

# Methicillin-Resistant Staphylococcus Aureus Lip Abscess as a Complication of Facial Laceration

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**Abstract** *Staphylococcus aureus* is a gram-positive round-shaped bacteria found in the environment and skin of humans and animals and commonly causes skin and soft tissue infections. Infections caused by drug resistant strains of *Staphylococcus aureus*, such as Methicillin-resistant *Staphylococcus aureus* (MRSA), are more difficult to treat due to a more limited pool of antibiotics available for use. We present a case of a 41-year-old man who presented to the emergency room with lower lip swelling after suffering a facial laceration from shaving. Physical exam indicated a desquamated, erythematous, and edematous lower lip lesion that was tender upon palpation. A computerized tomography of the lower lip showed diffuse swelling and fluid in the lower lip. Analysis of the purulent discharge from the wound grew MRSA and antibiotics were given to cover against this strain. The lower lip swelling decreased in size and the patient was discharged on oral antibiotics. This case demonstrates the importance of rapid identification of antibiotic-resistant strains of bacterial skin infections and an uncommon location of cellulitis.

**Keywords:** lip, cellulitis, edema, MRSA

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## 1. Introduction

*Staphylococcus aureus* (*S. aureus*) is a gram-positive round-shaped bacteria that is found in the environment and commonly on skin and mucous membranes. *S. aureus* can cause a wide range of infections including skin and soft tissue infections [1]. Drug-resistant strains, including methicillin-resistant *S. aureus* (MRSA) can also cause skin and soft tissue infections and should be identified early to appropriately manage antibiotic treatment [2]. Both *S. aureus* and MRSA infections commonly cause cellulitis which typically affects the lower extremities [1]. There have been scarce reports of cellulitis affecting the lips in the literature; causes of infection include insect bite, isotretinoin, Epstein-Barr virus (EBV), and MRSA [3,4,5,6]. We present a case of a 41-year-old man with lower lip erythema, edema, and purulent discharge after cutting his lower lip from shaving. The aim of this study is to describe a case of MRSA lip cellulitis, its treatment, and its clinical presentation.

## 2. Case

A 41-year-old male with no known past medical history presented with a week of lower lip swelling. Patient reports that he was shaving his face when he cut himself

on his lower lip. He noticed a closed comedone develop shortly thereafter with progressive swelling of his lower lip over the following days. The lower lip swelling was described as "tight" and was swollen throughout with cyclical dull pain. He denied taking any remedies to make the tightness better. Attempting to eat and drink was difficult secondary to the swelling. He denied recent fevers, sore throat, tongue swelling, and difficulty breathing. Additionally, he denies a history of allergies to food and medication. He endorsed an allergy to pollen which presents as sinusitis but is currently not experiencing symptoms. This has never happened to him in the past. The swelling persisted without improvement, and within four days of onset, he presented to the emergency department (ED) of an outside hospital twice. Between both of his visits, he was prescribed diphenhydramine, famotidine, and prednisone for suspicion of an allergic reaction. After taking the medications, his symptoms continued with no improvement, so he presented to the ED of our institution for a second opinion five days after initial onset. Here he was given cefalexin for suspicion of lower lip cellulitis. After discharge, he noted mild improvement with the antibiotic, however, he presented to our ED again seven days after initial symptom onset since the swelling and pain did not subside.

On arrival to the ED, he was afebrile at 98.2°F and hypertensive at 162/102 with a pulse rate of 92 beats per minute and respiratory rate of 18 breaths per minute.

Physical examination revealed a warm, erythematous lower lip with desquamation that was tender to touch. Upon inspection, no open wounds or abscesses were noted. It was difficult to ascertain presence of fluid collection. There was no erythema or lesions noted on the upper lip. Bloodwork was significant for an erythrocyte sedimentation rate (ESR) of 92, a C-reactive protein (CRP) of 7.4, and a serum potassium of 2.9. Infectious workup included blood cultures and methicillin-resistant *Staphylococcus aureus* (MRSA) nares screening. He was given one dose of clindamycin and vancomycin in the ED, ibuprofen for pain control, and was admitted for lower lip cellulitis versus angioedema.

After admission, otolaryngology was consulted and recommended an imaging study of the lesion and a dental consultation. A computerized tomography (CT) of the facial structures indicated diffuse swelling and fluid in the lower lip, diffuse skin thickening and subcutaneous edema in the lower face, without peripherally enhancing fluid collections that would suggest abscess of the lower lip. The morning after admission, the patient noted purulent discharge expelling from his lower lip (Figure 1). Although MRSA nares were negative, the discharge was cultured and grew MRSA. The isolated bacteria were susceptible to clindamycin, doxycycline, gentamicin, rifampin, tetracycline, trimethoprim-sulfamethoxazole, and vancomycin. He continued to be treated with IV vancomycin and over the next few days the lower lip swelling improved, and he was able to tolerate a diet. Bloodwork for possible angioedema indicated a C1 esterase level and C4 complement level which were both within normal limits. He was discharged on doxycycline and was scheduled to follow up in the outpatient clinic, however, he was lost to follow up.



**Figure 1.** Skin and soft tissue infection of lower lip as evidenced by swelling, discharge, and desquamation when compared to the upper lip

### 3. Discussion

We present a rare case of lower lip MRSA cellulitis incited by a razor blade cut while shaving. Initially presumed to be an allergic reaction, the patient was treated with diphenhydramine, famotidine, and prednisone, to which his symptoms did not respond. Once cellulitis was suspected and infectious workup was pursued - lip discharge yielded MRSA positive cultures. The cellulitis was managed with IV vancomycin which yielded symptomatic

improvement, after which he was transitioned to and discharged on oral doxycycline.

Lip swelling most commonly presents secondary to trauma or allergic reaction but may also be caused by infectious agents or tumors [7]. While angioedema should be high on the differential, MRSA soft tissue infection can present similarly with symptoms of erythema, edema, and areas of fluctuance. Most patients with MRSA infections present with localized infection in the lower extremities. However, a certain percentage can develop more serious illness and rapidly clinically deteriorate [8]. Thus, quick identification and appropriate treatment is fundamental. Appropriate treatment in hospitalized patients is IV vancomycin or daptomycin which can be transitioned to oral doxycycline, minocycline, tetracyclines, or trimethoprim-sulfamethoxazole outpatient [1]. There have been few other documented cases of lip MRSA cellulitis in the literature and of these, most cases were initially treated as a different differential diagnosis [5,8]. No cases identified accidental self-induced wound as an infectious source. One case was fatal [8]. This should emphasize the importance of keeping differentials broad and thinking of infectious causes in patients who present with lip swelling.

### 4. Conclusion

This case demonstrates the possibility of MRSA lower lip abscess development after a razor blade cut. The patient in this case was first mismanaged for suspected lower lip cellulitis versus angioedema before the abscess was identified and treated with IV vancomycin. Treatment of with appropriate broad-spectrum antimicrobials was crucial to prevent the spread of infection and resolve this patient's symptoms. This unique case demonstrates the importance of approaching lip swelling following trauma with a high degree of clinical suspicion and considering the possibility of MRSA lower lip abscess.

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