

## A case of necrotizing fasciitis developing after cesarean section

İsa Kaplan

Department of Obstetrics and Gynecology, Uşak  
University, Faculty of Medicine, Uşak, Turkey

ORCID ID of the author(s)

İK: 0000-0002-0861-319X

### Abstract

Necrotizing fasciitis (NF) is a rare condition that is observed in obstetric and gynecological practices. It is a rapidly progressive and often fatal complication. Failure to obtain an early diagnosis and delay in initiating appropriate treatment can lead to significant morbidity and mortality. Our case was 25 years old, and she was in her first pregnancy. The patient had no systemic disease or history of previous surgery. Our patient's baby was delivered by cesarean section with an indication of emergency fetal distress. During the cesarean section, it was observed that the amniotic fluid contained very dark meconium. No complications occurred during the cesarean section. Our patient presented with complaints of severe pain, bullae, and hyperemia at the level of the incision line one week later. In her vital findings, fever was 39.3 °C, blood pressure was 90/60 mmHg, and heart rate was 110 /min. In laboratory tests, white blood cell count was 25,280 /mm<sup>3</sup>, C-reactive protein (CRP) was 431 mg/dL, and sedimentation was 100 mm/hour. On the ultrasonographic examination, air, significant edema, and thickening were observed in the incision line, skin, and subcutaneous tissues. On the computed tomography scan, thickening of the skin and subcutaneous tissues, fluid locations, and areas of air densities were observed over a wide area extending to the level of the thoracic 10<sup>th</sup> and 11<sup>th</sup> vertebrae superiorly and to the mons pubis inferiorly. Based on these findings, the patient was diagnosed with NF. After broad-spectrum antibiotic therapy and fluid-electrolyte support, extensive surgical debridement was performed under emergency conditions. Before applying the skin graft, vacuum-assisted wound closure was performed, and a very good response was obtained. The patient, whose pathology result was compatible with necrotizing fasciitis, was discharged on the 20<sup>th</sup> post-operative day. In this case, we aimed to present a case of NF after cesarean section.

**Keywords:** cesarean section, necrotizing fasciitis, wound infection, CRP

### Corresponding Author

İsa Kaplan

Department of Obstetrics and Gynecology, Uşak  
University, Faculty of Medicine, Uşak, Turkey  
E-mail: isakaplan\_48@hotmail.com

### Informed Consent

The authors stated that the written consent was obtained from the patient presented with images in the study.

### Conflict of Interest

No conflict of interest was declared by the authors.

### Financial Disclosure

The authors declared that this study has received no financial support.

### Published

2023 June 22

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Published by JOSAM

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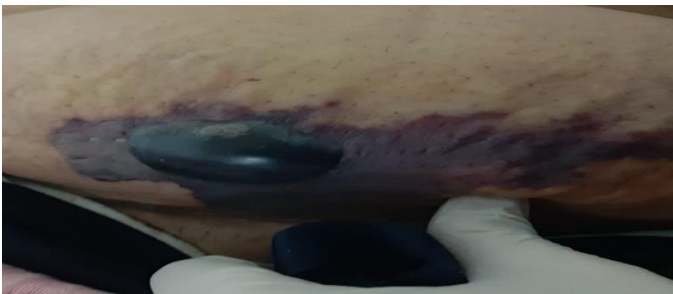
### Introduction

Necrotizing fasciitis (NF) is a severe, life-threatening infection characterized by aggressive necrosis of the skin, subcutaneous tissues, and fascia. The main factors that reveal the course of the disease are the age of the patient, the extent of the infection area, the time of the first debridement, concomitant systemic diseases, including malnutrition, and the type of causative pathogen. The most common reason for delayed diagnosis in necrotizing fasciitis is the inconsistency between clinical findings, such as severe pain and tenderness, and the physical appearance of both the lesion and the patient [1]. Rapidly progressive necrosis in tissues often causes systemic sepsis, toxic shock syndrome, and multi-organ failure [2]. Therefore, early diagnosis and treatment of NF are very important. Informed consent was obtained from the patient before the study.

