

Case Report

# Actinomycotic Sinus of the Buccal Mucosa: A Rare Complication of Cheek Dimple Creation

Badr AbdullGaffar, MD; Khalid Ghandoor, MD; and Qassim Ahli, MD

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## Abstract

Even though actinomyces are common oral commensals, actinomycosis is an uncommon oral infection. Cheek dimple creation is a common surgical procedure with rare complications. Bacterial infection with abscess formation and foreign body reaction were reported. We report a rare example—and, to our knowledge, the first—of oral actinomycosis after cheek dimple creation. A young woman complained of a chronic tender nodule of the right buccal mucosa with pus discharge after surgery for cheek dimple creation. Histologic examination showed a sinus tract with actinomyces microorganisms. This complication can be mimicked by other oral or dental sinus-forming lesions, can be chronic and insidious, and could therefore clinically be missed or mistreated. This might delay the diagnosis and cause scarring and disfigurement. The treatment of choice is early recognition and complete surgical excision to avoid irreversible complications and prevent recurrence. Awareness of this potential complication by aesthetic surgeons, oral clinicians, and dentists is important. Patients' adherence to preventive measures and plastic surgeons' application of inclusion criteria and contraindications, as well as their choice of best technique per patient, should help minimize such a problem in a simple and safe aesthetic procedure.

## Level of Evidence: 5

## Keywords

actinomycosis, cheek dimple, oral, sinus

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Facial dimple creation is a safe and simple cosmetic surgery.<sup>1–6</sup> Complications might occur, albeit rarely.<sup>1–6</sup> Poor oral and dental hygiene and certain surgical techniques are possible risk factors.<sup>1–6</sup> Even though actinomyces are common oral commensals, oral actinomycosis is rare.<sup>7–10</sup> Certain predisposing factors—for example, trauma or dental or oral surgeries that cause a mucosal lesion—might help actinomyces gain access to deep tissue, become invasive, and cause chronic draining sinuses.<sup>7–10</sup> Because there is an increased worldwide demand for facial dimple creation, the rate of infection-related complications might increase. We report an example of oral actinomycotic sinus formation after cheek dimple creation. Other oral or dental sinus-forming lesions can mimic this rare complication. Because it is a chronic and slowly evolving complication, it could be missed or mistreated, thereby leading to excessive scarring and disfigurement. Aesthetic surgeons, oral surgeons, dentists, and oral pathologists should be aware of this potential complication. Certain preventive measures, application of strict inclusion criteria, and choice of surgical technique should minimize this problem.

## CASE REPORT

A 25-year-old woman presented with a nodule in the right buccal mucosa for 1 year. It was treated with several short courses of antibiotics without much improvement. It became painful with pus discharge and bad smell. The patient gave a history of surgery for bilateral cheek dimple creation in an outside private clinic 2 years ago. In addition, she had a history of a dental implantation 5 years ago for malocclusion due to a missing second upper-right molar tooth and midline shift. She gave a history of Bell palsy treated with steroids months after the dimple creation and prior to her current presentation. The patient

From Rashid Hospital, Dubai, United Arab Emirates

### Corresponding Author:

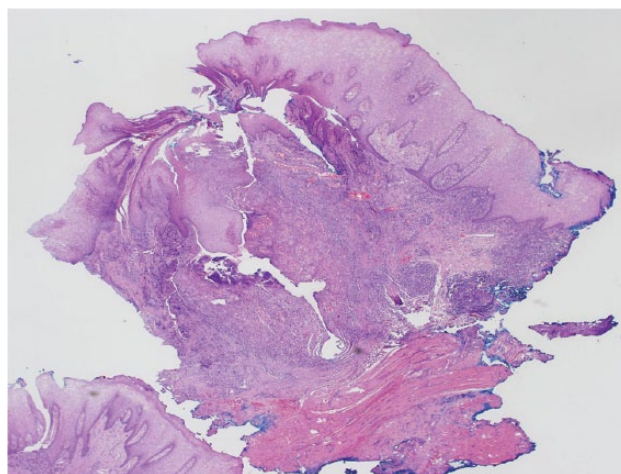
Badr AbdullGaffar, MD, Pathology Section, Rashid Hospital, PO Box 7272, Dubai, United Arab Emirates.  
E-mail: badraah009@yahoo.com

had been married for 1 year. She had primary infertility and facial acne and hirsutism due to polycystic ovary syndrome, for which she received several medications that included Clomid, metformin, and Glucophage. The patient did not give a history of fillers injection into her face. She did not smoke or drink alcohol. She was not diabetic. Her blood tests and inflammation serology markers were within normal limits. Clinical examination demonstrated an erythematous tender nodule of the right buccal mucosa with a suture corresponding to the surgically created dimple. The clinical impression was abscess formation or foreign body granuloma. The nodule was surgically excised via intraoral approach under local anesthesia. The suture and a portion of the underlying buccal skeletal muscle were also removed. The excised material was submitted to the laboratory for pathologic evaluation. The patient had a course of antibiotics (oral tablets of penicillin, 500 mg, for 7 days) and antiseptic mouthwash. The surgical site healed without complications. There was no recurrence of the lesion after 3-month follow-up. We could not recognize the exact method used for the dimple creation, because the procedure was performed 2 years back in an outside private clinic. However, the presence of a permanent tight stitch with a mucosal defect could suggest an open technique with tissue excision and remaining nonabsorbable suture.

