Acute urinary retention as a late complication of subcutaneous liquid silicone injection: a case report

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ABSTRACT

Acute urinary retention is characterized by a sudden interruption of urinary output; urine is retained in the bladder due to either functional or obstructive anatomic factors, and cannot be voided. The main causes of acute urinary obstruction are benign prostatic hyperplasia, constipation, prostate adenocarcinoma, urethral stenosis, clot retention, neurological disorders, following surgery, calculi, drugs, or urinary tract infections. A transvestite patient, aged 55 years, described having had liquid silicone subcutaneously injected in various parts of the body, the last one four years ago. He complained of absent urinary output during the last 14 hours. The physical examination revealed skin deformation due to migration of implants; a hard nodule (characterized as a foreign body) was present in the prepuce and a diagnosis of acute urinary retention was made; an unsuccessful attempt to exteriorize the glans for urinary catheterization, was followed by therapeutic cystostomy. Acute urinary retention has not been mentioned in the medical literature as a complication of liquid silicone subcutaneous injection.

Keywords: Urinary retention/etiology; Silicones/adverse effects; Case reports

INTRODUCTION

Acute urinary retention (AUR) is a condition characterized by sudden interruption of urinary output and urine retention in the bladder due to either functional or obstructive anatomic factors(1). The main causes of AUR are benign prostatic hyperplasia (53%), followed by constipation, prostate adenocarcinoma, urethral stenosis, clot retention, neurological disorders, postoperative neurological disorders, calculi, drugs, and urinary tract infections(1).

These patients may describe a history of polyuria, nocturia, urinary urgency, interrupted urinary stream, post-voiding residue, and a weak urinary stream. The physical examination may reveal a...
globular mass in the lower abdomen with solid sound at percussion\(^{(3)}\).

The diagnosis of AUR is essentially clinical, based on clinical history and physical examination; the differential diagnosis should be made with anuria and bladder rupture. Laboratory tests, instrumentation and imaging methods may be used if there are doubts. Bladder catheterization and suprapubic puncture are fast and efficient measures to demonstrate and treat AUR\(^{(1)}\).

A serious social issue in recent decades has been the use of various materials to improve physical appearance, particularly in transsexuals, usually implanted by non-medical professionals. Possibly the most commonly used material is liquid silicone, also known as industrial silicone; the short- and long-term results in most cases are disastrous and lead to several complications\(^{(2)}\).

We report the first case described in the literature of AUR caused by liquid silicone migration.

**CASE REPORT**

A white male transvestite patient aged 55 years presented a history of liquid silicone injections by a non-medical professional into several parts of the body during the past 30 years (the last injection was applied 4 years ago) in the face, breasts, back, abdomen and thighs. The patient complained of dysuria, urinary stress, and difficulty to initiate voiding for the past four days. He had not voided during the last 14 hours, and complained of severe hypogastric pain that worsened with local pressure and efforts to urinate.

Upon physical examination, evident cutaneous deformity due to migration of the previously implanted liquid silicone. Additionally, the abdominal wall was rigid, and a painful mass could be palpated in the lower abdomen. There was no evidence of peritoneal irritation; a hard silicone nodule was palpated in preputium. AUR caused by extrinsic compression of the urethra by a foreign body was characterized; the foreign body probably had migrated from the lower abdomen (Figure 1).

We first tried bladder catheterization, which was unsuccessful due to the fact that the glans could not be exteriorized to access the urethral meatus. An emergency cystostomy was then carried out (Figure 2), and 1,200 ml of pale yellow urine was drained.

The patient progressed well and was discharged with a functioning cystostomy during the following day with no perioperative complications. He is currently under psychiatric, urological, nephrological, and plastic surgery care.

![Figure 1](image1.jpg)

**Figure 1.** (A) Cutaneous deformity caused by migration of liquid silicone implants performed by non-medical professional; (B) Genital deformity, highlighting hard nodule in the preputium

![Figure 2](image2.jpg)

**Figure 2.** Performance of urgent supra-pubic cystostomy, given the impossibility of using an urethral catheter
DISCUSSION
Replacing live tissues with inert materials had been done for many years in a number of medical specialties. Silicone (dimethylchlorosilane), a synthetic organic compound, is currently the most commonly used material for this purpose; it has a carbon chain with silicon atoms, and can be found as a solid material gel or liquid (dimethylchlorosilane)\(^3\).

The use of liquid silicone for subcutaneous injections with esthetic purposes became popular after the Second World War, and has been known as a fast and low cost method, compared to conventional plastic surgery. This substance was developed originally for industrial and electric purposes, and has never been authorized for use in an implant in soft tissues. Silicone injections are still used by non-medical professionals, particularly in transsexuals and transvêtes, to feminize the face, breasts, buttocks, hips, and calf muscles\(^4\).

The effects of this material on the human body have been studied for decades. One of the first studies was carried out by Hur and Neuman\(^3\) in 1965; these authors demonstrated the local adverse effects of liquid silicone. Following these studies, the word ‘siliconoma’ was applied to describe large dimethylchlorosilane cysts surrounded by histiocytes containing vacuoles in the cytoplasm and an inflammatory process typical of foreign body reactions. In 1967, Hur, Rees, and Ballantyne Jr.\(^4\) implanted carbon-labeled silicone in animals, which was detected in several organs 14 months later. This finding supported the hypothesis that liquid silicone is phagocytized by tissue macrophages and transported to other organs through lymphatic pathways. Thus, once subcutaneously injected, liquid silicone may accumulate locally and cause an intense inflammatory reaction, resulting in the formation of a fibrous capsule, or may migrate and settle down in remote areas\(^4\).

Although easy to apply, silicone may cause complications such as changes in skin color or texture, inflammation, severe fibrosis, fistulas, deformities, and contractures, among other described complications\(^6\). Regional lymphadenopathy, adjacent soft tissue infiltration, and organ compression have been described as long-term complications\(^4\). Acute and chronic respiratory diseases, collagen and vascular diseases have been described as systemic complications, mainly in patients in whom larger amounts of silicone were applied; some of these patients died\(^4\).

Complete resection of injected silicone is generally impossible, because this material invades all tissue layers along less resistant paths, making it almost impossible to resect\(^4\). Moreover, there are no measures to avoid the harmful effects of silicone on the skin and adjacent tissues\(^6\). Complications may be treated with intravenous antibiotics, systemic corticosteroids, non-steroidal anti-inflammatory drugs, warm towels applied locally, local resection, mastectomy, and removal by liposuction, obviously depending on each case\(^9\).

Choong and Emberton\(^1\) carried out a meta-analysis of studies on AUR from 1966 to 1998 and found several uncommon causes of this condition, such as prostate-infiltrating chronic lymphocytic leukemia, prostate carcinoma metastasizing to the penis, bladder leiomyoma, retrovesical schwannoma, and AUR after penis contact with vaginal contraceptives. Gemperli et al.\(^7\) described a case of augmentation of the penis and scrotum due to migration of liquid silicone. Similar changes were also found in the present case. However, AUR has not been reported in the international medical literature as a complication of liquid silicone subcutaneous injections.

Although complications due to inappropriate injections of liquid silicone have seldom been described in literature, researchers agree that this practice should be restricted. Policies encouraging guidance and information are required. Furthermore, it is essential to control the acquisition and use of this material for esthetic purposes, since it is easy to apply and to use incorrectly.

REFERENCES