

Selected Topics: Wound Care

A DEADLY DIGITAL DRESSING: A CASE OF SURGICAL DECOMPRESSION FOR FINGER ISCHEMIA DUE TO CIRCUMFERENTIAL FINGER DRESSING

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Abstract—Background: Tubular gauze dressings are commonly used, but have potential to cause iatrogenic finger ischemia. **Objectives:** To inform health care providers of an avoidable complication and to discuss appropriate methods of prevention and treatment. **Case Report:** We discuss a teenage female's finger that narrowly avoided amputation after a tubular gauze dressing caused iatrogenic ischemia. **Surgical decompression using a novel technique successfully salvaged the finger. Operative intervention for this complication has previously been unreported. Conclusion:** It is important that circumferential digital dressings are applied correctly. Vascular insufficiency from an occlusive dressing is an iatrogenic and avoidable complication. Successful operative decompression may be indicated to minimize tissue loss and improve circulation. © 2014 Elsevier Inc.

Keywords—finger; dressing; ischemia; amputation; decompression

INTRODUCTION

Hand and wrist injuries have been reported to account for 14% to 28.6% of injuries treated in emergency departments (EDs), with up to 62% of these injuries reported to have primarily involved the fingers (1). Often, surgeons are called to evaluate and treat the most severe of these cases. There remain, however, a significant number of injuries that are treated by emergency physicians and other types of specialists. In all cases, it is paramount that emphasis is placed on proper wound care

and awareness of potential complications associated with different treatment options. We present a case involving circumferential tube gauze dressing to a finger that ultimately resulted in loss of perfusion and venous congestion, threatening the viability of the digit and requiring urgent surgical decompression. These types of iatrogenic injuries are important to discuss further, as 60% of reported cases resulted in eventual amputation (2–7).

CASE REPORT

Our patient was an 18-year-old woman who sustained a partial amputation of the soft tissue pad on the distal phalanx of the long finger on her right hand after getting it shut in a door. She was originally treated at an outside ED with sutures and circumferential tubular gauze dressing, which she was instructed to leave in place (Figure 1). The patient admitted to feeling tightness and pain after placement of the dressing, but thought this was to be expected with her injury. She was evaluated at the same outside ED 48 h later due to increased pain, and a hand surgeon was consulted via telephone. She was instructed to observe her finger for an additional 24 h and to follow up in his office the next day. When she presented to our clinic 72 h after the initial injury, she was found to have a significant band of constriction at the middle aspect of the proximal phalanx on her long finger, with no capillary refill and



Figure 1. Circumferential tubular gauze dressing.

marked impairment of perfusion (Figure 2). She underwent urgent decompression, and intraoperatively was found to have no bleeding with pinprick. Yellow eschar formation was noted circumferentially, which was felt to be compressive on the neurovascular bundles, and this was incised to release the constriction. The incision was then extended along the length of the finger in a Bruner-type fashion. A longitudinal incision was made dorsally for the length of the finger, allowing for decompression and fasciotomy incisions for the finger (Figure 3). Extrusion of fat was noted while making the incisions, consistent with high pressures suspected on initial examination. After decompression, both digital arteries appeared patent, and the tissues distally gradually developed some slow return of circulation.

The patient was seen weekly in the immediate postoperative period, treated with an office escharotomy and focused outpatient hand therapy. At 12 weeks of follow-up, the patient had done well, with complete healing of incisions, distal phalanx eschar resolution, and healing by secondary intention. Normal two-point discrimination was noted and there was good capillary refill with increased erythema of the digit (Figure 4). She was using her finger as tolerated with active/passive range of motion exercises and static night extension splinting to correct interphalangeal contractures.



Figure 2. Constriction band discovered under dressing.

DISCUSSION

Iatrogenic digital ischemia due to the application of a circumferential tubular gauze digital dressing is not an unreported phenomenon, but due to its rarity and the perceived simplicity of dressing application, this potential complication is often overlooked (2–7). However, the devastating consequences of such an easily avoidable complication deem it worthwhile to review this topic as a reminder to all health care professionals potentially involved in treatment of digital injuries.

Much of the related published literature specifically discusses proper application of tubular gauze dressings (2–6). Miller and Haftel discussed four cases of digital ischemia due to improper elastic tubular gauze application in patients with minor injuries highly unlikely to compromise digit viability, with one patient requiring amputation (2). Ersek described a similar case that led to amputation, and documented increased pressures created with multi-layering of elastic tubular gauze resulting in compromised perfusion (3). Neal reported a case of distal phalanx injury resulting in mid-proximal phalanx amputation after tubular gauze application (4). Norris and Gilbert provide a comprehensive description of how tubular gauze

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