

Gel Filler Dermotension

Sulamanidze MA*, Nerobeyev AI, Adamyan AA, Sulamanidze GM and Sulamanidze KM

Clinic of Anaplastic and Aesthetic Surgery TOTALCHARM, Moscow, Russia - Tbilisi, Georgia

AV Vishnevskiy Institute of Surgery, Russian Academy of Postgraduate Medical Education, Moscow, Russia

***Corresponding Author:** Sulamanidze MA, MD, Clinic of Anaplastic and Aesthetic Surgery TOTALCHARM, Moscow, Russia - Tbilisi, Georgia, 0105, 18 V. Orbeliani street; Tel: +995 32 2920371; Mob: +7 903 1 567 567, E-mail: gracia@aptos.ru

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The Article Elaborates on:

1. The wire scalpel device (Aptos Wire) applied in plastic, reconstructive and aesthetic surgery for undercutting (dissection) of the skin integuments without making external incisions, through punctures.
2. Formacryle - polyacrylamide gel manufactured by Moscow Mechanical Rubber Goods Factory used in various integumentary implant (mammary, testicular) filling, etc. Similar gels are manufactured in Ukraine (Interfal) and Italy (Aquamid).
3. Plasmagel - blood plasma fraction that underwent special heat treatment (120°C over 15-20 minutes). Plasmagel is produced ex tempore prior to injection, or in advance from the blood plasma of the patient or donor.

Abstract

Introduction: During a classical dermotension operation usually skin incision is usually performed, a cellulocutaneous flap is mobilized, i.e. a subcutaneous pocket is created wherein an expander is inserted. Then the wound is closed and the process of filling the elastic bulb begins after the stage of stable wound cicatrization being reached.

Material and Methods: A new dermotension method is proposed, which is essentially a creation of a subcutaneous cavity by means of subcutaneous dissection without incisions, through punctures, with subsequent gradual stretching of the skin area with the help of the gel component.

Results: Since 1995 the gel dermotension method has been applied in 33 cases to the areas of the face, upper/lower limbs and the trunk of the body. The operations were performed effortlessly and quickly occasionally followed by a slight post-operational syndrome noticed. The dermotension process began on the first day. A sound plastic material thus achieved was used for its designated purpose on the second stage.

Conclusions: The presented method is cost-effective, the first stage is minimally invasive while the Dermotension process is accelerated by 12 to 14 days.

Introduction

Classical dermatension methods include the following manipulations:

- skin incision along the expander insertion line,
- cellulocutaneous flap mobilization, i.e. formation of a pocket for the bulb
- expander insertion
- Closing the wound and insertion of a small amount of liquid filler into the expander.

A waiting period of 12 to 14 days is required; dermatension can be implemented no sooner than the wound has healed up [1].

The following is the description of the skin expansion method which lacks some inconveniences characteristic of the classical dermatension methods.

Material and Methods

The method is based on applying a special device, a wire scalpel (Aptos Wire), and a corresponding method of subcutaneous soft tissue dissection, through cutaneous punctures, as well as using a gel component for gradual stretching of the skin [2, 3]. The Aptos Wire consists of a double-edged needle up to 10 cm long and a steel multiple-stranded cerclage wire (2/0 or 3/0) up to 50 cm long attached to it (Figure 1).

