Tourniquet Application

Purpose: A tourniquet is a constricting or compressing device used to control venous and arterial circulation to an extremity for a period of time. Pressure is applied circumferentially to the skin and underlying tissues a limb; this pressure is transferred to the vessel wall causing a temporary occlusion. There are a number of commercially available tourniquets available for pre-hospital and hospital patients of exsanguinating extremity trauma. While there are potential risks involved in the utilization of tourniquets (see "Notes" section), expeditious and clinically appropriate application in the presence of potentially life threatening hemorrhage is in keeping not only with the standards of medical professionals, but accordingly so with the best interests of the patient.

Indications:

1. Life threatening extremity hemorrhage. An amputation with hemorrhage does not necessitate the use of a tourniquet; most bleeding from these injuries is controllable through use of direct pressure and elevation.
2. Amputation with uncontrolled active bleeding.
3. A mass causality incident may be an indication for the use of tourniquets for temporary control of hemorrhage while the situation is brought under control.

Contraindications:

1. Never use a tourniquet for more than the recommended period of time (product-specific). With any extrication plus transport time of less than 180 minutes, there is minimal risk of developing an ischemic limb.
2. Never apply a tourniquet over an impaled object.

<u>Pre-Medical Control</u>
MFR/ EMT/SPECIALIST/PARAMEDIC
Procedure:

1. Check neurovascular status prior to tourniquet application (pulse, sensation, motor function distal to hemorrhage).
2. Apply tourniquet proximal to the area of bleeding, at least 3-5 centimeters from the wound margins.
3. Secure the tourniquet in place; continue to tighten the tourniquet until hemorrhage is controlled – avoid "over-tightening" the tourniquet. Use only the minimal effective pressure required to reliably maintain arterial occlusion throughout the procedure.
4. Elevate the extremity if possible.
5. Note the time the tourniquet was applied. Reassess neurovascular status every five minutes post application.
6. Notify the receiving hospital that a tourniquet is in place. Once tourniquet is in place, do not remove prior to transferring patient to the emergency department staff.

Notes:

- Tourniquets should not be applied over joints. Application of the cuff over the peroneal nerve (knee or ankle) or ulnar nerve (the elbow) may result in nerve damage or paralysis.
- Tourniquets should not be applied over clothing. Any limb with an applied tourniquet should be fully exposed with removal of all clothing, and the tourniquet should never be covered with any other bandage.
- Continued bleeding (other than medullary oozing from fractured bones) distal to the site of the tourniquet is a sign of insufficient pressure and a need to tighten the tourniquet further.
- **A tourniquet should not be loosened in any patient with obvious signs of shock or amputation that necessitated use of the device.**