

Tourniquet Application

Use of tourniquets does not require on-line medical direction however; there may be situations in which medical direction consultation is advised. The goal of tourniquet application is to control hemorrhage. Overall morbidity and mortality, however, is affected by multiple factors related to type of device, application technique, and duration of application. Fortunately, civilian extremity exsanguination is exceedingly rare.

Indications:

- To control potentially fatal hemorrhage from wounds or traumatic amputations 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
- Tourniquets may be considered when treating patients who have had prolonged compression of an entrapped extremity in order to decrease the life-threatening release of Potassium and acids from the ischemic limb.

Contraindications:

- Venous, bony and small vessel bleeding.
- Tourniquet application is generally unnecessary when wound bleeding is adequately controlled using direct pressure, pressure dressings, elevation, or any other simpler method.
- Non-extremity hemorrhage

Procedure:

8. Commercially made tourniquets are preferred over improvised devices with the exception of pediatric patients (as there exists no effective commercial device designed for a pediatric patient).*
9. Apply device approximately 3 inches proximal to wound. If the wound is on a joint, or just distal to the joint, apply the tourniquet above the joint.
10. Tighten until bleeding stops (venous oozing is acceptable) and/or distal pulse is absent.
11. If one tourniquet is not sufficient a second should be applied just proximal to the first.
12. Do not cover the tourniquet with a dressing.
13. Once a tourniquet has been applied, do not remove or loosen it unless ordered by medical direction.
14. Note time of tourniquet application and communicate this to the receiving care providers.
15. Dress wounds per general wound care procedure.
16. Document application time, location, and patient response on the Patient Care Report (PCR)

*** The commercially made tourniquets recommended in the PAEMS System include the Combat Application Tourniquet (CAT) and the Special Operations Forces Tourniquet (SOFT-T).**

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Critical Thinking Elements

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.
- Although unlikely if applied correctly and removed within 1-2 hours, tourniquets may cause nerve and tissue damage.
- Application of a tourniquet in the conscious patient will cause tremendous pain.

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, 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.