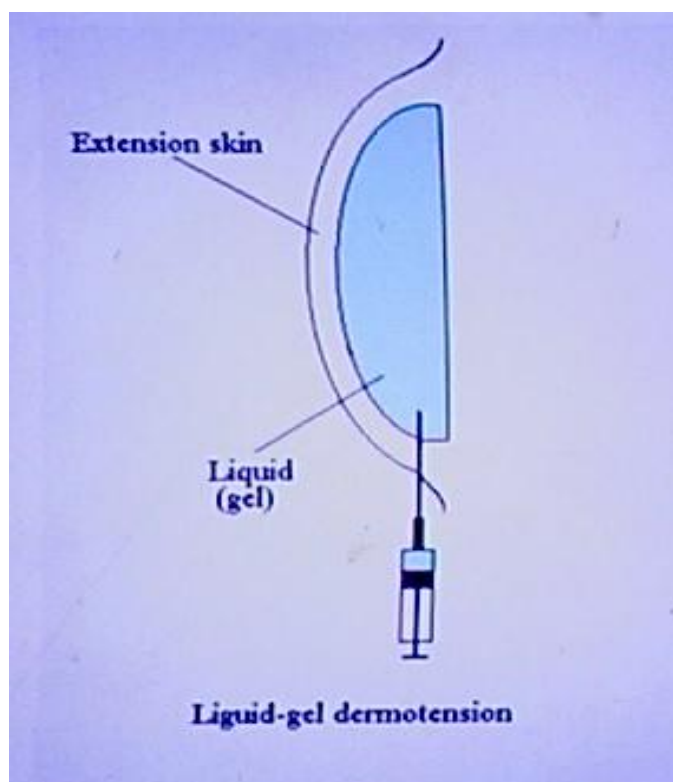


Figure 1. Wire Scalp

A skin area which dermatension would be applied to was singled out for a subcutaneous cavity to be created near the defect. After anesthesia applied the needle was stuck into the skin and inserted into the subcutaneous fat at the required depth. Then the needle was moved along the edges of the detachment zone. If necessary, the needle was put out at the zone contour bends, brought to the surface (but not completely so) with the second edge remaining above the skin, so the progression of the needle was continued using the second edge. The entire designated area thus marked, the needle and the wire were introduced into the first insertion point. Holding and pulling the wire ends, we

dissected the subcutaneous tissues with smooth sawing movements thereby creating a cellulocutaneous flap, or subcutaneous cavity.

Special attention was paid to the depth of cellulocutaneous layer dissection, the anatomical features of a specific area, its blood supply which helped avoiding bleeding and hematomas. The manipulation itself was effortless, quick, and painless.

In the immediate wake of the operation the gel was injected into the cavity until it was tightly filled, henceforth continuing the skin expansion process with the help of the gel. The intervals between filler insertions were identical to those for other types of tissue expansion and equal to 2-5 days (Figure 2).

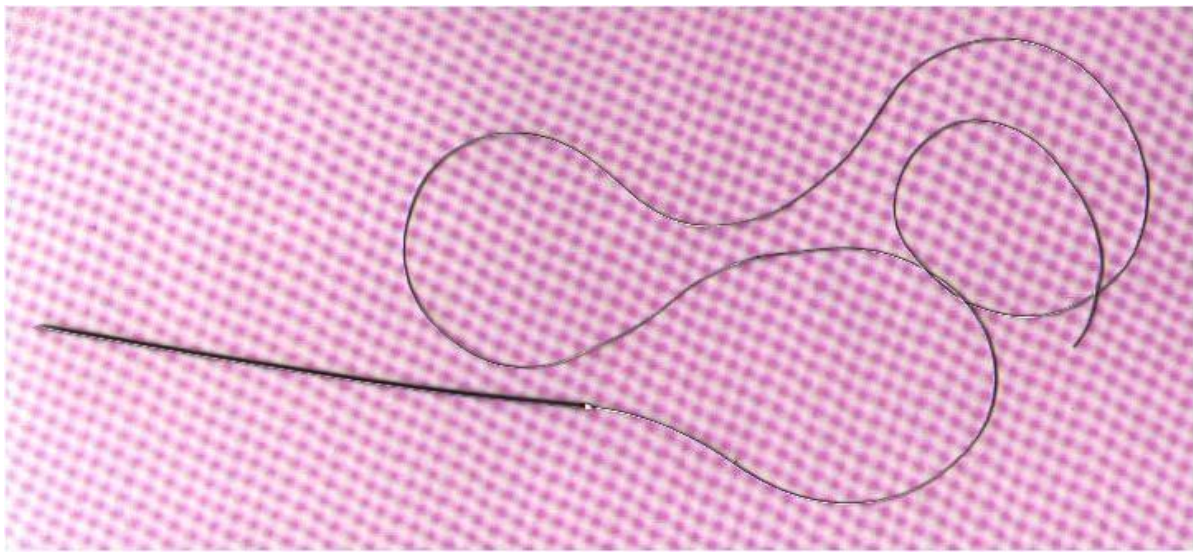


Figure 2. Diagram of the gel dermotension process.

