

# Oleomas mimicking cutaneous xanthomas following breast augmentation by injection of liquid silicone

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## Abstract

**Background:** Oleoma is defined as a foreign body granuloma resulting from the injection of oily substances into the skin or subcutaneous tissue. Liquid injectable silicone has been used extensively over the last five decades for soft tissue augmentation. Although initially considered as a biologically inert material, it has been implicated in a variety of adverse reactions, sometimes with latent periods of decades.

**Main observations:** We describe the case of a 44-year-old Peruvian woman presenting with multiple painless yellowish papules and plaques limited to the lower half of the breasts, that seemed to be cutaneous xanthomas. A skin biopsy showed granulomatous inflammation with multiple clear vacuoles corresponding to injected liquid silicone particles, diagnosed as oleoma. The patient was then re-evaluated and she reported that she underwent breast augmentation by injection of liquid silicone five prior to presentation in our department. Thus, the diagnosis of oleoma was confirmed.

**Conclusions:** We describe a case with yellowish papules on both breasts in a woman that underwent breast augmentation by injection of liquid silicone. Since this unusual presentation of oleomas can be confused with cutaneous xanthomas, a biopsy is essential for diagnosis. (*J Dermatol Case Rep.* 2014; 8(1): 13-15)

## Introduction

Oleoma or paraffinoma is defined as a foreign body granuloma resulting from the injection of oily substances into the skin or subcutaneous tissue. A wide variety of substances have been extensively used during the last decades for soft tissue augmentation, to remove facial wrinkles or to improve the appearance of the ptotic breast.<sup>1,2</sup> All these materials have been implicated in a variety of adverse reactions because they can cause granulomatous inflammation.

Herein we present a case of a patient with an abnormal presentation of oleoma.

## Case report

A 44-year-old Peruvian woman presented with a year and a half history of symptomatic yellowish papules on the underside of the breasts. She had no significant medical history.

Cutaneous examination demonstrated multiple painless yellowish papules and plaques with epidermal atrophy, all strictly limited to the lower half of the breasts (Fig. 1). Because lesions initially showed a clinical appearance of eczema, patch tests were performed for suspected allergic eczema without relevant results and treatment was initiated with topical corticosteroids and topical and oral antifungals without improvement.

The histological features included numerous dilated vacuoles containing lipids and/or calcification of variable sizes, surrounded by a granulomatous inflammation with foreign body multinucleated giant cells throughout the subcutaneous tissues, resulting in the appearance called "Swiss cheese" (Fig. 2).

In the mammography very dense breasts with marked thickening of the skin were observed and normal breast parenchyma was replaced by many different sized opacities extending to the immediate skin surface (Fig. 3).

Serum levels of lipids were considerably elevated: total

cholesterol 271 mg/dl, LDL 154 mg/dl, HDL 55 mg/dl, triglycerides 309 mg/dl.

Our initial diagnosis was xanthomas, but when histopathological changes were observed, the patient was re-evaluated and she reported that she underwent breast augmentation by injection of liquid silicone by a Peruvian physician in 2005 (five years prior to presentation in our office). Even though

the initial diagnosis was xanthomatosis, the histopathological study ruled out this possibility, so no additional tests were performed to discard a paraneoplastic xanthomatosis. Therefore, the diagnosis of oleoma was confirmed.

The treatment recommended was total mastectomy with subsequent reconstruction, but our patient elected not to use any type of treatment and did not return to the medical consultation.

