A 57-year-old woman presented with a predominantly right-sided cellulitic area of her buttock after receiving multiple bilateral silicone injections in the buttocks. The workup revealed subcutaneous infection with rapidly growing mycobacteria. Surgical management and etiologic factors are discussed, and a review of the literature is presented.

(Aesthetic Surg J 2004;24:342-345)

The first reported nosocomial outbreak caused by a rapidly growing nontuberculous mycobacterium was published in 1938 by da Costa Cruz. Although they remain a rare source of nosocomial infection, these pathogens accounted for 4% of all outbreaks investigated by the Centers for Disease Control and Prevention (CDC) from 1980 through 1990.

The 3 main pathogens causing these infections are Mycobacterium abscessus, M fortuitum, and, more rarely, M chelonae. These pathogens usually cause a cutaneous infection after a penetrating trauma. Postinjection abscesses prompted the first epidemic study of these subcutaneous infections caused by rapidly growing mycobacteria. The largest of these studies, involving 350 cases, was reported in 1997 from Barranquilla, Colombia.

Recent press reports suggest that this type of infection has become a concern for public health officials in the United States and worldwide as increasing numbers of people seek cosmetic procedures performed by untrained individuals using adulterated substances in nonmedical settings. An outbreak of soft tissue infections caused by rapidly growing mycobacteria was recently reported in the New York metropolitan area. These infections have been linked to a group of individuals who were illegally performing cosmetic procedures in their homes, under substerile conditions, with substances that are not regulated by the Food and Drug Administration (FDA).

In 2002, the New York City Department of Health and Mental Hygiene (DOHMH) began an investigation of serious soft tissue infections in the metropolitan area after reports that injections for cosmetic purposes were being administered by unlicensed practitioners. As of January 2003, DOHMH had found 14 confirmed cases and 11 suspected cases of infection with M abscessus after injections of adulterated silicone fluid. Injections were reported to have been administered between January 2002 and May 2002, mainly to Hispanic women, ages 19 to 65 years, living in New York City. Affected areas of the body included the hands, face, breasts, neck, and buttocks. Injected substances leading to the infections included silicone, hyaluronic acid compounds, collagen, and vitamins. The substances used in these cases were obtained from foreign sources; none had been produced in accordance with FDA regulations. No deaths resulted from these infections, but several patients required hospitalization, as well as drainage and debridement procedures that produced significant scarring and disfigurement. We report the details of one such case.

Case Report

On May 27, 2002, a 57-year-old Hispanic woman with no significant medical history was seen at University Hospital in Newark, NJ for treatment of cellulitis of the right buttock. Twenty-two days earlier, she had received bilateral injections of silicone fluid into her buttocks by an unlicensed practitioner in a residential setting in New York City. On the eighth day after the injections, the
Infection With Nontuberculous Mycobacterium After Injection of Adulterated Silicone Fluid

The patient went to an outside institution after she experienced a local acute reaction consisting of bilateral pain in the area of the injections concurrent with fever. She received intravenous antibiotic therapy for 8 days and was discharged with instructions to take oral antibiotics. Unresponsive to the oral antibiotics, she subsequently experienced fever and bilateral tenderness, with some purulent discharge from the right buttock. She came to University Hospital with bilateral pain and edema that was more significant on the right side.

Physical examination showed bilateral erythema, calor, and right-sided frank purulent discharge from multiple abscesses at injection sites where sinus tracks had formed (Figure 1). Left-sided findings were minimal, with no purulent discharge. The patient was admitted and administered intravenous cefazolin and gentamicin. Her abscesses were drained and cultured. In accordance with the recommendation of the infectious-disease service, she received a course of vancomycin and cefepime, as well as a one-time dose of tetanoid toxin.

The patient’s white blood cell count did not improve, remaining around 13,000 cells/L for the next 5 days. The superior and inferior margins of the right-sided cellulitis were spreading, significant tenderness continued, fevers were spiking up to 104.2°F, and multiple abscesses were draining frank pus. A computed tomographic scan of the right buttock (Figure 2) showed pools of silicone and diffuse involvement of the subcutaneous tissue, with possible involvement of the gluteal muscle. It was then decided that the antibiotic course was unsuccessful and that she would be taken to surgery for debridement of the right buttock.