Results and Discussion

The gel dermotension method was first used in 1995. Since then this kind of surgical intervention has been performed in 33 operations on the face, upper/lower extremities and the trunk. On each occasion the operation of creating a subcutaneous cavity was performed effortlessly and quickly with an occasional slight post-operational syndrome; dermotension was applied as soon as the subcutaneous cavity was created, i.e. 10 to 14 days earlier than in the case of expander dermotension. During the subsequent period the gel insertion procedure was accompanied by slight pain which disappeared without any external assistance within a few hours. The cutaneous expansion was continued until the desired size of the expanded skin area had been achieved.

After the dermotension was completed, at the second stage of the operation (after the removal of the gel filler) it was noted that the internal surfaces of the flap, as well as those of the donor surface, were smooth and covered with a thin-walled capsule; the flaps expanded well and adapted adequately to the new location [4].



Figure 3. Patient K..., Cicatricial deformity of the right crus (lower leg).

The 3/0 Aptos Wire was applied to the face and neck areas, i.e. to the areas where skin and subcutaneous fat is thin and soft while a device with a stronger and thicker wire (2/0) was used in other areas (body, superior and inferior limbs).

Case History

Patient K..., 24 years old, visited the clinic with a complaint for an atrophic sagittal cicatrix covering the entire surface of the dextral crus and part of the knee, which created a distinct aesthetic deformation of the right lower limb.

Using the subcutaneous dissection method a single cavity of a complex shape was formed in the patellar and knee areas. The cavity was then filled with 230.0 ml of gel. 35 to 40 ml of filler was daily inserted into the created cavity every 2 to 4 days (a total of 580 ml). 24 days later a good level of skin regeneration was achieved and the second stage operation was performed (Figures 3, 4 and 5). Pictures of other clinical cases are also included: Figures 6 - 15.



Figure 4. Patient K..., subcutaneous cavity formed above the defect. Gel insertion over a 21 days' period. A good level of skin regeneration achieved.



Figure 5. Patient K..., Condition after cutaneous expanded flap surgery (at the stitch removal stage).



Figure 6. Patient B..., Rough vicious cicatrix in the Achilles tendon area.



Figure 7. Patient B..., Cavity formation stage (using the Wire Scalpel).



Figure 8. Patient B..., Condition after 17 days – flap expanded



Figure 9. Patient B..., after removing the gel and excision of cicatrix, the flap that was placed in the defect area is considered to be of good quality.



Figure 10. Patient B..., Wound closed



Figure 11. Patient B..., after 4 months.



Figure 12. Patient D..., Dermotension applied on a patient with rough vicious cicatrix in the left-sided front temporal Para orbital region. Note that a cavity of an irregular form was cut which made it impossible to use a mass produced expander.



Figure 13. Patient D..., 17 days after stage 1 of the operation a sufficient cutaneous expansion was achieved.



Figure 14. Patient D..., 10 days after expanded flap surgery of the cicatrix.



Figure 15. Patient D..., 18 years after operation.

Conclusion

The gel dermotension method allows the formation of subcutaneous cavities without making incisions and creation of cellulocutaneous flaps of any thickness, size and configuration. Being straightforward, marginally traumatic and characterized by a reduced period of skin regeneration and overall efficiency, the method is well suited for widespread application in plastic surgery.

Disclosures

Drs. Marlen Sulamanidze and Aleksandr Nerobeyev have been holders of the Russian patents on the Wire Scalpel and Liquid-Gel Dermotension method since 1995. Drs. Marlen, George and Konstantin Sulamanidze are co-owners of the Aptos Company which manufactures and distributes wire scalpels (Aptos Wire).

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References

1. Radovan C. Tissue expansion in soft-tissue reconstruction. *Plastic and Reconstructive Surgery*, 74. 482 (1984).
2. Sulamanidze M.A., Nerobeyev A.I., Vozdvizhenskiy I.S. Tissue expansion techniques. *Annals of Surgery*, Issue No.2, Moscow, 1997, pp. 64-71.
3. Sulamanidze M.A., Britun Yu.A., Savchenko S.V. Subcutaneous dissection and liquid-gel dermotension. *Annals of Plastic, Reconstructive and Aesthetic Surgery*, Issue No.2, Moscow, 1997, pp. 35-40.
4. Shekhter A.B., Lopatin V.V. Tissue reaction during polyacrylamide hydrogel implantation. *The Reconstructive Surgery of the Mammary Gland Conference*, Moscow, 1996, pp. 121-122.

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