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penile girth augmentation silicone
DOI: 10.1111/j.1745-7262.2007.00262.x

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·*Clinical Experience*·

Short-term results of incremental penile girth enhancement using liquid injectable silicone: words of praise for a change

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Abstract

Aim: To report our experience with penile girth augmentation using liquid injectable silicone. **Methods:** Between August 2003 and July 2006, 324 men (mean age 35 years, range 19–65 years) received a series of liquid silicone subcutaneous injections between the penile skin and the corpora cavernosa on the dorsal and lateral aspects of the penile shaft, under local anesthesia. Digital photographs taken pre- and post-procedure (n = 324), and penile contour measurements (n = 30) yielded objective results. Subjective results were derived from patient and partner testimony of satisfaction. Follow-up averaged 20 months (range 1–36 months). **Results:** Three hundred and twenty-four procedures were primary augmentations. Most men (61%) were married, 7% were accompanied by their partners, and 93% were circumcised. The mean measured penile circumference was 9.5 cm (7.5–11.5 cm) pretreatment and 12.1 cm (10.3–15.3 cm) post-treatment (mean increase of 27% in circumference and 0.84 cm in diameter). Patient and partner satisfaction was already expressed after the first two treatments. Sexual activity could be resumed after 8 h. Complications (mild bruising) were easily resolved. **Conclusion:** Penile girth augmentation using liquid injectable silicone yields very satisfactory short-term results with no immediate or short-term complications. *(Asian J Androl 2007 May; 9: 408–413)*

Keywords: injectable silicone; penile girth; augmentation; penile contouring

1 Introduction

The number of patients seeking penile contour improvement is constantly increasing. Most of these men have a normal-sized stretched penis (~13 cm), but some are dissatisfied by the girth and wish to undergo augmentation. Penile girth augmentation is currently carried out by dermal grafts or by fat injections [1]. The former requires surgery and the graft might lack sensation for several months postoperatively, whereas the final results of the latter are unpredictable because the procedure requires overcorrection due to fat reabsorption. Liquid injectable silicone has been used to augment soft tissue [2], but no investigation of its application for penile girth enhancement has been reported before. We now describe the use of liquid injectable silicone for enhancing penile girth by augmenting penile volume and

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Received 2006-8-27 Accepted 2006-11-06

report our short-term results.

2 Materials and methods

2.1 Patients

Pre-procedure evaluation included a detailed history and physical examination with special attention to anatomical features of the genitalia and to psychological and socioeconomic details, such as background of psychological/psychiatric treatment, past and current medications, and family and employment status. The patients signed an informed consent form after the concept of gradual augmentation was explained and the irreversibility of the procedure was strongly emphasized. Exclusion criteria included severe obesity, hidden penis, paraplegic patients, psychiatric disorder and any chronic major cardiovascular or systemic disease.

2.2 Procedure

The procedures were carried out in an office setting, with the patient in the supine position and the procedure being carried out from his right side. Digital photos were taken before the first injection. The penile skin was cleansed with 70% alcohol and a penile block was induced by injecting 2–3 mL 1–2% lidocaine into the penis root. After the anesthesia had taken effect, an 18-gauge needle was introduced 1–2 cm pre-coronally under the tented dorsal penile skin. On the first treatment, the tenting was achieved by asking the patient to stretch the penis with his left hand in a downward direction and by the operator lifting the skin with his left hand (Figure 1). The tenting step is important to avoid injury to the dermis and tunica albuginea, and it is carried out jointly by doctor and patient during the first treatment, until some augmentation has been achieved. On the second treatment and thereafter the tenting might be obtained by kneading and rolling the augmented subcutaneous tissue between the operator's thumb and other fingers. No material is deposited in the 1-cm pre-coronal area in order to avoid capping of the shaft over the head.

No antibiotics were given during or after the procedures.