## Discussion

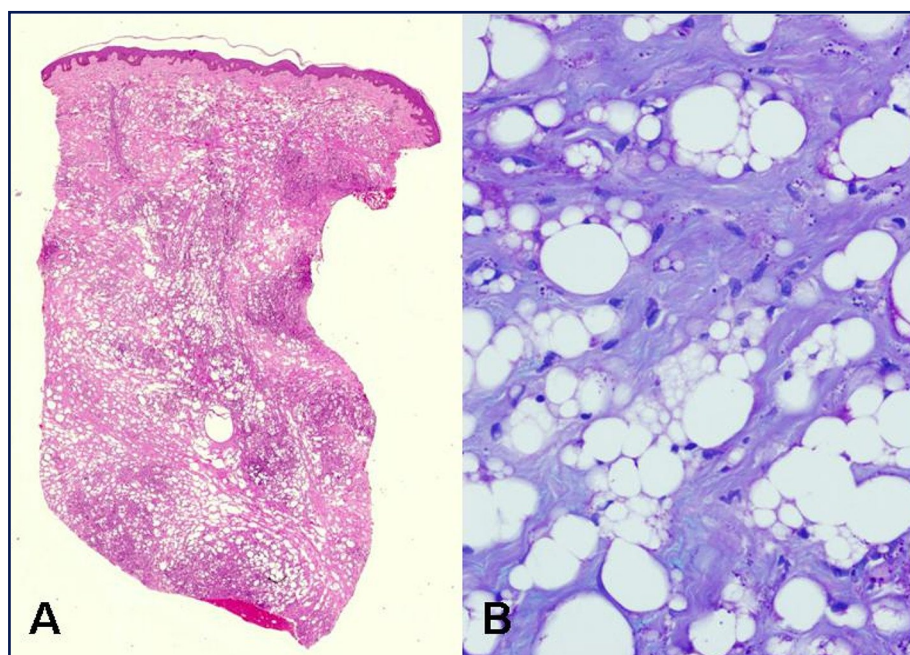
Oleoma or paraffinoma is defined as a foreign body granuloma resulting from the injection of oily substances into the skin or subcutaneous tissue. A wide variety of substances, including paraffin, petrolatum, vegetable oils, liquid petrolatum (mineral oil), hydrous wool fat (lanolin), sesame oil and beeswax have been injected subcutaneously to remove facial wrinkles or to improve the appearance of the ptotic breast.<sup>1,2</sup> There are cases of injection of filler materials in multiple locations and the most frequent are breast, penis, limbs and face.<sup>2,3</sup>

Injectable silicone has been used extensively over the last 40 years for soft tissue augmentation and correction of facial age-related wrinkles and acne scarring. Although considered biologically inert, this material has been implicated in a variety of adverse reactions including granulomas, disfiguring nodules and lymphoedema, sometimes with latent periods of decades.<sup>4,5</sup> In the 1980s several authors concluded that only minor and transient problems occur if pure silicone is properly used, but more recent reviews suggest that these complications can occur despite good techniques and good quality material.<sup>5</sup> Other authors suggest that



**Figure 1**

*Yellowish papules and plaques with epidermal atrophy limited to the lower half of the breasts.*



**Figure 2**

*A) Dilated vacuoles of variable size throughout the subcutaneous tissues, resulting in the appearance called "Swiss cheese" (haematoxylin and eosin, original magnification x 4).*

*B) Granulomatous inflammation with foreign body multinucleated giant cells and numerous vacuolated spaces containing paraffin oil and/or calcification (periodic-acid-Schiff diastase staining, original magnification x 60).*

**Figure 3**

*Mammography showing severe thickening of the skin and opacities replacing the parenchymal tissue of the breast and extending from the immediate subcutaneous region to the chest wall.*

often these complications are a result of the use of industrial grade products injected by unlicensed or unskilled practitioners.<sup>2,4</sup>

Although the pathogenesis is still unknown, granuloma formation has been attributed to a natural host response to wall off exogenous substances too large to be ingested by macrophages. Trauma and infection have been reported prior to silicone granuloma formation and they have been thought to be triggers for the formation of foreign body granulomas. This could explain why the onset of granulomatous reactions are unpredictable and may occur many years after injection of liquid silicone.<sup>4,5</sup>

Minor complications include pain, erythema, edema, tissue induration, pigmentation, peau d'orange, small skin nodules, cellulitis, ulcerations, local lymph enlargement, migration, tissue destruction and scarring. In addition to these minor reactions, more severe life-threatening systemic complications, such as pneumonitis, granulomatous hepatitis or an increased risk of breast cancer have been reported.<sup>5,6</sup>

Breast oleomas may occasionally mimic neoplasms upon physical examination and imaging.<sup>1</sup>

Microscopically, there is granulomatous inflammation with multiple clear vacuoles representing injected liquid silicone particles, resulting in the so-called "Swiss cheese".<sup>2</sup>

Different treatments have been reported, including intralesional and systemic corticosteroids, oral tetracycline, imiquimod cream, liposuction and surgical resection but usually with poor results. The first line of treatment is surgery, but surgical resection of the affected area is difficult because the silicone extends into a much larger area through the subdermal layer and usually a flap reconstruction is required.<sup>2,3,5,6</sup>

The diagnosis is challenging because the patient usually does not report to the physician that he received silicone injections, which may result in delayed diagnosis and performing unnecessary tests.

## Conclusions

Oleoma or paraffinoma is defined as a foreign body granuloma resulting from the injection of oily substances into the skin or subcutaneous tissue. We describe a case with yellowish papules on the underside of the breasts that seemed to be cutaneous xanthomas in a woman that underwent breast augmentation by injection of liquid silicone more than five years ago. Since this abnormal presentation can be confused with cutaneous xanthomas, a biopsy is essential for diagnosis.

These reactions can mimic autoimmune, infectious or neoplastic disorders so we think it should be included in the differential diagnosis of chronic inflammation or granulomatous reactions.

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