

Technical Tips

A TECHNIQUE FOR TEMPORARY CONTROL OF HEMORRHAGE

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□ **Abstract**—Traumatic injury to blood vessels is a common presentation in the Emergency Department. Control of hemorrhage is generally attempted using tight absorbent compression dressings. This may be a cause of inefficient control of hemorrhage and also contributes to tissue ischemia. We present a simple technique to control hemorrhage that does not cause tissue ischemia, which frequently accompanies the tight compression bandages applied for vascular injuries. Crown Copyright © 2008 Published by Elsevier Inc.

□ **Keywords**—hemorrhage; temporary control; technique; ischemia; vascular injuries

INTRODUCTION

Traumatic injury to blood vessels is a common presentation in the Emergency Department. Control of such hemorrhage can be difficult, and is often attempted using a tight pressure bandage with large quantities of absorbent dressings before definitive management. This technique often results in distal ischemia (Figure 1), simply because the bleeding cannot be stopped in this way without occluding the vascular flow (1). This method can also result in the loss of a significant proportion of blood volume into the dressing when the dressing is not tight enough. Compression for a long period of time leads to ischemia of the tissues and increases the risk of developing compartment syndrome (1). Usually, these bandages are applied in the field or upon arrival in the Emergency Department. To evaluate the wound, the



Figure 1. Ischemia caused by a tight bandage.

dressings are frequently removed, resulting in more hemorrhage. A simple method is illustrated whereby hemorrhage can be abated without the use of a tourniquet or tight bandaging, in a way that will avoid these problems. The technique is described in relation to the upper limb, but can be adapted to any site.

METHOD

Essential equipment includes dressing gauze and a bandage. Additional equipment includes a dental roll and tourniquet. If hemorrhage is severe and not controlled by

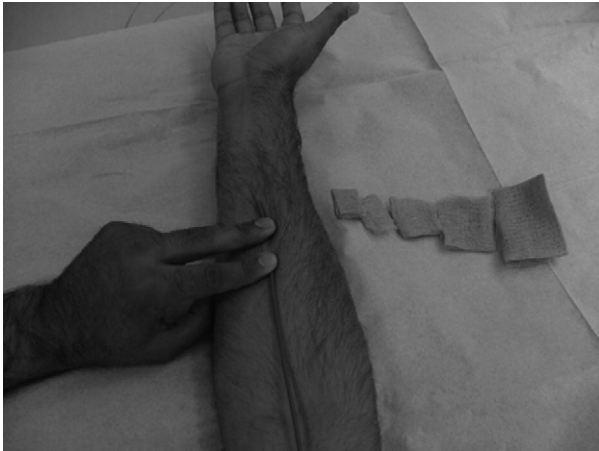


Figure 2. How to find the exact bleeding point.

any form of dressing at the time of presentation, pressure should be applied proximally, or a proximal tourniquet can be inflated. The bleeding point should be occluded directly with a gloved finger and the tourniquet is then completely released if it is still partially inflated (Figure 2). The occluding finger should be substituted with a dental roll or tightly folded “nugget” of gauze. Once the positioning is correct and no further bleeding is occurring, slightly larger or less folded pieces of gauze can be

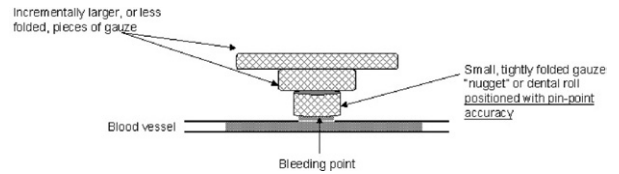


Figure 3. Schematic diagram of technique.

placed one on top of the other, creating an inverted pyramid of gauze (Figure 3). This is secured with a loose bandage. Only very light pressure need be applied to the top layer of gauze to maintain hemostasis, as the pressure is “focused” onto the bleeding point. This technique is based on the equation:

$$\text{Pressure} = \text{Force}/\text{Area}$$

The tightness of the bandage can be judged from the amount of pressure needed to maintain hemostasis when applying the top layer of gauze.

REFERENCE

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