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Indian Journal of Orthopaedics Surgery

Journal homepage: <https://www.ijos.co.in/>

Case Report

Severe acinetobacter necrotizing fascitis following open reduction and tension band wiring for patella fracture: A case report

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ARTICLE INFO

Article history:

Received 06-05-2024

Accepted 04-07-2024

Available online 04-09-2024

Keywords:

Necrotizing fascitis

Acinetobacter

Post operative infection

ABSTRACT

Necrotizing fasciitis (NF) is a rare form of bacterial infection that leads to necrosis of the fascia, skin, subcutaneous tissues and vasculature surrounding them; high mortality rate and morbidity make it a major concern. Here, a young male of 27 years who was previously healthy, came to the Emergency department for motor vehicle accident. It was determined that he suffered a closed transverse fracture of the left patella for which he undergoes open reduction and Tension band wiring. Post operatively a patient started with clinical image of necrotizing fasciitis like erythema, tenderness, blisters, and skin necrosis. Microbiological examination of the cultures unraveled that *Acinetobacter* species sensitive to meropenem. The patient was taken to the operation room for the fasciotomy and subsequently debridement of the wound was done to deal with the sepsis. Split skin graft was harvested and then placed on the wound site to facilitate the healing. At six month follow-up, the wound had closed adequately with a perfect outcome. An early diagnosis and a timely surgical debridement, the use of targeted antibiotic therapy, and the practice of vigilant wound care are essential strategy needed to prevent the complications and to see the best recovery.

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1. Introduction

Necrotizing fasciitis is a rare but severe infection characterized by rapid and extensive necrosis of the fascial planes and surrounding soft tissues. Like many infections of this kind, *Acinetobacter* species have been moving up as quite important pathogens in healthcare-associated settings.¹ *Acinetobacter* necrotizing fasciitis presents as a formidable challenge in clinical management due to its aggressive nature and limited treatment options. *Acinetobacter* is a gram-negative bacteria whose species are extremely widespread in the environment and are notorious for their resistance to multiple antibiotics, as well as for their ability to thrive under harsh conditions. Healthcare related *Acinetobacter* infections have usually been an issue confined to health care settings by most disease control

experts. However there is a rising trend of community-acquired cases, posing additional complexities in disease control and prevention.

Acinetobacter necrotizing fasciitis is characterized by the pathogenic effect by its virulence factors leading to rapid tissue destruction and systemic dissemination.² Factors such as compromised immunity, chronic medical conditions like Diabetes mellitus and recent surgical procedures further predispose individuals to this devastating infection. Clinical features of *Acinetobacter* necrotizing fasciitis progress quickly and the symptoms mainly include pain, redness, swelling and formation of bullae at the site of infection.³ However, distinguishing necrotizing fasciitis from other soft tissue infections is difficult and challenging. And rapid diagnosis and timely intervention are the crucial factors for better outcomes.⁴

The provision of severe *Acinetobacter* necrotizing fasciitis is a multidisciplinary approach featuring aggressive

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surgical debridement, broad-spectrum antibiotics. Nevertheless, the rising tendency of developing drug-resistant strains poses a challenge for antibiotic use and gives us a significant reason to pay attention to the antimicrobial stewardship and infection prevention strategies. Given the rise of *Acinetobacter* necrotizing fasciitis with ever growing rates and severity, the need for the monitoring system, research activities and collaborative approaches that would win the fight against this dangerous infectious threat. This Case report is dedicated to adopting the view of epidemiology, pathophysiology, clinical features, diagnostic difficulties, and therapy in relation to *Acinetobacter* necrotizing fasciitis. Our main goal is to advance the level of knowledge of our readers regarding this deadly condition.

2. Case Report

A 27-year-old male was admitted following a road traffic accident resulting in a closed fracture of the patella (Figure 1 A, B). He underwent open reduction and tension band wiring for the fracture (Figure 1 C)



Figure 1: A): Presenting skin condition after road traffic accident; B): Pre operative x-ray showing Transverse Patella fracture; C): Post operative x-ray after open reduction and Tension band wiring

Initially on post-operative day 3 the patient exhibited redness, blisters, swelling, severe pain in the area of the surgery accompanied with systemic symptoms like fever and malaise. (Figure 2 A) The wound of the patient was in very poor condition, encumbered with purulent discharge and offensive odour. The lab studies showed elevated inflammatory markers. A high clinician index of suspicion that pointed to necrotizing fasciitis was the indicator for the emergency surgical exploration. Wound debridement was done several times to control the infection (Figure 2 B, C) Cultures from the acquired specimens revealed *Acinetobacter baumannii* sensitive to Meropenem. Antibiotic therapy with Meropenem was initiated and continued for an extended duration.

