

Tourniquet Management Protocol

I. Introduction

Use of tourniquets does not require on-line medical direction. However, there may be situations in which medical direction consultation is warranted. The goal is hemorrhage control.

II. Indications

Tourniquets may be applied to control potentially fatal hemorrhagic wounds when significant extremity bleeding cannot be stopped using simpler methods. Tourniquets may also be indicated in tactical or safety situations, those involving prolonged extrication, remote locations, multiple casualties, and following extraction of a patient after prolonged compression of a limb.

III. Contraindications

Tourniquet application is generally unnecessary when wound bleeding is adequately controlled using direct pressure, pressure dressings or any other method. Venous, bony and small vessel bleeding can be managed with direct pressure.

IV. Precautions

A tourniquet applied incorrectly can increase blood loss and lead to death. If loosely applied, a tourniquet will obstruct venous outflow from the extremity while not stopping arterial inflow, thus paradoxically *increasing* bleeding. Tourniquets can also cause nerve and tissue damage whether applied correctly or not. Commercially made tourniquets are preferred over improvised devices.

V. Procedure

1. Remove clothing
2. Apply device following manufacturer's specifications at approximately 3 inches proximal to wound. Avoid joints and impaled objects.
3. If the patient is in extremis, has massive hemorrhage or the tactical situation is unsafe, then the device should be placed high up on the extremity and over the clothing.
4. Tighten until bleeding stops (venous oozing is acceptable) and/or distal pulse is absent.
5. If one tourniquet is not sufficient a second should be applied just proximal to the first.
6. Do not cover the tourniquet with a dressing.

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7. Note time of tourniquet application in the patient care record and/or on the patient.
8. Consider pain management interventions.

VI. Communication

Consultation with medical direction authority is recommended for concerns regarding:

- appropriateness of device or application
- device or tourniquet removal

VII. Complications

Complications generally occur with applications greater than two hours duration and may be irreversible by six hours. Tourniquets may result in local tissue damage (worse with narrow or improvised tourniquets): blisters, nerve damage and gangrene are possible. Systemic complications can also occur with prolonged applications from byproducts of ischemia distal to the site: pulmonary emboli, rhabdomyolysis, lactic and respiratory acidosis, elevated K^+ , dysrhythmias, shock, circulatory overload (in cardiac patients). Patients who were in shock before the application of the tourniquet have a much lower survival and the degree of tissue loss will be greater, especially with tourniquet times beyond two hours.

VIII. Special Considerations

- Correct application of a tourniquet in the conscious patient will cause tremendous pain.
- Monitor vital signs and neurovascular function distal to tourniquet.
- Permissive hypotension may be advisable.