## Case presentation

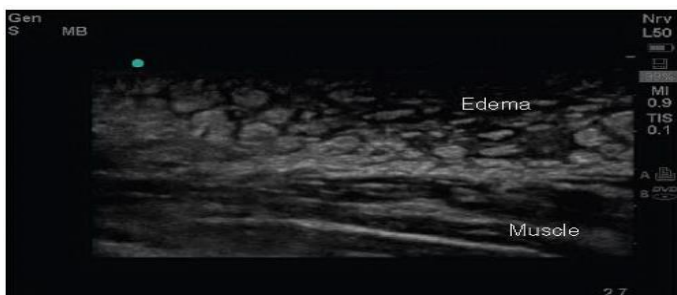
Our case was 25 years old and in her first pregnancy. The patient had no systemic disease and previous surgery history. Her body mass index (BMI) was 33, indicating she was obese. Our case presented to the delivery room of our hospital in labor at 42 weeks of gestation. Our patient, who was in active labor with a 4 cm opening, 60%–70% effacement, and active amniotic fluid discharge, was admitted to the delivery room for follow-up and treatment. An emergency cesarean section was performed because the patient had late decelerations based on the non-stress test (NST) follow-up, and the amniotic fluid contained dark meconium. No complications occurred during the cesarean section. The patient was discharged uneventfully at 48 h after the cesarean section. Low molecular weight heparin (LMWH) was started in the obese patient for venous thromboembolism prophylaxis. One week after discharge, the patient presented with the complaint of severe pain, bullae, and hyperemia at the incision line (Figure 1).

Figure 1: Wound image



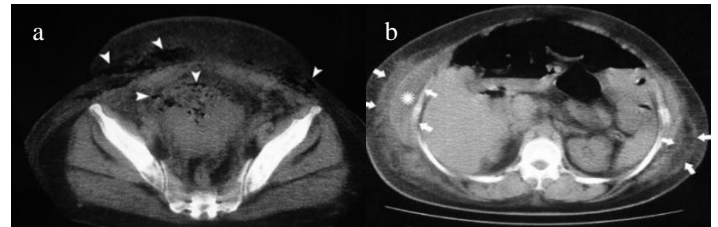
In her vital findings, temperature was 39.3 °C, blood pressure was 90/60 mmHg, and heart rate was 110/min. In laboratory tests, the white blood cell was 25,280/mm<sup>3</sup>, C-reactive protein (CRP) was 431 mg/dL, and sedimentation was 100 mm/hour. On the ultrasonographic examination, air, significant edema and thickening were observed in the incision line, skin, and subcutaneous tissues (Figure 2). Abdominal contrast-enhanced tomography (CT) was performed on the patient since the abdominal organs due to edema could not be seen clearly on the ultrasonography image

Figure 2: Ultrasound Image



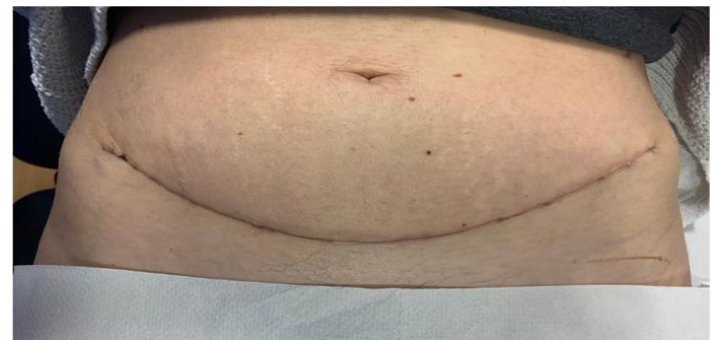
On the abdominal contrast-enhanced tomography (CT) scan, thickening, fluid loculations, and areas of air densities were observed in the skin and subcutaneous tissues in a large area extending to the level of the thoracic 10<sup>th</sup> and 11<sup>th</sup> vertebrae superiorly and to the mons pubis inferiorly (Figure 3a). On the computed tomography scan, air values (arrowheads) under the skin at the level of the incision line in the pelvic area and (Figure 3b) thickening (arrows) in the skin-subcutaneous tissues at the thoracic level, fluid loculations (stars) can be observed.

Figure 3: Pre-operative computed tomography (CT) image of the patient.



