Clinic case

Granulomatous inflammation of the penis due to injection of an unknown substance

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Abstract:

Liquid silicone has been utilized as a medical material for decades. In urology, it has been used to enhance the girth of the penis through subcutaneous tissue injection. Said practice can produce a granulomatous inflammatory reaction with local deformity, resulting in a foreign body reaction called "siliconoma". We present herein the case of a patient with penile lipogranuloma secondary to the injection of an unknown substance that required surgical treatment to excise the affected tissue and cover the defect with cutaneous grafts. It is our opinion that such an enhancement practice is not justified, given its possible catastrophic consequences.

Keywords: liquid silicone, penile girth enhancement, penile lipogranuloma

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Introduction

Numerous techniques in the different fields of medicine have been developed for the purpose of improving body aesthetics. In the case of urology, cosmetic penile surgery is one of the most frequently requested, especially the techniques for lengthening the penis, increasing its girth, and correcting penile curvature.[1-2]

There are currently no approved substances for the nonsurgical enhancement of penile girth, but surgical techniques overlaying fat or grafts (skin graft, acellular dermal matrix allograft, xenograft, saphenous vein graft) have been described.[1]

Silicone has been used as a medical material for several decades and its three common forms are as a liquid, a gel, and an elastomer.[3–5] Subcutaneous injection of liquid silicone appears to be a simple and inexpensive technique, apparently converting it into a popular alternative to plastic surgery in some cultures.[3,6]

Cases of penile granulomatous inflammation following the injection of an unknown substance into the subcutaneous tissue for the purpose of enhancing penile girth have been reported.[1–4,6]

Even though silicone, when first applied, is considered biologically inert, it can later produce a granulomatous inflammatory reaction with local deformity, resulting in a foreign body reaction known as "siliconoma", which can produce penile pain, painful erection, or impotence, as well as distant compromise due to silicon particle migration by way of the lymphatic system and/or blood circulation.[3,4,6]

Case presentation

A 40-year-old man from Senegal, residing in Spain for several years, had an unremarkable past medical history. He sought medical attention for progressive thickening and edema of the penis over a 10-month period that worsened over the past 12 days. The patient presented with pain that impeded him from having sexual intercourse, with no micturition alterations or fever. He stated he had no recent infectious disease and did not engage in risky sexual intercourse. There was no involvement of the lower limbs or any other area. He complained of discomfort at the inguinal level.

Physical examination revealed thickening of the penile linings that affected the skin and subcutaneous tissue in patches, as well as areas of increased consistency forming subcutaneous nodules with a granulomatous appearance. Upon palpation, the corpora cavernosa appeared to be unaffected. The epidermis was intact, with no ulcers or other lesions. The patient was circumcised, and the glans penis was not compromised. Testicular examination produced no findings and inguinal adenopathies were increased in size and consistency. Blood test and urinalysis results were normal (figure 1).

