

Mycobacterium abscessus Infection after Breast Lipotransfer: A Report of 2 Cases

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Summary: *Mycobacterium abscessus* is a rare, non-tuberculous, rapidly growing mycobacterium. Although it has been usually associated with chronic pulmonary infections in cystic fibrosis patients, the second most frequent infection sites are the skin and subcutaneous tissue. Most of the cutaneous infections described in the literature occur secondary to cosmetic invasive procedures, many of them in the context of medical tourism. Its atypical presentation and antibiotic-resistant nature make its diagnosis and therapeutics challenging. In this case report, we present 2 cases of *M. abscessus* infections secondary to breast lipotransfer reported in the same private center. Case 1 patient underwent surgery to treat scar contracture resulting from previous quadrantectomy. Case 2 patient underwent breast augmentation with lipotransfer. Both of them developed lesions in the breast and in the donor site (abdomen). The therapeutic regimen used was amikacin (1 g/24h) + tigecycline (50 mg/12h). In case 1, we performed a simple mastectomy, and in case 2, periodical ultrasound-guided drainages were performed as additional procedures. To our knowledge, these are the first 2 cases that describe an infection secondary to breast lipotransfer. The aim of our report was to illustrate the presentation, diagnosis, therapeutic management, and strategies available to prevent this complication. (*Plast Reconstr Surg Glob Open* 2020;8:e3063; doi: [10.1097/GOX.0000000000003063](https://doi.org/10.1097/GOX.0000000000003063); Published online 19 August 2020.)

M*ycobacterium abscessus* is a rare, non-tuberculous mycobacterium discovered as a human pathogen in 1953.¹ Its name reflects its capability of generating subacute cutaneous infections with the formation of fistulas and subcutaneous abscesses, usually secondary to invasive cosmetic procedures.¹⁻¹⁰

We present 2 cases of *M. abscessus* infections secondary to lipotransfer in breast surgery. These patients were admitted to Cruces University Hospital (Spain) for diagnosis and treatment. The aim of our report was to illustrate the presentation of this rare complication, as well as the diagnosis, therapeutic management, and strategies available to prevent its transmission.

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CASE REPORT

CASE 1

A 66-year-old woman underwent surgery to treat scar contracture resulting from a previous conservative oncologic surgery and adjuvant radiotherapy on her left breast in a Peruvian private center. A lipotransfer was performed, with the abdomen as the donor site. A month later, the patient was admitted to our service with tenderness and ulcerative lesions (Fig. 1). She was afebrile with no other symptoms. We did not notice any acute-phase reactant elevation on blood analysis, and no collections were observed on the echography. Antibiotic empiric therapy was started with intravenous amoxicillin/clavulanic. Despite this treatment, the lesions progressed over the following 2 weeks (Fig. 2). Wound cultures obtained before antibiotic usage were negative. Sixteen days after admission, wound biopsy was performed to rule out atypical infection. These new cultures showed growth of multiresistant *M. abscessus*, *subsp. bolletii*, with sensitivity only to imipenem, amikacin, and tigecycline. The therapeutic regimen was therefore changed to amikacin (1 g/24h) + tigecycline (50 mg/12h) without any clinical improvement. During the fourth week of admission, we performed a simple mastectomy (Fig. 3). Antibiotic treatment was continued 6 weeks thereafter. Signs of recurrence in the affected breast were no longer observed. However, 2 months before hospital discharge, the patient presented

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Fig. 1. Case 1: a 66-year-old woman with breast lesions during admission.



Fig. 2. Case 1: breast lesions of the patient at 2 weeks before commencing treatment with amoxicillin/clavulanic was started.

with an abscess and fistula on her right lower abdominal quadrant, the donor site for the lipotransfer. Drainage and fistulectomy were performed, and the same antibiotic treatment was administered for a further 6 weeks. To date, the patient remains asymptomatic.

CASE 2

A 29-year-old woman was admitted to our department with multiple subacute abscesses and fistulas on both breasts and in the abdominal wall (Fig. 4). The patient had undergone a cosmetic breast augmentation with lipotransfer using donor abdominal fat; this surgery was performed 2 months ago at the same clinic as the patient in case 1, only 1 week later. The patient had undergone a cosmetic breast augmentation with lipotransfer using donor abdominal fat two months ago. This surgery was performed at the same clinic as the patient in case one, only 1 week later. Wound biopsy was performed, and



Fig. 3. Case 1: postoperative results of the patient. Simple mastectomy was performed, where the nipple-areola complex, skin, and gland were removed, and direct closure was done.



Fig. 4. Case 2: a 29-year-old woman with breast and abdominal wall lesions during admission.

microbiological analysis disclosed the same pathogen as in case 1. She underwent 3 months of the same antibiotic treatment. Periodical ultrasound-guided drainage of the collections was performed to avoid radical surgery in a young patient. To date, the patient remains asymptomatic.

DISCUSSION

M. abscessus is an emerging pathogen usually associated with chronic pulmonary infections in cystic fibrosis

patients.^{2,4,6,11} The second most frequent infection sites are the skin and the subcutaneous tissue. Most of the cutaneous infections described in the literature occur secondary to a cosmetic procedure. *M. abscessus* infections related to breast prosthetic augmentation,^{1,5,7,9,10,12–15} breast reduction,¹³ liposuction,^{1,2,4–6,13} body-contour surgery,^{2,4,5,13} rhytidectomy,^{1,3,4,15} and blepharoplasty¹⁵ have been described. To our knowledge, these are the first 2 cases that describe infection secondary to breast lipotransfer.

