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## A tooth can be a culprit for life Threatning: A review with a case report

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### Abstract

In head and neck region Necrotizing fasciitis is an uncommon, potentially fatal, soft tissue infection characterized by extensive necrosis and gas formation in the subcutaneous tissue and fascia. Factors responsible for development of necrotizing fasciitis are diabetes mellitus, chronic renal disease, peripheral vascular disease, malnutrition, advanced aged, obesity, alcohol abuse, intravenous drug used, surgery, ischemic ulcers. The purpose of this report is to heighten the awareness of this infection. To avoid a fatal outcome in these patients, prompt diagnosis and early radical surgical debridement is necessary. This article reviews the literature and also presents case report of 50 year old female with swelling extending on both side of jaw. Necrotic region and sinus formation in the neck and chest region was observed.

**Keywords:** elastic modulus, flexural strength, provisional restorative materials

### Introduction

Dental infections originate in tooth, which can spread from enamel to dentine, pulp, periapical region, and to surrounding facial spaces. Hippocrates circa 500 BC was first to describe Necrotizing soft-tissue infection (NSTI), when he wrote, "Many were attacked by the erysipelas all over the body when the exciting cause was a trivial accident... flesh, sinews, and bones fell away in large quantities... there were many deaths." It seems that despite of advances in our studies of this disease and advances in medical care, in the last 30 years the mortality rate associated with NSTI has not decreased or changed and remains 25% to 35% [14-15].

Diffuse necrosis of fasciae and subcutaneous tissues is characteristic of Necrotizing fasciitis (NF) which is rapidly spreading, soft tissue infection. In 1871 during civil war Joseph Jones, an American army surgeon, described this entity. He named it "hospital gangrene." 20 cases of "streptococcal gangrene" Melany reviewed in 1924. He noticed that subcutaneous necrosis is the indication of necrotizing fasciitis. It predominantly affects the tissues of the abdominal wall, the perineum and the extremities, but can be seen in the maxillofacial region also [1, 3].

In 1952 Wilson coined the term "necrotizing fasciitis" and has gained wide acceptance. In the neck region Necrotizing fasciitis is rare and usually occurs secondary to dental infection, gingivitis, or pulpitis. However, necrotizing fasciitis can occur due to any deep seated neck infection. It is most often a mixed infection involving both aerobes and obligate anaerobes. The spread of mixed bacterial infection is rapid through the fascial planes of the head and neck involving the subcutaneous tissues, skin, fasciae and even muscles [2, 3].

Severe systemic toxicity, carotid artery erosion, jugular vein thrombophlebitis, aspiration pneumonia, meningitis and mediastinitis are the result of misdiagnosis and delayed treatment. 15%-40% is the mortality rate. For successful treatment of this life-threatening condition consists of early diagnosis and aggressive surgical intervention combined with supportive therapy such as appropriate antibiotics, airway maintenance and adjunctive hyperbaric oxygen therapy. To a surgeon, Computed tomography (CT) is of great help for early diagnosis because it detects gas bubbles which can be difficult to see on plain radiographs [4].

### Case Report

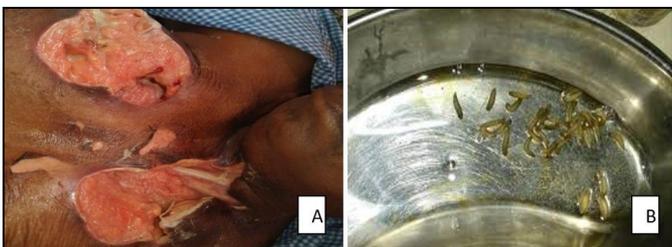
A 50-year-old female patient had chief complaints of toothache in the lower left posterior

region since one month. She then started experiencing swelling on the same site. The swelling extended bilaterally. The patient also started difficulty in breathing. She had no systemic history. She had carious tooth, in region of 34 and 35. Initially there was swelling in same region. The swelling extended on both side of the jaw. The patient was treated by incision and drainage. The patient reported to our department of oral and maxillofacial surgery then after, with necrosis and sinus formation in the neck and chest region. The necrotic area increased and dirty yellow necrotic foul smelling fascia was visible on removing the blackened overlying skin.



**Fig 1:** Pre-operative photo depicting necrotizing fasciitis extending to chest region

Number of maggots were found in the necrotic area. They were removed one by one by using turpentine ointment and copious irrigation by normal saline. Intravenous medications were also started. The irrigation of the site was done every day for about 3-4 weeks. Later the number of maggots decreased. The wound started granulating.



**Fig 2a:** Area irrigated with turpentine ointment,  
**2b:** Maggots collected in kidney tray



**Fig 3:** Granulating wound after 3 weeks

## Discussion

Abdominal wall, peritoneum, and extremities are the tissues

predominantly affected by necrotizing fasciitis. In head and neck region this necrotizing fasciitis is rare. The severity of this disease depends on the etiology, anatomical site, tissues depth, type of bacteria, and general condition of patient. Dental and gingival infections are the secondary cause for development of necrotizing fasciitis

Polymicrobial or single organism can cause Necrotizing fasciitis which is a aggressive soft tissue infection [5, 6, 7]. Necrotizing fasciitis of odontogenic origin can also be a result of multiple organisms as well as mixed infections [8]. Rapid spreading bacterial infection "Odontogenic necrotizing fasciitis" spreads to involve multiple fascial tissue planes, which leads to vascular compromise, thrombosis, or rupture, along with necrosis of adipose, integumentary, muscular, and subcutaneous and cutaneous tissues. NF may involve mixed infection of anaerobes plus facultative species such as Streptococci or Enterobacteriaceae; and/or infection with only Streptococci [10]. In study by Mitchell R Gore, the patients were classified according to pus culture. The mortality rate of patients with NF varies significantly from 10% to 40%, and figures as high as 80% have been reported when early surgical or medical intervention is not available [8, 9].

In the early stages as the clinical features are not clear, so it may be wrongly diagnosed as a routine dental infection. There are some findings that one should be aware of and which may indicate necrotizing fasciitis or soft tissue infection'. These features include dental infections that spread to the lower neck anterior Chest, abnormal accumulation of gas in the tissues, very rapid progression of the infection, and an orange-peel appearance of the skin [12].

A review of literature by Umeda *et al.* [11] founded 125 cases whose age ranged from 12 to 82 years (mean 45.2 years). Periapical infection from mandibular molars were found to be the origin of infection. Fifty percent of the patients had associated diseases; systemic disease followed by alcohol abuse, drug abuse, HIV infection, heart disease, liver cirrhosis, renal insufficiency and schizophrenia. However, 34% had no systemic problems. 19.2% reportedly died despite aggressive therapy out of 125 patients. The relationship among various clinical factors and the prognosis was studied. 24.3% was the mortality rate of the patients with associated diseases was much higher than that of those who did not have systemic disease (9.3%) [11].

EA Nayko and NO Nartey [13] reported, the management of two cases of necrotizing fasciitis emphasizing the importance of early accurate diagnosis, aggressive surgical debridement of the necrotic fat and fascia within the tissue planes, adequate doses of broad-spectrum antibiotics and intravenous fluid support for a successful resolution of the disease. Failure to do this could result in gross morbidity that may require extensive rehabilitation including extensive skin grafts if the patient survives the ordeal or even death.

Similar to available information polymicrobial infection was the most common aetiology of NF in this group of patients. Delay in instituting appropriate measures allows the infection to spread in any direction, often ascending to the temporal space or descending to the chest wall and resulting in mediastinitis both of which are often fatal [1, 11, 12].

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