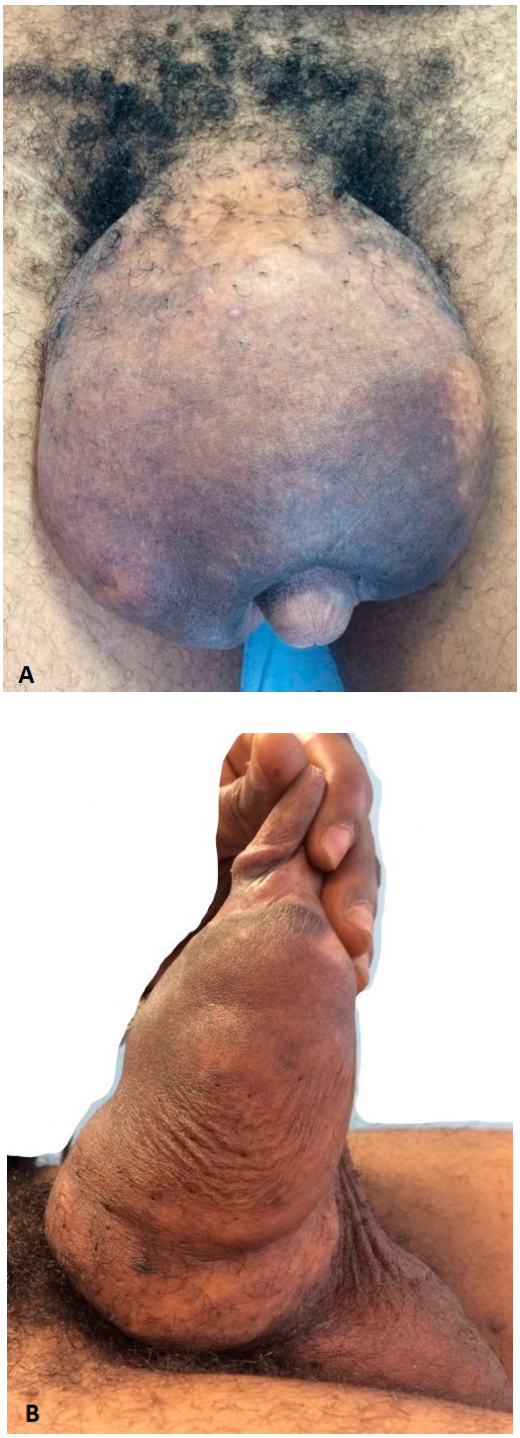

Figure 1. Thickening/inflammation of the subcutaneous tissue of the penis, from the root to the balanopreputial sulcus, with no involvement of the glans penis. A) Upper view. B) Lateral view.

The patient was questioned as to the possible cause, given the suspicion of the injection of a substance into the subcutaneous tissue and its consequent extending inflammation, but he strongly denied there had been substance injection.

Penile ultrasound identified granulomatous inflammation of the subcutaneous tissue and reactive "snow storm" adenopathies, suggestive of a reaction to the injection of a silicone liquid.

Once the ultrasound results were obtained, the patient was questioned again, and despite his previous denial, he finally confirmed that two years prior he had been injected with a silicone-like substance for penile girth enhancement and that its distribution had been extending progressively.

The evaluation was completed with magnetic resonance imaging which showed poorly defined, greatly thickened subcutaneous tissue (a maximum thickness of 3.8 cm), affecting the entire body of the penis, from the root to the balanopreputial sulcus, suggestive of sclerosing lipogranuloma of the penis, secondary to the injection of a foreign body (liquid silicone). Bilateral inguinal adenopathies with probable granulomatous involvement were also observed. There was no deeper involvement of the Buck's fascia and the corpora cavernosa were unaffected (figures 2 and 3).

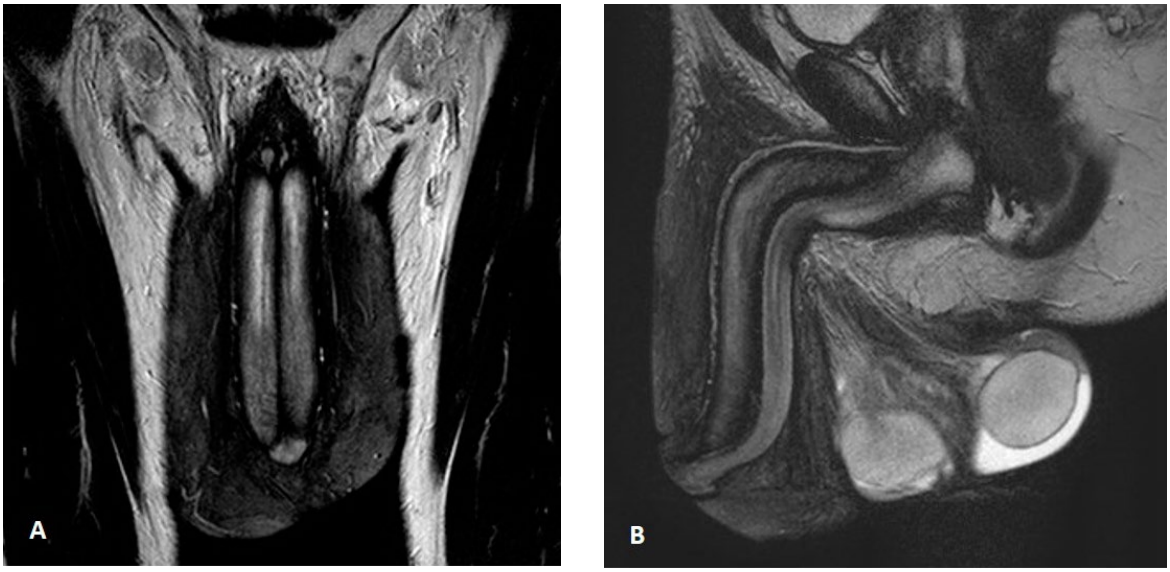

Figure 2. NMR images. Coronal (A) and sagittal (B) views in T2 sequences at the level of the penis, showing greatly thickened subcutaneous tissue, suggestive of sclerosing lipogranuloma of the penis with intact corpora cavernosa.

