	—
Group 8	7	4	1
Group 9	35	8	—

before-and-after photographs were taken to document the changes resulting from the treatment.

The injections were administered in an outpatient setting with the patient lying on the operating table. Facial injections were administered with the patient in a sitting position. After the fat deposits were marked, the skin was

cleaned with alcohol. Using 27-gauge needles 1.2 cm long, a maximum injection lipolysis mixture of 100 mL with a maximum of 2500 mg phosphatidylcholine was injected into the fat deposits, following a multi-injection pattern according to the shape of the fat deposit. The amounts of injection lipolysis injectable mixture that were injected into any single fat deposit ranged between 40 and 100 mL per application, according to the individual need of the patient and the extension of the treated area. One injection contained 0.5 mL of mixture administered at a depth of 12 mm, 1.5 cm apart.

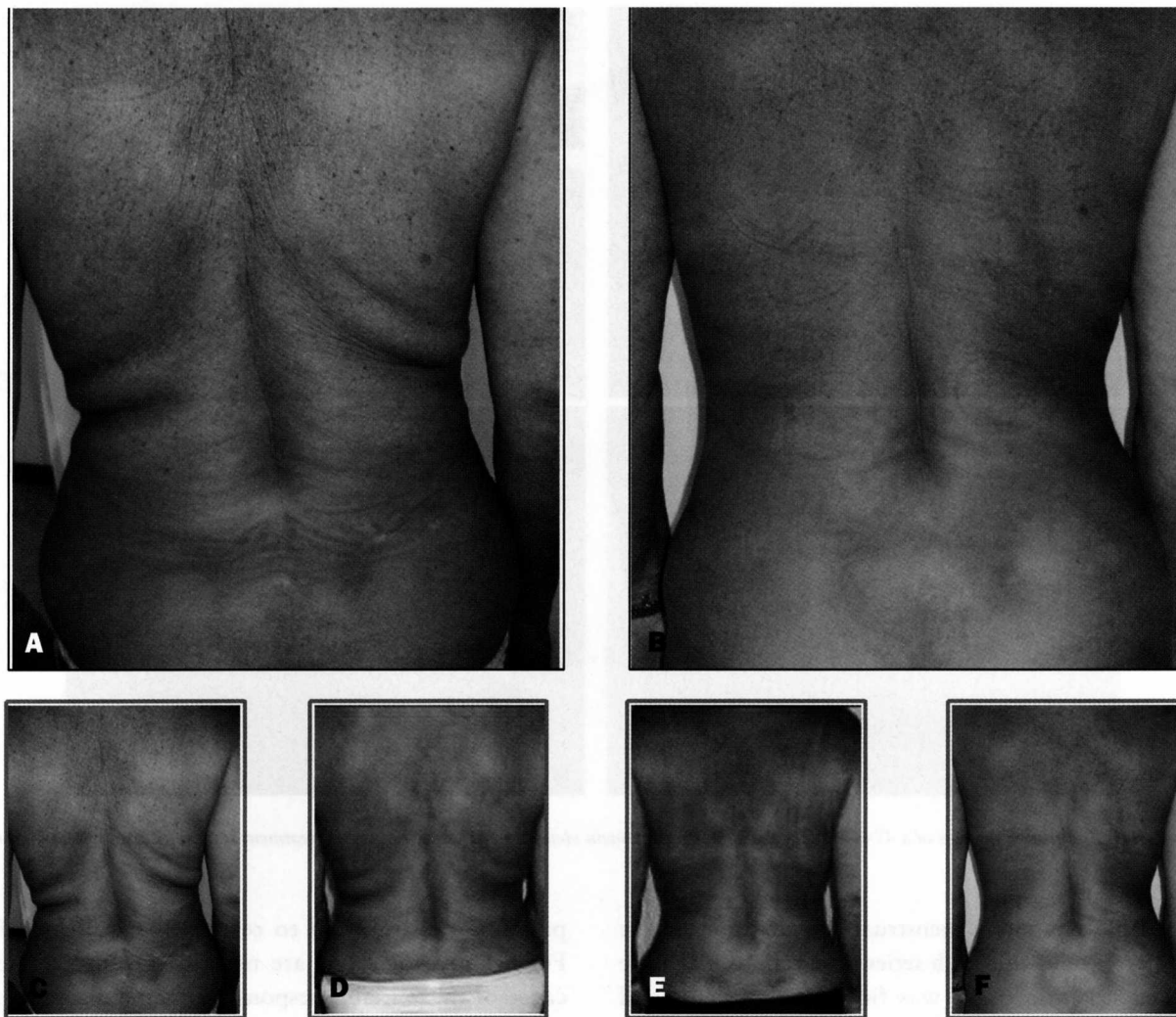
The mixture consisted of phosphatidylcholine, 50 mg/mL, NaCl as dilutant (50%), Buflomedil in a concentration of 5% as a vasodilator, and the B-vitamin complex (vitamins B<sub>2</sub>, B<sub>3</sub>, and B<sub>6</sub>, 1%) in a carefully measured protocol, first developed by the author in 2003. In facial procedures, the basic mixture was not diluted because of the small size of the treatment areas.