The patient underwent a wide radical excision of the cellulitic area. Operative findings included a significant amount of fat necrosis, multiple granulomas, and multiple-fistula sinus tracts (Figure 3). The wound was left open and covered with a negative-pressure dressing. Appropriate pain management measures were taken, and the patient was placed in respiratory isolation.

At this point the cultures had grown acid-fast bacillus, most likely atypical mycobacterium. Because there was no longer any risk of tuberculosis, the patient’s antibiotic regimen was changed from vancomycin and cefepime to clarithromycin and cefixime. Clarithromycin administration was discontinued when the patient began to experience desquamation of the palms and soles. The patient’s
negative-pressure dressing was changed 3 times a week. The wound began to contract and form granulation tissue, with resolution of the purulent discharge.

On the 13th postoperative day, the patient received a skin graft. A negative-pressure dressing was used to cover the skin graft. The graft had 100% take 5 days after its placement. The patient was prescribed oral antibiotics and discharged. The infection and all symptoms resolved without further complications. The wound healed fully, but it resulted in significant scarring, for which the patient is seeking additional reconstructive surgery at the time of this writing (Figure 4).

**Discussion**

The complications caused by the mycobacteria present in silicone must be distinguished from the acute and long-term effects of the silicone injection. In the short term, silicone causes a granulomatous foreign-body reaction in the tissue. Sudden death can occur if silicone is injected intravascularly. Late findings can include severe fibrosis, skin discoloration, swelling, pain, and ulceration. Figure 5 depicts such late findings in another patient seen at University Hospital after receiving illegal silicone injections in the buttocks.

Mycobacterial infections remain a relatively uncommon cause of nosocomial soft-tissue infection. These pathogens are ubiquitous in soil and water throughout the world; however, they are rarely responsible for disease in human beings. They have been associated with pulmonary infections, infections involving foreign materials (ie, prostheses), and postsurgical infections. Bacteremia and disseminated infection are uncommon, usually occurring in the immunocompromised host, and are responsible for a large proportion of the deaths caused by these organisms. Tap or distilled water has been the most commonly identified source of infections involving *M. abscessus* and *M. fortuitum*. Tap water was also identified as a source for *M. chelonae* in 2002.

One possible explanation for this series of infections is contamination of the injected material. This hypothesis is supported by the fact that multiple infections have been caused by the same pathogen after injections by different operators, as well as the fact that no official standard for sterile technique was applied in the production and packaging of these materials. A second hypothesis involves the technique for sterilizing the equipment used for the injections, as well as the technique for the injections themselves. In all reported cases, including the case discussed in this article, the injections were administered in settings that provided substandard conditions. The operators in these cases had not received proper training in sterile technique and infection control, nor did they possess the equipment necessary to adequately sterilize reusable equipment, often using tap or distilled water to clean their instruments. In some cases they were found to be reusing single-use instruments after washing them in tap water.

Diagnosis of *M. abscessus* relies on its growth and identification from cultures grown in broth or on agar-based medium. Treatment of these infections involves the surgical removal of any foreign material, surgical debridement

![Figure 4](https://example.com/fig4.jpg)

**Figure 4.** View of the healed wound on the right buttock 6 months after treatment.

![Figure 5](https://example.com/fig5.jpg)

**Figure 5.** Example of a late granulomatous reaction to silicone fluid injected bilaterally into the buttocks.
and irrigation of the wound site, and antimicrobial therapy against the offending agent. Isolates of *M. abscessus* are generally susceptible to clarithromycin, amikacin, imipenem, and cefoxitin, although clarithromycin-resistant strains have been reported. Localized infection can usually be treated effectively with a 6-month course of a single antibiotic, whereas disseminated disease will generally require a longer course with a combination of at least 2 antibiotics to which the organism is susceptible to reduce the emergence of resistance.

**References**