Based on these findings, the patient was prediagnosed with NF, and broad-spectrum ampicillin/sulbactam 4 x 1 g IV, gentamicin loading (2 mg/kg), maintenance (1.5 mg/kg), and clindamycin 3 x 900 mg intravenous (IV) antibiotic treatment were started. Extensive surgical debridement was performed under emergency conditions. The abdomen was not entered. A sample was taken for a culture antibiogram. Vacuum-assisted wound closure was performed after debridement. The VAC system (Kinetic Concept Ing. USA) was used as the vacuum-assisted system. Vacuum-assisted dressing was continued for one week. Vancomycin treatment was started in the patient who had *Enterococcus* sp. growth based on the culture antibiogram. CRP values showed a dramatic decrease at the follow-up visit. Fever and leukocytosis regressed. Open wound dressings were applied to the patient for 10 days, and she had a good response to vacuum-assisted dressing. Secondary suturing combined with a cutaneous flap shift operation was performed on the patient, who did not have any infected tissue at the wound site. A drain was placed under the skin as a precaution. The pathology result was consistent with NF. The patient was discharged on the 20<sup>th</sup> post-operative day after the subcutaneous drain was removed. No problems were encountered in the outpatient clinic visits by the patient.

Figure 4: Post-operative wound location



## Discussion

Cesarean section is the most common operation in clinical gynecology practice. The frequency of NF after undergoing a cesarean section procedure is reported as 1.8/1000 in the literature [2]. The mortality and morbidity of infections of the subcutaneous soft tissues with a necrotizing course is quite high. Reported mortality rates range from 30% to 70%. It frequently leads to mortality due to multiorgan failure, respiratory failure, renal failure, and sepsis. NF is more common in elderly and immunocompromised patients. In addition, chronic diseases, IV drug use, varicella zoster, malnutrition, obesity, cancer, human immunodeficiency virus (HIV), and long-term use of nonsteroidal anti-inflammatory and immunosuppressive drugs are also counted among the predisposing factors [2]. NF initially begins as a localized infection, and later, it rapidly spreads along the fascial planes due to various factors and becomes gangrene. These risk factors include a disease affecting the immune system, old age,

diabetes, obesity, debility, alcohol/substance abuse, liver and kidney diseases, trauma, and/or surgery. Although the disease is common in people with risk factors, it can also occur in healthy people [3–5]. In our case, however, risks related to previous cesarean section and obesity were present. Early diagnosis and urgent extensive surgical debridement are very important in the treatment. Pain, erysipelas, and excessive edema are observed in the early stages of infection. The mild severity of the focal findings at first may lead to errors in the differential diagnosis. In this period, it is very important to diagnose and perform early surgical intervention. A delay in surgical treatment causes an increase in the mortality rate. Early debridement of necrotic subcutaneous tissue and fascia and leaving wounds open and providing drainage are life-saving. In addition, an effective antibiotic therapy is also important for causing a reduction in the risk of death [6,7]. Early diagnosis was made in our case, and emergency debridement was undertaken. In addition, the patient was immediately started on broad-spectrum antibiotics. Antibiotherapy was adjusted according to the culture results. Vacuum-assisted dressings were performed. In addition, the healing progress was followed very closely with open wound dressings. Diagnosis of NF is mostly based on clinical findings. The most defining clinical finding for NF is severe pain-tenderness, which is incompatible with the physical appearance of the lesion. Pain may precede infection. In the following days, edema, redness, and an increase in temperature are observed in the infected area. In untreated cases, thin-walled hemorrhagic bullae occur in this area within 3 to-5 days [8]. Although NF can be seen in any part of the body, the areas in which it is frequently observed are the extremities, abdominal wall, and perineum. In NF cases, the rate of spread of the infection can reach up to 2.5 cm/hour with minimal changes in the skin over it [1]. Radiological imaging has a very important role in the diagnosis of NF, which spreads rapidly and progresses with high mortality. In these cases, since the treatment involves emergency surgical debridement, imaging procedures should not delay surgical intervention and should provide a rapid and accurate diagnosis. In our case, an abdominal CT with contrast was performed because the abdominal organs due to edema could not be seen clearly with ultrasonography. Based on the CT, thickening of the skin and subcutaneous tissues in a wide area extending to the level of the thoracic 10<sup>th</sup> and 11<sup>th</sup> vertebrae superiorly and to the mons pubis inferiorly, fluid locations, and areas of air densities led us to a definite diagnosis. Also, emergency debridement prevented aggressive progression of the infection.

### Conclusion

Early diagnosis and extensive surgical debridement of NF is the most effective treatment method for stopping the rapidly progressing infectious process. This treatment should be combined with intensive antibiotic therapy and other measures in cases with systemic clinical findings. Vacuum-assisted dressing accelerates wound healing and is a good treatment option for preparing the wound for surgery.

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