The result of each single application per patient and area was monitored by measuring the most prominent circumference of the treated area before the application and 8 weeks after the application—the time it takes for the process to be fully effective, as determined by practice and ultrasound examination. Care was taken to ensure that the measurement of fat deposits before and after application was conducted on exactly the same points. In addition, before-and-after photographs were taken to document the changes resulting from the treatment. Patients were asked to hold their body weight stable for the duration of treatment to ensure that reductions of fat deposits were not the result of dieting.

## Results

### Reduction of fat deposits

All treatments resulted in circumferential reduction of the treated fat (Figures 1 and 2). Within the study group, 15.2% of patients were satisfied after just 1 treatment and 72.4% after 2 treatments (Tables 2 and 3). Ten percent required 3 treatment sessions, and only 2.4% required 4 sessions. Only 6 of 441 patients were not satisfied with the result; of these, 4 patients had a latent hypothyroidism. The average circumferential reduction per application was for example, 3.7 cm on the upper belly, 3.9 cm on the lower belly, 1.9 cm on the hips, and 1.6 cm on the upper arm. Facial treatments were also very successful (Figure 3). The visible fat dissolving process was achieved more quickly in younger patients than in older ones. On average, patients older than 60 years needed 1 session more than those younger than 60 years. The old-



**Figure 1.** **A,** Pretreatment view of a 57-year-old woman. **B,** Posttreatment view 16 weeks after receiving 1 treatment for correction of dorsal fat and skin laxity. **C-F,** Sequential views at pretreatment and 1 week, 10 weeks, and 16 weeks posttreatment, respectively.

est patient was 83 years of age. Similarly, male patients required 1 more treatment than women.

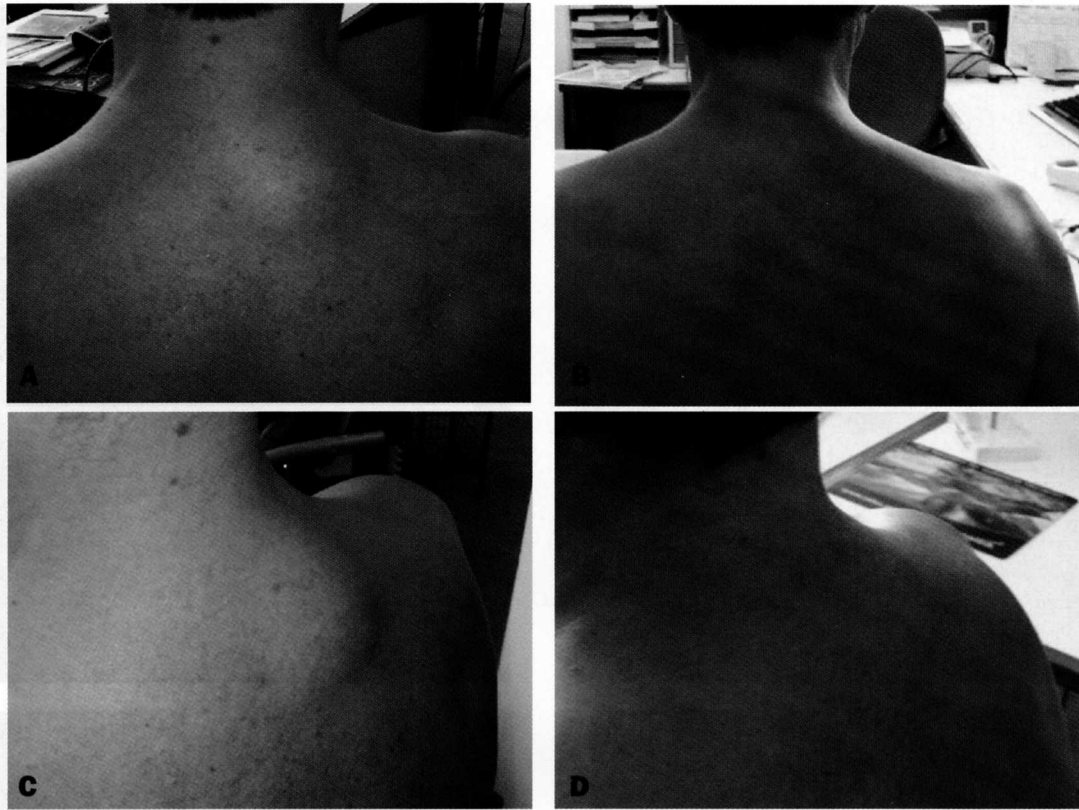
In 4 patients with raised cholesterol levels before the injections, a substantially lower level of cholesterol was found by chance after the treatment (Reflotron dry method). This finding occurs often after injection lipolysis treatments and is a well-known result of treatment with phosphatidylcholine, which, since the 1960s, has been administered orally or intravenously as a blood lipid-decreasing medicine to patients with extremely high fat levels or liver disease.