The polydimethylsiloxane (Siluron 1000, Fluron. GmbH, Germany) that we used was ultrapurified silicone oil, 5 mL of which was injected subcutaneously into the areolar tissue between the tented penile skin and Buck's fascia on the dorsal and lateral aspects of the shaft using a fanning technique. The needle was directed posteriorly and laterally, parallel or tangential to the corpora cavernosa, distributing the material as uniformly as possible from the penile root to the point of injection by a continuous back and forth movement, while constantly pressing the syringe plunger. Figure 2 illustrate the injection procedure and appearance of injected area. One injection containing no more than 5 mL liquid injectable silicone was carried out at each 10 min session. A patient usually needed between 4–6 sessions and there was an interval of at least 30 days between each one. In order to preserve a natural-looking organ, the operator carefully ensured that there was a beveling effect which was achieved by depositing the silicone in the distal part of the shaft, but taking care to leave the most distal part of the shaft free of filling material. The dorsal part of the shaft was injected, whereas the anterior part was not. After the needle was withdrawn, gentle pressure was applied to the injection site to prevent spillage of the silicone, but more to avoid bleeding. The injected surface was thoroughly massaged in order to redistribute the silicone as uniformly as possible, without leaving palpable nodules. The patients were instructed to refrain from normal sexual activity until 8 h had elapsed, and to massage the injected site for 2–3 minutes once daily. As the penis in its flaccid state has the tendency to retract, a bandage was left after each treatment continuously for 2 weeks (apart from sexual activity and shower), to support the penis in stretched position and thus to avoid conglomeration of silicone and reactive tissue. This maneuver seems to uniformly fix the distributed silicone as intended and after a few treatments, less retraction of the penis occurs in a flaccid state. The patients should be instructed to construct penile support bandage but not to compress too tightly to avoid squeezing injected silicone out of injected place.

The extent of augmentation was decided primarily by the patient and his partner, in consultation with the doctor. In order to judge the extent of penile girth augmentation, the best reference point appears to be the corona of the glans as it is not changed during the procedure (Figures 3–5). The augmentation was carried out on circumcised patients, as well as on uncircumcised patients. Satisfaction was evaluated at 1-36 months after the last injection. It was only after 90 consecutive patients had been satisfactorily treated that we decided to report our findings, whereupon we began to measure the outcome by obtaining and recording the pre- and postprocedural values of circumference and girth by means of a tape measure.

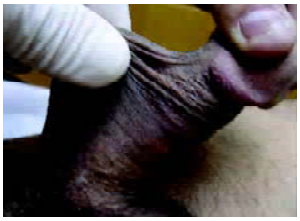

Figure 1. The tenting technique used for the initial injections (the ungloved hand is the patient's hand). The polydimethylsiloxane oil is injected subcutaneously into the areolar tissue between the tented penile skin and Buck's fascia on the dorsal and lateral aspects of the shaft. The needle is directed posteriorly and laterally, parallel or tangential to the corpora cavernosa, distributing the material as uniformly as possible from the penile root to the point of injection by a continuous back and forth movement, constantly pressing the syringe plunger. Care is taken not to inject into beneath the Buck's fascia.

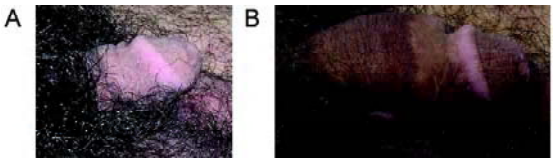

Figure 3. A 20-year-old patient seeking penile girth augmentation before (A) and 4 months after treatment (B). The best way to appreciate the degree of augmentation is to visually confront the coronal/shaft ratio before and after the treatments.