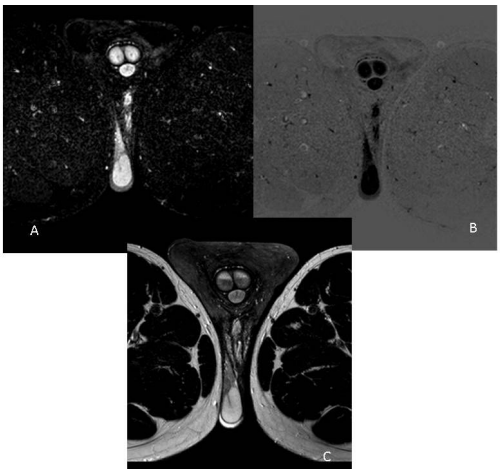

Figure 3. NMR images. Axial view of the penile region showing greatly thickened subcutaneous tissue, suggestive of sclerosing lipogranuloma of the penis with intact corpora cavernosa. Silicone-only positive sequences (A), silicone-only negative sequences (B), and T2 volumetric sequences (C).

Given the findings and the negative impact on the patient's quality of life, he was programmed for surgery to excise the penile linings and perform reconstruction with grafts. The procedure was carried out, excising the skin and subcutaneous tissue of the penis from the root to the balanopreputial sulcus, denuding the penis. The cutaneous defect was then covered with free skin grafts from the bilateral inguinal region (figure 4).

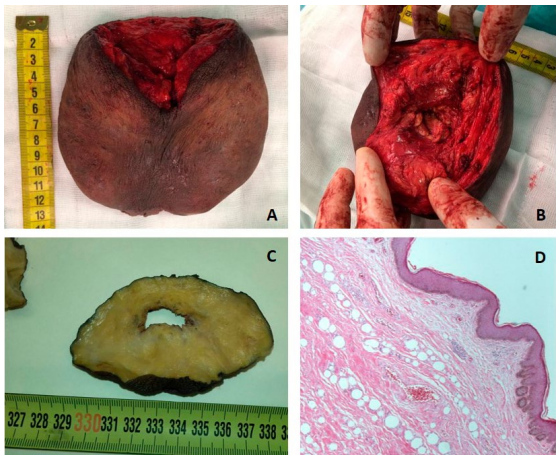

Figure 4. Surgical specimen. Macroscopic aspect of the surgical specimen. Anterior view (A) and superior view (B). C) Macroscopic slice of the surgical specimen included for processing: upon slicing, the subcutaneous tissue was whitish-yellow with indurated zones. D) Microscopic image of the subcutaneous tissue of the penis: increased thickness with intense fibrosis and multiple vacuoles of different sizes surrounded by foamy histocytes and multinucleated giant cells with focalized chronic inflammatory infiltrate, consistent with lipogranuloma of the penis secondary to a reaction to liquid silicone.

The pathologic anatomy was consistent with lipogranuloma of the penis.

Surgical intervention was performed with the patient under general anesthesia. The penile skin and subcutaneous tissue were extirpated up to the root of the penis, reaching the unaffected Buck's fascia. All the tissue was infiltrated by an irregularly distributed yellowish substance that made it impossible to separate the penile skin from the subcutaneous tissue. Therefore, *en bloc* resection was performed. Once the specimen was extracted, the scrotum was reconstructed and the skin of the base of the penis was attached.

Assisted by the Plastic Surgery service, bilateral free skin grafts were extracted from the inguinal region and prepared for covering the cutaneous penile defect, favoring their adhesion and vascularization. Two grafts were used and attached with reabsorbable suture, utilizing the capitonnage method. A urethral catheter and compression dressings were placed (figure 5).

Figure 5. Images during and after the surgical intervention. A) Denuded penis after excision of the affected skin and subcutaneous tissue. B) Final aspect after cutaneous defect repair with free skin grafts taken from the inguinal region.

The surgical specimen was histologically analyzed, and its result was subcutaneous tissue with numerous clear, vacuolar-like spaces, suggestive of a foreign material (silicone), surrounded by a histiocytic and giant cell reaction to a foreign body. Pathologic anatomy was consistent with penile granuloma secondary to the injection of an unknown substance, suggestive of a siliconoma.

Discussion

Several cases of penile granulomas secondary to the subcutaneous injection of liquid silicone for increasing the size of the penis and/or improving erectile function have been reported in the literature. [1–4,6]

The effect can be seen not only at the local level, but also at distant sites due to dissemination of the silicone particles via the blood circulation and/or lymphatic system,[3,5] and can appear a long time after the injection. A latency period of up to 24 years has been reported.[3,6]

The consequential symptoms of silicone injection are penile pain, painful erection, erectile dysfunction, and silicone particle migration, requiring surgery for their resolution.[1,3,4,6] If possible, surgical treatment should be restricted to symptomatic siliconomas. Sometimes attempts can be made to preserve the skin,[3] but that was not possible in the present case, resulting in our using free skin grafts from the inguinal region. Other techniques for covering the cutaneous defect have been described, such as the use of scrotal skin and grafts from other locations.[6]

In conclusion, the subcutaneous injection of liquid silicone is an unjustified practice that produces catastrophic effects and requires important surgeries to remove the injected material, with an unfavorable result in all cases.[1]

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