

Necrotizing Fasciitis: A Case Report. What to Do? When? And How?

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Abstract

Case Report

Necrotizing fasciitis is one of the rare reported pathological condition in oral and maxillofacial region. It is characterized by rapidly progressive necrosis of fascia, with involvement of skin and muscles in late stages and can be fatal. We report a case of necrotizing fasciitis of neck and part of face, who presented to our institute with chief complaint of swelling since 15 days. The fasciitis was found odontogenic in origin with initially involvement of buccal, and masseteric spaces. The condition was further complicated as patient had diabetes mellitus that prolonged the healing, favoring the environment for bacterial growth and necrosis. Drainage of the involved spaces followed by subsequent debridement of wound and reconstruction with skin graft was done. This report is addition to existing literature elaborating the treatment of necrotizing fasciitis in patient with comorbidity, in stages. What one should do? When and how?

Keywords: Necrotising fasciitis, bacterial infection, diagnosis, drug therapy, reconstruction.

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INTRODUCTION

Necrotizing fasciitis (NF) is severe form of fulminating, rapidly progressive infection characterized by necrosis of fascia, muscle and underlying tissue. The term "Necrotizing Fasciitis" was first coined by Wilson in the year 1952 [1]. It usually has very nonspecific presentation and may include mild cellulitis, edema, and occasionally crepitation [2]. The rate of accurate diagnosis of NF is only 15% to 34% on admission [3]. Misdiagnosis and delayed treatment can result in death from sepsis, mediastinitis, carotid artery erosion, jugular vein thrombophlebitis, or aspiration pneumonia [4]. Usually, such complications in immunocompromised patients can be fatal [4, 5].

We present a case of massive necrotizing fasciitis associated with type 2 diabetes mellitus reconstructed with a skin graft.

CASE REPORT

A 45 year male, known case of diabetes mellitus since 2 years, reported to our institute with chief complaint of swelling over left side of face associated with decreased appetite since last 15 days. On examination he had an ill defined non circumscribed

swelling over left side of face measuring approximately about 5 x 6 cm extending from anterior border of tragus to lateral commissure of lip and superior-inferiorly from infraorbital margin to 2cm below inferior border of mandible into the neck (Fig 1).

The appearance of the swelling was brawny with smooth and shiny surface. On palpation central part was firm while the peripheral region was soft on palpation. Extent of swelling on palpation was suggestive of involvement of canine space infection. For the swelling of the neck an USG neck was advised and showed presence of hypo-echoic gaseous voids and strips of collection in subcutaneous tissue. A panoramic radiograph was taken to rule out the dental etiology of infection. Routine investigations showed raised leukocyte count and hemoglobin value of 10.3 g/dl. The patient was started with broad spectrum antibiotics including amoxicillin and clavulanic acid (1.2g twice a day) along with metronidazole (100cc three times a day). BSL was recorded daily and patient was put on insulin therapy with sliding scale. An incision and drainage was planned under L.A. for canine space through existing sinus (Fig-2) both the intraoral and extraoral incisions were connected for proper debridement and irrigation.

The pus was not reduced while there was spread of infection into buccal, submassetric, submandibular and submental space in following two days. Incision and drainage was done to drain pus from above mentioned spaces. On 5th day we started observing necrotic tissue from incision site at the time of dressing thus we planned for re-exploration and debridement of all the spaces. On re-exploration bilateral neck was involved, so multiple incisions were given in neck, complete debridement and curettage was carried out till we got fresh bleeding to remove the necrotic material including fascia and muscles (Fig 3).

Dressing was continued twice daily. After 15 days from the last debridement we observed that the skin overlying was necrosed. The necrosed skin was removed and sofratule dressing was given. We waited for a good healthy granulation bed following days. Reconstruction of defect was planned with split thickness skin graft. The split thickness skin graft was harvested from right thigh. Multiple fenestrations were done over the graft and the split thickness graft was sutured over the defect (Fig 4).