The specimen was fixed in formalin. It was grossly described as a piece of gray white firm nodule that measured  $0.6 \times 0.5$  cm with a suture. It was bisected and submitted for tissue processing. Histologic examination showed a sinus tract surrounded by granulation tissue and chronic inflammation with few reactive lymphoid follicles (Figure 1). The oral squamous epithelium showed florid hyperplasia. The cavity showed a dark purple to blue gram-positive fluffy filamentous actinomyces-like organisms. Negative periodic acid–Schiff and Grocott methenamine silver stains ruled out fungi. No multinucleated giant cells, epithelioid granulomas, or refractile polarizing foreign material was seen. This ruled out the possibility of foreign body reaction. We entertained the diagnosis of actinomycotic sinus with nonabsorbable suture complicating a previous cheek dimple creation.

## DISCUSSION

Facial dimple creation is a common cosmetic practice with a very low rate of complications.<sup>1-6</sup> Hematoma formation or bleeding is one of the most common complications. Injury to the buccal branch of facial nerve or salivary gland duct is rare.<sup>1-6</sup> Excessive scarring secondary to foreign body reaction or infection with abscess formation is also uncommon but can result in disfigurement.<sup>1-3</sup> In general, open techniques have more risk of complications because more tissue is resected, in contrast to closed techniques with little tissue defect.<sup>1-6</sup> Nonabsorbable sutures that are kept for a long time



**Figure 1.** Low-power view shows an irregular sinus tract of the buccal tissue with granulation tissue and marked chronic lymphoid inflammation of the surrounding tissue. Aggregates of dark blue amorphous fluffy material are seen within the sinus cavity. Note the overlying hyperplastic oral squamous epithelium and the underlying buccal skeletal muscle tissue focally involved by fibrosis and inflammation (hematoxylin and eosin,  $20\times$ ).

tend to have an increased potential risk of complications than that of absorbable sutures because they increase the risk of foreign body reaction and provide an access point for food debris, dental plaques, and oral actinomyces. Excessive surgical scraping of the buccal tissue to create more adhesion, the use of foreign material (eg, Vaseline gauze or silicon cylinder), and excessive tightening of stitches can create a mucosal defect accessible by oral commensals or lead to ischemia of the mucosa.<sup>1-3</sup> Lari et al described a nondestructive, no-excision technique that features no sutures left behind 1 week after the surgery. It involves a small incision and scraping of the mucomuscular attachments of the skin and mucosal sides, and a bolster stitch is kept for 1 week only. Compared to other techniques—particularly, open technique—no tissue is resected, and no suture (whether permanent or absorbable) is left behind, thus minimizing risk of hematoma and infection.<sup>3</sup> Poor condition of the oral and dental tissue increases the risk of infection as well. Actinomyces are gram-positive filamentous bacteria that are commensals in the oral cavity.<sup>7-10</sup> Actinomycosis is a chronic infection characterized by draining sinuses.<sup>7-10</sup> The organisms cause infection by gaining access into the deeper tissues through a mucosal lesion secondary to dental caries, dental manipulation, trauma, or surgically created defect.<sup>7,9,10</sup> Actinomycotic sinuses might mimic other infectious and noninfectious conditions—for example, a ruptured cyst with a sinus formation.

Such a complication without prior knowledge of facial dimple creation might present a diagnostic challenge to the unwary dentist, oral surgeon, or pathologist because of its rarity, chronicity, and resemblance to other oral and

odontogenic lesions. The rate of such complications might increase because there is a global increased demand and performance of facial dimple creation.<sup>1-6</sup> An important differential diagnosis includes cutaneous odontogenic sinuses secondary to chronic dentofacial infection that can present as chronic skin lesions and might mimic an artificial dimple.<sup>11,12</sup> A thorough clinical and radiologic dental evaluation should rule out this possibility because its management is different.<sup>11,12</sup> Another differential diagnosis might include inflammatory fibrous hyperplasia of the oral mucosa secondary to nonresorbable suture with a piece of dental plaque morphologically similar to a mass of actinomyces organisms.

Oral actinomycotic sinus complicating dimple creation is managed by early surgical excision, followed by a course of antibiotics and proper oral hygiene to prevent future complications and to avoid recurrence. Potential complications in untreated cases might include excessive scarring with disfigurement, abscess formation, formation of multiple skin sinuses, spread to adjacent tissue, and cervicofacial actinomycosis. Therefore, dimple creation surgery should not be performed on patients with bad oral hygiene and dental caries or in patients who are unlikely to keep good oral and dental hygiene after the surgery. Patients with fillers injected in the face are not good candidates for dimple creation.

We could attribute the prolonged delay in diagnosis in our case to several factors. Actinomycosis is usually a chronic infection with a slow and insidious progress, and it is unresponsive to short courses of commonly used antibiotics. This rare complication is usually unsuspected by clinicians and therefore treated conservatively. The patient had other medical as well as oral and facial skin aesthetic problems and took multiple oral and topical treatments, which might have masked the underlying lesion. Therefore, knowledge of the history of previous surgery, clinical suspicion, and culture should have helped with the diagnosis earlier.

## CONCLUSIONS

This unusual complication of a simple common cosmetic surgery suggests that patients' adherence to a course of antibiotics and to proper oral hygiene is a mandatory preventive measure. In addition, assessing the condition of oral and dental health before dimple creation and correcting as necessary might help reduce the risk of future complications. Aesthetic surgeons should be aware of this

problem, recognize suitable candidates, and know the contraindications to dimple creation; they should also apply the best practice that helps to prevent a potentially disfiguring complication after such a simple cosmetic procedure. Management of actinomycotic sinus is primarily by surgical excision, supplemented by a course of antibiotics.

## Disclosures

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