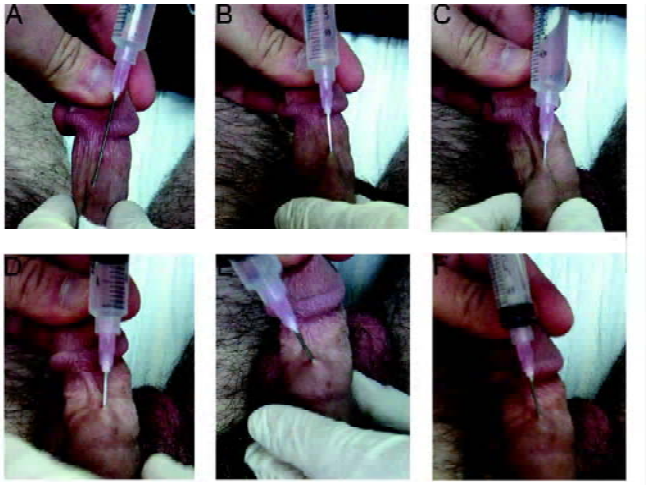

Figure 2. Second treatment session of a 26-year-old patient. (A): After tenting the dorsal penile skin by kneading and rolling the augmented subcutaneous tissue between the operator's thumb and other fingers, the needle is directed posteriorly into the areolar space. (B): One milliliter has been injected and some fullness might be noted between the fingers of the operator. (C): The direction of injection is changed while taking care to avoid the puncturing of the dermis or Buck's fascia by tenting the injected area. (D): Appearance of injected area after 3 ml of introduced polydimethylsiloxane. (E): Change of direction should be carried out continuously during the injection procedure. Appearance of the area after injection of 4 ml of silicone oil. (F): Appearance of injected area at the end of second treatment. Massage should follow to redistribute more accurately the silicone micro-droplets, while pressing on injection point to avoid outflow of introduced substance.

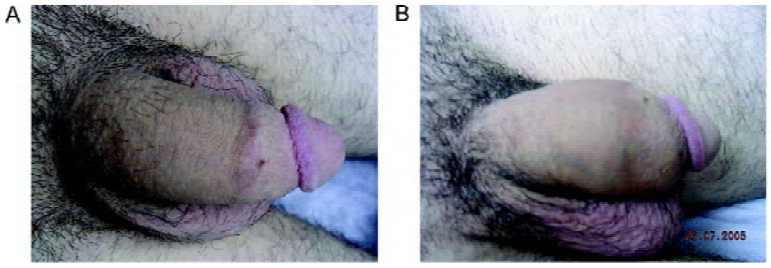

Figure 4. A 23-year-old patient seeking penile girth augmentation before (A) and 5 months after the treatments (B).

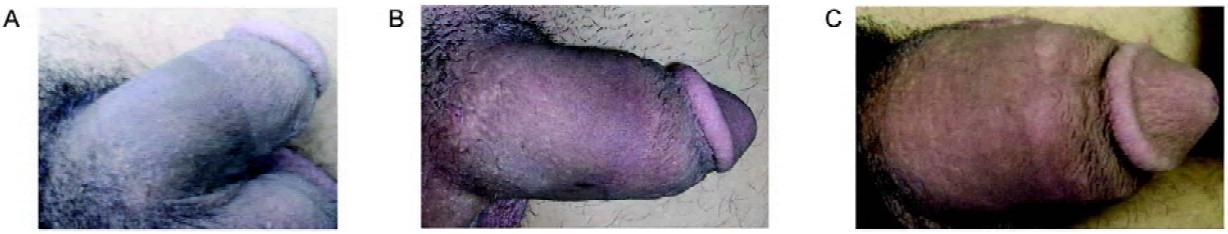

Figure 5. A 28-year-old patient seeking penile girth augmentation before (A), after three treatments (B) and after 9 months following six treatments (C).

3 Results

A total of 324 men, whose mean age was 35 years (range 19–65 years), underwent penile girth augmentation by a procedure using liquid injectable silicone between August 2003 and July 2006 at the Theomim Clinic, Ramat-Gan, Israel. The mean follow-up was 20 months (range 1–36 months). They were all primary augmentations with the exception of one patient who requested cushioning augmentation 6 months after semirigid penile prosthesis insertion. Most of the men (198, 61%) were married, 23 (7%) arrived to the treatments with their partners and 302 (93%) were circumcised. All the patients but eight were heterosexual. Each patient received about five injections (range 3–6) during a mean period of 20 weeks (range 16–24 weeks).