Even though surgical debridement and targeted antibiotic therapy were applied extensively, the patient condition was critical. He was subjected to several debridement procedures



Figure 2: A): Post operative day 3 skin condition; B, C): Wound condition after fasciotomy and wound debridement

to control the sepsis. (Figure 3) Once the infection was adequately controlled, the split-thickness skin grafting was performed to accelerate and assist in wound closure as well as the healing process. (Figure 4 A) The patient was hospitalized for an extended period to get the wound care and rehabilitation. With intensive medical management and wound care, the patient's condition improved. A series of examinations showed successful wound healing and functional recovery. During the follow-up assessment, there was a satisfactory wound healing and the restoration of functions. At the 6-month follow-up, the patient demonstrated substantial improvement, with the wound successfully healed and satisfactory functional outcomes achieved (Figure 4B, C). Despite the initial challenges, timely intervention and comprehensive management led to a positive outcome for the patient.

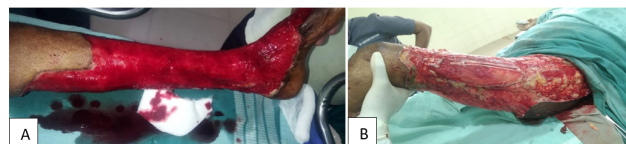


Figure 3: A,B): Wound condition after multiple wound debridements

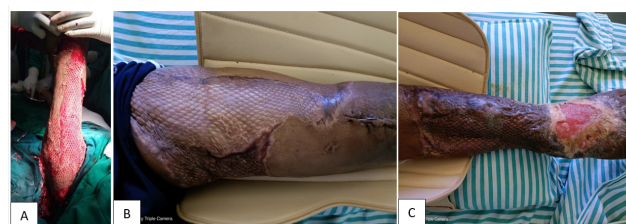


Figure 4: A): Subsequently Split Skin Grafting was done; B, C): 6 months follow up wound condition was successfully healed with satisfactory outcome

This case emphasizes the opportunity of *Acinetobacter*-associated necrotizing fasciitis after orthopaedic operation, indicating that it is very important to carry out vigilant supervisions and prompt intervention immediately. A pivotal role of the multidisciplinary approach is stressed

especially for the early recognition, aggressive surgical debridement, and targeted antibiotic treatment which might save the quality of patients' outcome.

3. Discussion

Postoperative necrotizing fasciitis caused by *Acinetobacter* presents a challenging clinical scenario, need for prompt recognition and aggressive management to tackle complications and optimize patient outcomes.⁵ This debate has brought about the diverse management domain and the complications which may arise in the course of management of this life-threatening infectious disease.

3.1. Management strategies

1. Early recognition: Early detection of necrotizing fasciitis is critical as the process can worsen the outcomes if the diagnosis is delayed. Giving alert and closely monitoring the clinical signs including erythema, tenderness, formation of bullae and skin necrosis particularly in the postoperative phase is imperative.⁶
2. Surgical intervention: Emergency explorative and debridement has continued to remain the essential treatment of necrotizing fasciitis. For the treatment of these infections, prompt fasciotomy, and extensive removal of necrotic tissue are the most important methods as these are the functional approaches to halt the rapid progression of the infection and prevent further tissue damage.
3. Antibiotic therapy: Empirical, broad-spectrum antibiotic therapy needs to be given immediately the diagnosis of necrotic fasciitis is suspected. The culture and sensitivity profile must ensure correctly adequate antibiotic selection. An example is Meropenem, which effectively treats *Acinetobacter*.⁷
4. Wound care: Supportive and effective wound care often calls for a multi-faceted approach to ensure that the recovery process is not compromised by any further infections. Techniques such as wound irrigation, regular dressing, and when indicated, surgical closure or skin grafting may be done to facilitate wound healing.

3.2. Complications

1. Sepsis: Necrotizing fasciitis is extremely risky for progressive systemic infections and sepsis which might cause the shutdown of many organs and lead to life-threatening consequences if not given immediate care.
2. Tissue loss: Extensive tissue necrosis and surgical debridement may result in significant soft tissue loss, necessitating reconstructive procedures and prolonged rehabilitation.

3. Functional impairment: Necrotizing fasciitis involving extremities that normally leads to functional impairments such as reduced range of motion and muscle weakness and contracture.⁸ The patient may require long-term physical therapy and rehabilitation.
4. Recurrence: Despite the fact, that an aggressive management is used in necrotizing fasciitis, the recurrence of the infection surely remains a problem, especially in immunocompromised individuals or those with underlying conditions such as diabetes or peripheral vascular disease.⁹

4. Conclusion

Necrotizing fasciitis as a postoperative sequelae by *Acinetobacter* infection though quite rare but is a fatal complication. The accurate treatment would entail a collaborative effort through early diagnosis and also intensive surgery. Apart from timely diagnosis, prompt surgical debridement, targeted antibiotics administration, and comprehensive wound care are major factors in successful treatment that will decrease the likelihood of complications and increase recovery rates.¹⁰ It is important to note the possible difficulties and provide a long term follow up for the best recovery and patient's safety.

5. Consent Form

Written informed consent was taken from the patient.

6. Conflict of Interest

The author declares no conflict of interest.

7. Source of Funding

None.

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Cite this article: Kammar SF, Hosangadi AA, Pawar V, Naik RB. Severe acinetobacter necrotizing fasciitis following open reduction and tension band wiring for patella fracture: A case report. *Indian J Orthop Surg* 2024;10(3):285–288.

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