The patient was discharged on 25 th day and followed up regularly for two months on OPD bases (Fig 5).



Fig 1: Presentation of swelling on day 01 of admission showing extension of swelling from anterior border of tragus to lateral commissure of lip anteroposteriorly and superior-inferiorly from infraorbital margin to 2cm below inferior border of mandible into the neck



Fig 2: Exploration of multiple spaces done

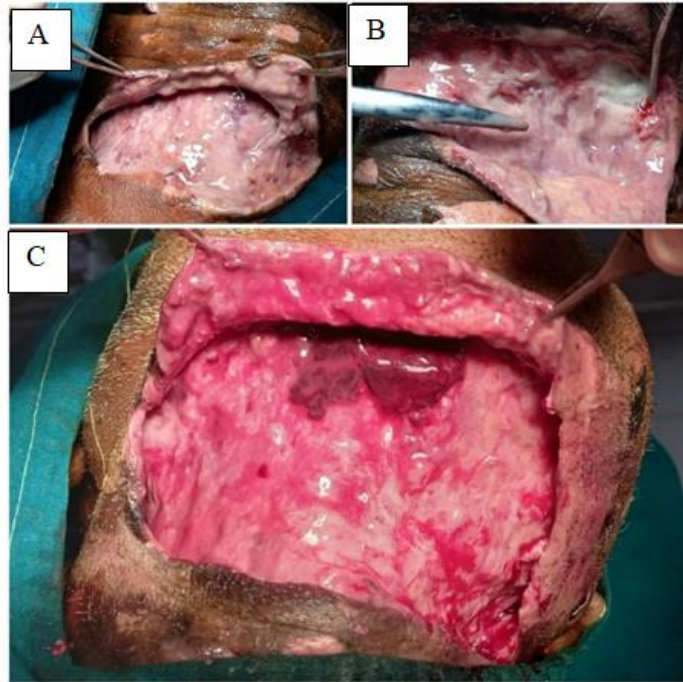


Fig 3A, B, C: Showing bilateral necrotic tissue on second exploration

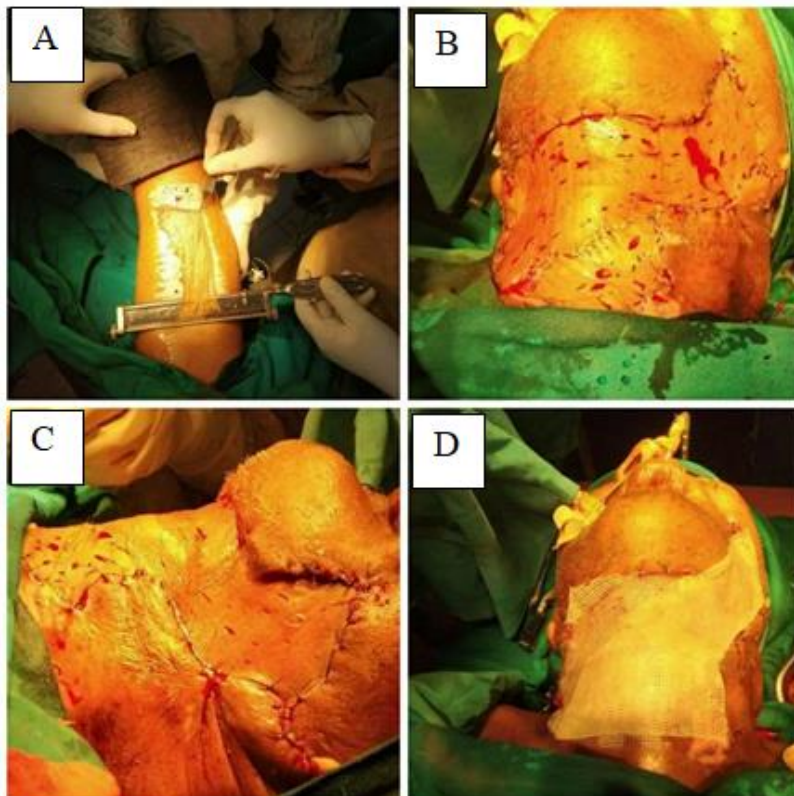


Fig 4: A) Harvesting of split thickness graft from left thigh region; B & C) Adaptation of skin graft over the defect; D) the skin graft was closed with sofratuele dressing