In 31 persons who had normal blood values within the last 6 months before treatment, confirmed by independent laboratories, total bilirubin and gamma glutamyl transferase were checked 5 days after treatments and 8

weeks after treatments. The results without exception showed normal values

#### Side effects

No irregularities or dimples were seen in the treated patients and no serious side effects or complications were noted. All patients reported a small to medium degree of pain, small to extensive swelling, and erythema, which typically lasted for 2 days and was reported by the patients as "fully bearable." Deep hematomas, appearing as temporary lumps, also occurred in some patients. The study was performed from January to December 2004. During this time, no recurrence of the fat deposits was reported. A few patients reported a not unwelcome increase and softening of their stools. Four patients



**Figure 2.** A, C, Pretreatment views of a 47-year-old man. B, D, Posttreatment views 8 weeks after the second treatment session for correction of lipoma.

reported twice-monthly menstrual bleeding outside the normal cycle following each series of injections. After the injections, the skin tissue was firm in all patients and surplus skin receded in all cases. Trials with other lipolytic substances are currently being conducted, but as yet, no mixture has shown the safety and the effectiveness of the compound discussed in this study. Using the study formula, local side effects are less severe and the results are more effective than those obtained with injectable phosphatidylcholine.

### Discussion

Injection lipolysis has been shown to offer a nonsurgical alternative to lipoplasty in patients objecting to or unable to undergo surgery. It is safe and effective in the correction of small to medium fat deposits.<sup>1-11</sup> To ensure a smooth reduction of the fat deposit, it is important to evaluate candidates for treatment carefully, administer an adequate and sufficient concentration of injectable mixture in every part of the treated area, use the right injection technique, and address only fat areas.

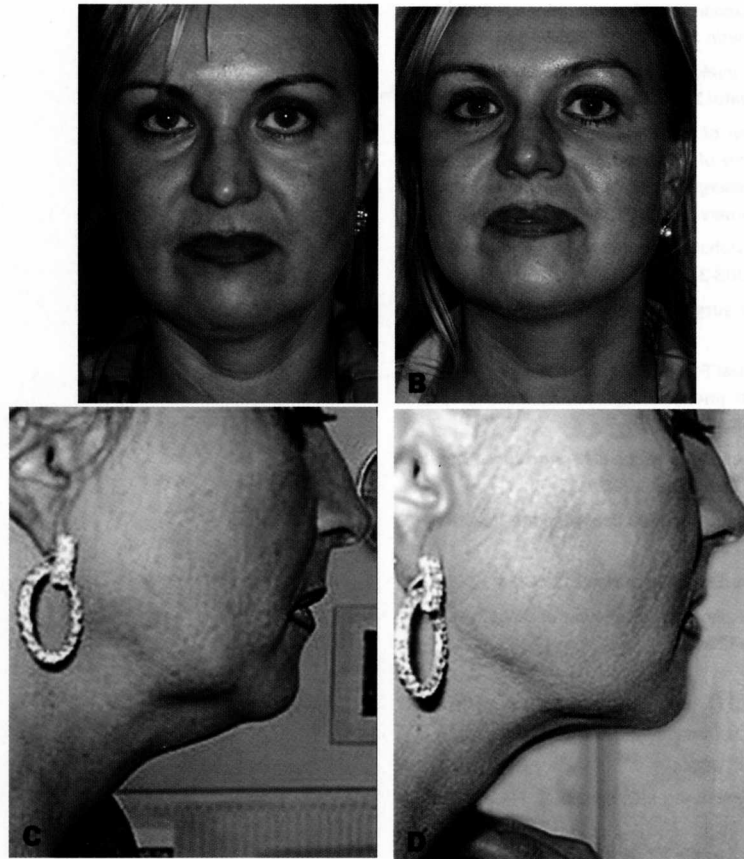
Although significant reduction of fat deposits was seen in most patients participating in the study, a few

patients did not seem to respond as well as others. Further investigations are necessary to determine the cause of this variable response. Organic disorders such as hypothyreosis or hormonal disturbances could be the reason. Although evidence from South America indicates that reductions of fat deposits are permanent and that no long-term side effects have been seen in thousands of patients treated during the past 10 years, this also needs to be verified in further studies. Studies in collaboration with universities in Regensburg and Bochum, Germany; Vienna, Austria; and Manchester, England, are in process.

### Conclusion

In the opinion of the author, the safety and efficacy of injection lipolysis for the reduction of localized fat deposits is well proven. To ensure a smooth and satisfying cosmetic result, it is critical to select patients carefully and to use the correct injection technique and dosage. This method should not be considered as a complete substitute for lipoplasty in all cases. However, when used as an adjunct to surgery, either before or after the surgical procedure, it can offer an opportunity to enhance cos-





**Figure 3. A, C,** Pretreatment view of a 40-year-old woman. **B, D,** Posttreatment views 4 weeks after the first treatment session to correct cheeks, jowls, and chin.

metic results. In the hands of the skilled physician, it could offer an alternative to liposculpture for patients with small and medium-sized fat deposits who do not want, or are unable, to undergo surgery. A long-term study on 5000 patients is currently being conducted, and initial data are available at [www.network-lipodissolve.com](http://www.network-lipodissolve.com). ■

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*Franz Hasengschwandtner, MD, has indicated no significant financial interest in commercial use of injection lipolysis.*

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