

## Anthrax: A Case Report

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### Abstract

Anthrax is a zoonotic disease caused by a bacterium called *Bacillus Anthracis*. In humans, it causes a cutaneous, gastro-intestinal and inhalation form of disease. The in-cutaneous form progresses along with skin necrosis and oedema. Since the necroses in the skin are not quite superficial, they can affect the tendon sheaths progressing close to the skin. Therefore, in surgical treatment, the closure in the areas where tendons are surfaced must be provided by a flap instead of a graft. The repair on the existing patient was performed with a graft since the flap repair was not accepted, and thus, restrictions in hand movements occurred during the post-operative period.

**Keywords:** Anthrax, Graft, Flap.

### Introduction

Anthrax is a zoonotic disease caused by a bacterium, *Bacillus Anthracis*. This bacterium capable of producing spores can be quite resistant to heat and chemicals in particular and is observed to live through years. It can grow after having been in contact with diseased animals and animal products.<sup>1</sup> The anthrax bacillus takes effect in the tissue with two significant enzymes: The lethal factor (endopeptidase) causing cell damage and adenylate cyclase responsible for oedema.<sup>2,3</sup> There are 3 forms of anthrax identified as cutaneous, gastro-intestinal and inhalation. The cutaneous form is most commonly seen, (95%) and has quite a low fatality with the antibiotic treatment. The second frequently seen gastro-intestinal anthrax is particularly spread by contaminated meat and poses a more serious problem. Although least-seen, the inhalation anthrax is the most fatal form of all. The incubation period of the cutaneous anthrax is between 1-7 days. The skin lesions begin to appear in the form of papules on 2nd or 3rd day and transforms into bulla and necrosis.<sup>1</sup> Ciprofloxacin is used as the treatment.<sup>4,5</sup> Particularly, the surgical treatment during the acute stage/period is not recommended due to development of possible bacteraemia.<sup>5</sup> In the presented case, after the

necrotic tissues produced in the wake of the medical treatment were debrided, the open wounds were closed with the Split Thickness skin graft. Following the graft application, movement restrictions occurred in the hands and fingers/toes of the patient.

### Case Report

Having been in contact with a dead animal, a 55-year-old male patient presented to the dermatology outpatient clinic with complaints of rash in the form of a pimple, itching, a slight pain and inflation on his fore arm and hand. The patient was sent home with the prescription of a cream containing antibiotics and oral ciprofloxacin tablets. The next day, the patient attended the emergency department with a complaint of haematemesis. He was subjected to surgery with the diagnosis of gastric bleeding. Throughout the postoperative period in the intensive care unit, he was followed by the doctors of the plastic and reconstructive surgery, due to the extreme oedema on his arm, considered a risk for compartment syndrome. The oedema started to diminish by the 8th day of the antibiotic therapy (intravenous ciprofloxacin). The necrotic tissues on the the dorsum of the fore arm and hand were debrided after the demarcation line was formed. The extensor tendon sheaths on the dorsum of the hand were also excised due to necrosis. As an alternative, the patient was advised to have a flap surgery for closure of the wound. As the patient did not accept the recommended treatment, he received a Vacuum-Assisted



**Figure-1:** Preop image.

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**Figure-2:** Postop image.

Closure (VAC) for about a week to augment formation of granulation tissue. After sufficient viable tissue was formed on the open wound, closure was done with the Split Thickness skin graft. He was discharged with instructions of hand exercises and physical therapy. In the subsequent follow-up period, it was observed that the flexion and extension movements of the patient's fingers were limited.

## Discussion

Anthrax had an uncommon clinical presentation in this case. However, the skin findings and the contact history with animals and animal products helped in arriving at a diagnosis of anthrax. Even though cutaneous anthrax is a problem in the developing countries, but because the medical/surgical treatment is within reach has considerably minimized the mortality and morbidity of the disease.<sup>1</sup> Despite the fact that intensive oedema develops in patients with anthrax, the compartment syndrome is rarely seen.<sup>6</sup> It has been reported that anthrax seen in the hand region presents on the dorsum of the hand<sup>7</sup> involving the thickness of palmar skin, The protective function of sweat glands is affected and chaps develop depending on weather conditions. Both to prevent superinfections and to enhance recovery, surgical treatment is recommended after the limits/borders of necrosis in the skin are cleared.<sup>8</sup> In the literature, techniques like graft, flap and secondary recovery, are advised for the purpose of closing the tissue defect which

occurs in the wake of the debridement of dead tissues.<sup>9-11</sup> In particular, flap surgery is advised for the repair of tissue defects in the dorsum of hand.<sup>6</sup>

In the presented case as the patient did not accept the option of flap treatment, the defect on the dorsum of the hand was closed with a partially-thick skin graft. It was observed during the post-op follow-ups that the skin was adherent to the tendons and the flexion and extension movements of the fingers were restricted to a large extent. The existing adhesion on the hand could not be eliminated despite the intensive hand exercises; yet, depending on the flexibility of the skin, a little increase in the flexion and extension movements could be maintained.

In conclusion, if a tendon fascia loss occurs in open hand injuries, it is recommended that repair should be done with a flap instead of a split thickness skin graft.

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