Penile circumference was measured at the mid part of the penis in 30 patients; it was 9.5 cm (7.5–11.5 cm) before treatment and 12.1 cm (10.3–15.3 cm) after treatment (length was not measured). These figures represent a mean increase of 27% in circumference, corresponding to 0.84 cm change in diameter.

The men and their partners reported being satisfied with the results without exception. Surprisingly, 21 men reported improvement of erectile function and patients that suffered premature ejaculation (ejaculation time less than 1 min after penetration) reported prolongation of time to ejaculation to about 15 min. The results of injection were noted very early, that is, after the first or second treatment. The patients reported that they could return to normal sexual activity 8 h after the procedure without untoward sequelae. None of the patients reported any pain after the effect of the anesthetic wore off. There were no complications during this short-term follow-up, with the exception of slight bruising after injection which quickly resolved. There were no serious complications whatsoever.

4 Discussion

Silicone was introduced for cosmetic improvement in humans in the 1940s, but there has been no clinical investigation of the outcome of silicone injection into the penis; the existing reports are anecdotal and describe complications [3, 4]. Furthermore, in none of the reported cases was the microdroplet injection technique described. The criteria for an ideal filling substance and the characteristics of liquid injectable silicone as an ultrapurified, viscous fluid are reported by Orentreich [5]. The quality of silicone has dramatically changed since its introduction. Recent literature strongly emphasizes the need for strict adherence to the microdroplet injection technique [2, 5] as opposed to the massive injections that had been carried out earlier. The history, legal status, mechanism of action, indications, variations of techniques and complications of the silicone used in aesthetic medicine have been described at length elsewhere [2, 5]. In addressing concerns about silicone and tissue interactions, prospective histological and immunohistochemical studies have shown that microdroplet implants (0.01–0.07 mL) of medical-grade silicone created an inflammatory reaction from the second day after injection, a response that began to subside from the 15th day, after which a fibroblastic response was apparent from the first month and remained so in the 11- and 14-month biopsies [6, 7].

The most recent anecdotal report on untoward complications secondary to large-volume injections of silicone into the corpora cavernosa and penile soft tissue appeared in 1995. Wasserman and Greenwald described a case of debilitating granuloma of the penis and scrotum [3]. In 1982, Christ and Askew reported one case of their own and four others from the literature (1973–1976) involving silicone injections into the penis that were carried out in the late 1960s [4]. Those authors commented that injectable silicone had been applied to an undetermined number of men for penile augmentation.

In a study of flaccid and stretched penile sizes in 123 young men, 24% underestimated their penile size [8]. Interestingly, urologists are rather indifferent to their patients' complaints about penile contour, and some suggest that any adult male who feels the need for peer review of his genitalia has a greater need of a psychiatrist's couch than the surgeon's operating table.

Reports in the literature of complications pursuant to the use of adulterated silicone or other [9] filling material injections into the penis, particularly into the corpora cavernosa and by lay persons, are probably responsible for hampering progress in the field of penile contouring. Today, there are clinical, histological and pathological studies in humans and animals that support the safety and efficacy of liquid injectable silicone in augmenting connective tissue mass [10–16].

Pre-procedural physical examination of the genitalia is of utmost importance because it can show pathologies that require the postponing of any augmentation (e.g.

testis tumors and anorchia), and even preclude its performance (e.g. exclusion criteria as derived from physical examination were severe obesity, hidden penis and paraplegia). Two of our patients who wanted penile augmentation were found to be anorchid and we advised testicular implants as the first line solution to increase total volume of the genitalia. Neither underwent penile girth augmentation in our facilities.

Wallace *et al*. [17] analyzed the histological effects of host response to subdermally injected liquid silicone to augment soft-tissue cushioning of the bony prominences of the foot. They concluded that silicone injections in fat pads for the treatment of atrophy and loss of viable tissue have a histologically stable and biologically tolerated host response that is effective, with no evidence of any systemic changes.