Fig 5: Shows follow up photographs after 35 days of skin graft harvest. A) Profile Photo B) Uptake of skin graft C) Right Lateral Profile D. Left lateral Profile

DISCUSSION

Necrotising fasciitis is a rapidly spreading infection that causes necrosis of the tissue by thrombosis of vessels usually in subcutaneous space which supply the superficial muscles and skin. Necrotising fasciitis was first described in the year 1848 [6]. One of the earliest literature about identification of Necrotising fasciitis, the clinical presentation was done by Meleny in the year 1920. The bacterial causative of this infection is explained by different theories meleny proposed hemolytic streptococcus as the only causative organism. The role of streptococcus species, Staphylococcus species and mixture of facultative and anaerobic bacteria was given by Kantu *et al.*, [7]. In the present case we observed combination of gram-positive cocci and gram-negative rod.

Patients reported with any immunocompromised disease, diabetes mellitus, cancer, or severe liver disease are found more prone to this type of infection [8]. On admission patient with high serum glucose levels should be considered as predominant risk factor for associated complications. Association between multispace infection and diabetes mellitus was given by Zheng *et al.*, Through their retrospective study [9] Golger *et al.*, found that amongst several associated comorbidities, diabetes mellitus constituted 30% of mortality rate. Immunocompromised state being the second cause (17%) [10].

Appropriate radiographic studies act as adjuvant to the clinical presentation and are helpful for

tracing the extent of NF. According to a clinical review by Richard F. Edlich *et al.*, Magnetic resonance imaging (MRI) is the most useful imaging modality to differentiate between necrotizing and non-necrotizing soft tissue infections. Radiographic or CT imaging evidence of subcutaneous gas produced by Enterobacteriaceae and Klebsiella, has been reported in 17%-29% of patients [11]. This finding is highly specific, but not sensitive. Successful gas tracking, fascial thickening and fat stranding was reported in a retrospective study of 20 patients by Wysoki *et al.*, they concluded that, CT images have sensitivity of 80% for NF diagnosis [12]. For superficial abscesses sonographic imaging can be a viable option but otherwise they are considered neither sensitive nor specific.

Management of this form of severe infection has always been a challenging task for a surgeon and requires both, surgical and medical management each playing an equal important role. The prime objective of managing necrotizing fasciitis is to limit this fatal condition that can lead to morbidity and give speedy recovery for patient to do so.

For a oral and maxillofacial surgeon it is important to understand the sequale of the pathology and management of the condition. Although there are several articles mentioning about this pathology and its management we found a void in literature, as a comprehensive literature that can serve as guide to young surgeons. To avoid time-consuming surgeries

and severe blood loss, planned and staged debridement of the affected regions should be performed after initial abscess drainage. So far adjunctives like hyperbaric oxygen therapy, intravenous immunoglobulins, vacuum assisted or foam dressing, and guided tissue regeneration with collagen membrane, biodegradable polyurethane dermal substitute, amniotic dressing, potato peel have been put to use. Each of these adjunctives has faced criticism for their shortcomings. While the use of autogenous skin grafts shows highest rate of success for reconstruction [13].

Our staged surgery aimed to address that targeted different anatomic zones with lesser surgical time, faster healing and minimal blood loss. Along with subsequent debridements the patient was adjunvantly given I.V antibiotics. In our case, we opted for broad spectrum antibiotics including combination of amoxicillin and clavulanic acid with metronidazole for extended anerobic coverage. As the amount of viable tissue was increased with reduction in necrosis and closure of defect was done with skin graft which showed satisfactory results.

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