This complication should be suspected when facing a case of subacute cutaneous ulcers, fistulas, or abscesses with negative surface culture. Particular attention should be paid after surgeries are performed in a developing country in the context of medical tourism. Symptoms usually start between 3 weeks and 2 months postsurgery.^{4,9,13,14} Once suspected, a wound biopsy should be taken and cultured in a *Löwenstein–Jensen* medium. This pathogen is a rapidly growing mycobacterium; therefore, results may be obtained after 2–5 days.^{1,5} Once the diagnosis is determined, antibiotic therapy should be started. However, *M. abscessus* is resistant to most antibiotics because of its hydrophobic cell wall, biofilm generation, resistance genes horizontally transferred from pseudomonads and streptomycetes, and constitutive genes that code proteins such as β -lactamase and aminoglycoside phosphotransferase.² The most effective drugs used in vitro are amikacin, cefoxitin, and imipenem. Although clarithromycin was previously considered as the first-line therapy, most strains now have inducible resistance genes against it.^{2,11} Currently, there is no strong evidence demonstrating in vivo susceptibility in cases of extrapulmonary infection.² Based on the evidence from case reports, a combined therapy of clarithromycin, amikacin, and another intravenous antibiotic is recommended. In any case, drug selection should be guided by a susceptibility test.^{2,4,13} There is no clear consensus about the treatment duration, but it is recommended to maintain a combined treatment for 2 to 6 months. Nevertheless, medical therapy is not enough, and it is usually necessary to perform any kind of surgical debridement or drainage to achieve complete resolution. We did not use macrolides, as our strain was resistant.

In most cases, tap water serves as the contamination source when it is used to clean surgical instruments or the skin of the patients.^{4,6,9} *M. abscessus* can be resistant to the treatment of water with chlorine and to usual chemical sterilization methods like glutaraldehyde usage.^{4,6} Once a case or outbreak is detected, the Petroff method should be used to test contamination as described by Guimarães et al.⁶ The tap water system should be reviewed and the filters should be changed to those with a pore size of 0.2 μ m. A chemical sterilization system such as 0.2% peracetic acid is also safe. Physical sterilizing methods are effective. Before any invasive procedure, the skin must be disinfected using a combination of alcohol and iodine, which is the most effective antiseptic solution.⁴

CONCLUSIONS

M. abscessus infection is a rare but devastating complication in aesthetic surgery. Its atypical presentation and

antibiotic-resistant nature make it a diagnostic and therapeutic challenge. Aggressive surgical debridement and prolonged antibiotic therapy are critical. Once an outbreak is detected, contamination source must be sterilized correctly using the most appropriate method.

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REFERENCES

1. Fox LP, Geyer AS, Husain S, et al. *Mycobacterium abscessus* cellulitis and multifocal abscesses of the breasts in a transsexual from illicit intramammary injections of silicone. *J Am Acad Dermatol.* 2004;50:450–454.
2. Medjahed H, Gaillard JL, Reytrat JM. *Mycobacterium abscessus*: a new player in the mycobacterial field. *Trends Microbiol.* 2010;18:117–123.
3. Agarwal A, Maloney RW. *Mycobacterium abscessus* outbreak after rhytidectomies performed in an outpatient surgery center. *Plast Reconstr Surg.* 2011;128:85e–86e.
4. Wu CH, Thong HY, Huang CC, et al. Report of two cases of cutaneous *Mycobacterium abscessus* infection complicating professional decorative tattoo. *Dermatol Sin.* 2017;35:40–43.
5. Cusumano LR, Tran V, Tlamsa A, et al. Rapidly growing *Mycobacterium* infections after cosmetic surgery in medical tourists: the Bronx experience and a review of the literature. *Int J Infect Dis.* 2017;63:1–6.
6. Guimarães T, Chimara E, do Prado GV, et al. Pseudooutbreak of rapidly growing mycobacteria due to *Mycobacterium abscessus* subsp *bolletii* in a digestive and respiratory endoscopy unit caused by the same clone as that of a countrywide outbreak. *Am J Infect Control.* 2016;44:e221–e226.
7. Jackowe DJ, Murariu D, Parsa NN, et al. Chronic fistulas after breast augmentation secondary to *Mycobacterium abscessus*. *Plast Reconstr Surg.* 2010;126:38e–39e.
8. Jeong SH, Kim SY, Huh HJ, et al. Mycobacteriological characteristics and treatment outcomes in extrapulmonary *Mycobacterium abscessus* complex infections. *Int J Infect Dis.* 2017;60:49–56.
9. Schefflan M, Wixtrom RN. Over troubled water: an outbreak of infection due to a new species of *Mycobacterium* following implant-based breast surgery. *Plast Reconstr Surg.* 2016;137:97–105.
10. Toy BR, Frank PJ. Outbreak of *Mycobacterium abscessus* infection after soft tissue augmentation. *Dermatol Surg.* 2003;29:971–973.
11. Cho EH, Huh HJ, Song DJ, et al. Drug susceptibility patterns of *Mycobacterium abscessus* and *Mycobacterium massiliense* isolated from respiratory specimens. *Diagn Microbiol Infect Dis.* 2019;93:107–111.
12. American Society for Surgery of the Hand Council. ASSH position statement on hand transplantation 2013. *J Hand Surg Am.* 2013;38:2234–2235.
13. Cai SS, Chopra K, Lifchez SD. Management of *Mycobacterium abscessus* infection after medical tourism in cosmetic surgery and a review of literature. *Ann Plast Surg.* 2016;77:678–682.
14. Feldman EM, Ellsworth W, Yuksel E, et al. *Mycobacterium abscessus* infection after breast augmentation: a case of contaminated implants? *J Plast Reconstr Aesthet Surg.* 2009;62:e330–e332.
15. Galea LA, Nicklin S. *Mycobacterium abscessus* infection complicating hand rejuvenation with structural fat grafting. *J Plast Reconstr Aesthet Surg.* 2009;62:e15–e16.