Migration of silicone beyond the breast implant capsule, specifically, the axilla, despite an intact implant envelope and fibrous capsule [20] have not deterred the breast augmentation procedure from being carried out in many countries. Rapaport in 2002 noted that there had been fewer complications after the use of more viscous silicone during the previous decade [19]. Requena *et al.* [7] concluded that polymerized silicones and other filler materials are better than the older materials because they tend to not migrate, do not usually produce much of a host immune response and adverse reactions after injection of these materials are rare (although there are a few reported cases as a result of bad technique or anomalous granulomatous reactions). Several animal studies have shown the importance of large-size molecules of liquid injectable silicone and high viscosity, partially for promoting anchorage and stability after fibrotic reaction and, thus, preventing migration and phagocytosis [10, 11].

The issue of efficacy and safety was also addressed by the American Society of Dermatologic Surgery in 1993. It was concluded that liquid injectable silicone that is injected by means of the microdroplet technique had proven to be effective and safe in many individuals over many years [18]. The incidence and consequences, if any, of axillary siliconosis after the ubiquitous silicone breast implantation remain unknown [20]. Finally, liquid injectable silicone appears to be safe and effective when used for various urologic pathologies in pediatric as well as adult populations [12–16].

Unlike the fat transplantation technique that demands some knowledge of fat retrieval and reinjection, the method described herein is simple to carry out as an office procedure under local anesthesia and does not require long abstinence from sexual activity. Another important advantage that distinguishes this method from fat injection is that the latter requires overcorrection, whereas the silicone microdroplet technique involves gradual augmentation. Gradual augmentation of the penile shaft provides safe and predictable results by slowly increasing its diameter and shape.

Unexpectedly, some of our patients reported improvement of erectile function. It could be that compression of emissary, circumflex and deep dorsal veins between the tunica albuginea and new subcutaneous tissue during erection occlude them easily, thus reducing venous outflow.

The liquid injectable silicone procedure can be used on any psychologically stable patient. Because there is no ideal penile contour, many patients do not have an idea of how much increase in girth will suit them. This is one of the reasons why the method uses a gradual approach. Our experience includes two diabetic patients and one man who had a penile prosthesis insertion 6 months earlier. All three were successfully treated without complications.

The most frequently encountered problem is contour irregularities that occur if the silicone is not injected uniformly, and these are easily resolved. Injuries that could theoretically occur during treatment are to the corpora cavernosa, corpus spongiosum, dorsal nerve, arteries and veins, and the skin. The tenting-fanning technique circumvents injuries such as these.

The degree of satisfaction among circumcised and non-circumcised were the same, as were the objective results of the procedure.

Treatments were repeated at intervals of 4–6 weeks to allow the patient to decide if further girth augmentation was needed from aesthetic as well as functional points of view. A total of 3–6 treatments were usually required. The cumulative quantity of injected liquid injectable silicone depends on penile length, which determines a reasonable girth target.

In no case should a large bolus be injected in one site. The continuous back and forth movement while constantly pressing the syringes plunger is of utmost importance to uniformly deposit tiny quantities of liquid injectable silicone and avoid injecting it intravenously. Care must be taken to avoid an accidental intravenous bolus injection. It should also be kept in mind that the dorsal part of the penis can be injected but the anterior

part of shaft should not.

Gradual augmentation of penile girth by subcutaneous injections of liquid injectable silicone is a new method. It is simple to carry out, and there are no immediate or short-term complications. It should be carried out only by a physician who has thorough knowledge of penile anatomy. Intracorporeal as well as intradermal deposition of silicone must be avoided. Penile girth augmentation should be offered to psychologically stable men with realistic expectations. Because the current follow-up is still short-term, the procedure should be carried out conservatively, avoiding any exaggeration in the quantity of cumulatively injected material.

Gradual penile contouring gives the patient time to adjust psychologically and functionally to a new penile shape as well as to allow collagen to deposit around the microdroplets, thus further increasing penile volume. In order to avoid self or lay person injections that can cause disasters [9], it is our duty as physicians and as urologists to offer the patients this type of procedure. Finally, the physician must exercise his/her good judgment in deciding the suitability of the individual to undergo penile augmentation.

Acknowledgment

Dr Esther Eshkol is thanked for editorial assistance.

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Edited by Dr Ching-Shwun Lin