

# TCCC Quick-Look:

## What Kind of Bleeding Requires a Tourniquet?



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**19 May 2026**



# Bottom Line Up Front

- Many tourniquets are being placed on arms and legs that do not have life-threatening bleeding. Multiple studies have found that the percent of prehospital tourniquets that were not medically indicated ranges from 40-75%.
- Tourniquets have not caused complications when transport times to a treatment facility are short (< 2 hours).
- Where evacuations are prolonged, however, (as they are in Ukraine), tourniquets that are not medically indicated are causing completely unnecessary amputations, kidney damage, and even death.
- This presentation is an adaptation of one that was originally done for the Ukrainian military to help address this problem.



# Rethinking TQT Conversion: Holcomb et al – JTACS 2023



- **Ukrainian casualty**
- **Only wound was a minor fragment injury of the soft tissues of the right forearm (under the gauze dressing).**
- **Delayed evacuation - 11.5 hours tourniquet time).**
- **The right upper limb was cold, with no distal pulse, and no sensation.**
- **The arm had to be amputated.**



# **Delayed Evacuations – It's Not Just Ukraine**

**Delayed evacuations and prolonged tourniquet application times may also be encountered in other settings:**

- Naval surface combat**
- Urban conflict**
- Amphibious operations**
- Rural civilian settings**
- Mass casualties**
- Non-permissive environments for flight operations (weather, anti-aircraft threat, drone threat)**



# **Reducing Morbidity from Prolonged Tourniquet Application Time**

**The presence of an extremity wound DOES NOT automatically indicate a need for a tourniquet to be applied!**



# Care Under Fire Is Different!

- **If the tourniquet is being applied in Care Under Fire (or other circumstances where there is imminent danger to the casualty and the care provider), the tourniquet should be applied over the uniform or clothing and positioned between the bleeding site and the main part of the body.**
- **The slides to follow assume that the TCCC provider is able to safely evaluate the wound and the severity of the bleeding.**



# What Kind of Bleeding Is Truly Life-Threatening?

- **Spurting, pulsing or steadily flowing blood from the wound.**
- **Blood pooling on the ground.**
- **Overlying clothes soaked with blood.**
- **Bandages or makeshift bandages used to cover the wound are ineffective and steadily becoming soaked with blood.**
- **Traumatic amputation of the arm or leg.**
- **There was prior bleeding, and the patient is now in shock (unconscious, confused, pale, weak and rapid pulse).**

*Holcomb  
BACS 2015*



# Who Needs a Tourniquet? And Who Does Not?

- The slides to follow are examples of extremity wounds.
- The task is to identify which wounds need a tourniquet (i.e., show life-threatening extremity bleeding).
- If the bleeding is not life-threatening, the extremity does not need a tourniquet.



# Major Traumatic Amputations Call for a Tourniquet



**This tourniquet stays ON.**

*Photo – Dr. John Holcomb*



# Tourniquet Assessment: Yes or No?



**Case #1**

*Photographer Unknown*



# Tourniquet Assessment: Yes or No?



## Case #2

*Photo: 2018 TCCC Curriculum*



# Tourniquet Assessment: Yes or No?

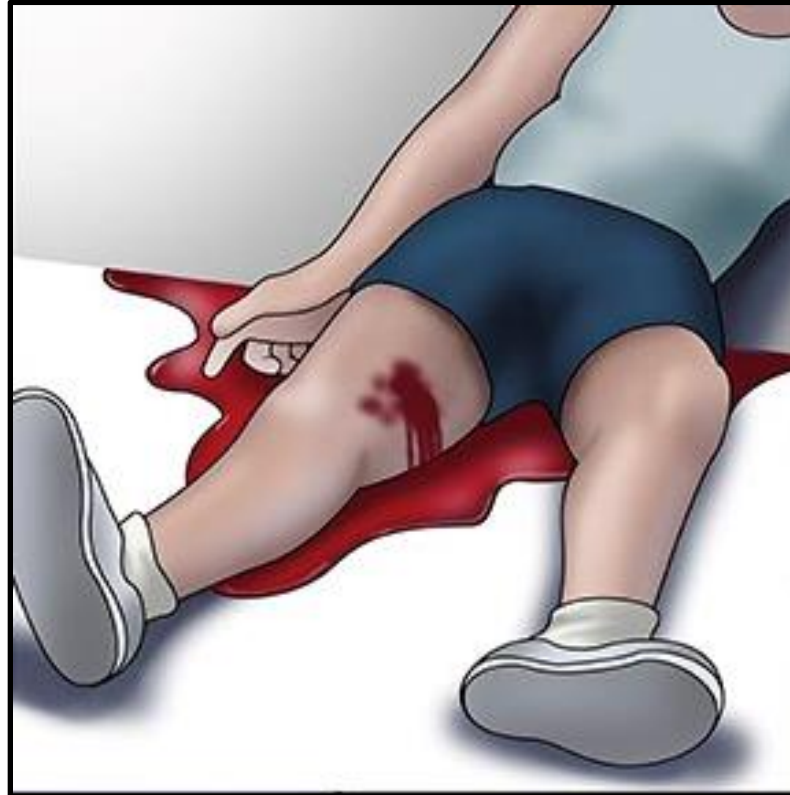


## Case #3

*Photo: Dr. Warren Dorlac*



# Tourniquet Assessment: Yes or No?



## Case #4

*Image: American College of Surgeons*



# Tourniquet Assessment: Yes or No?



## Case #5

*Photo: Mr. Mike Meoli*



# Tourniquet Assessment: Yes or No?



**Case #6**

*Photographer Unknown*



# Tourniquet Assessment: Yes or No?



## Case #7



# Tourniquet Assessment: Yes or No?



## Case #8

*Photo courtesy Dr. Oleksandr Linchevskyy*



# Tourniquet Assessment: Yes or No?



**Case #9**

*Photo: Deployed Medicine*



# Tourniquet Assessment: Yes or No?



**Case #10**

*Photo: Deployed Medicine*



# Tourniquet Assessment: Yes or No?



**Case #11**

*Photographer Unknown*



# Tourniquet Assessment: Yes or No?



## Case #12

*Image: American College of Surgeons*



# Tourniquet Assessment: Yes or No?

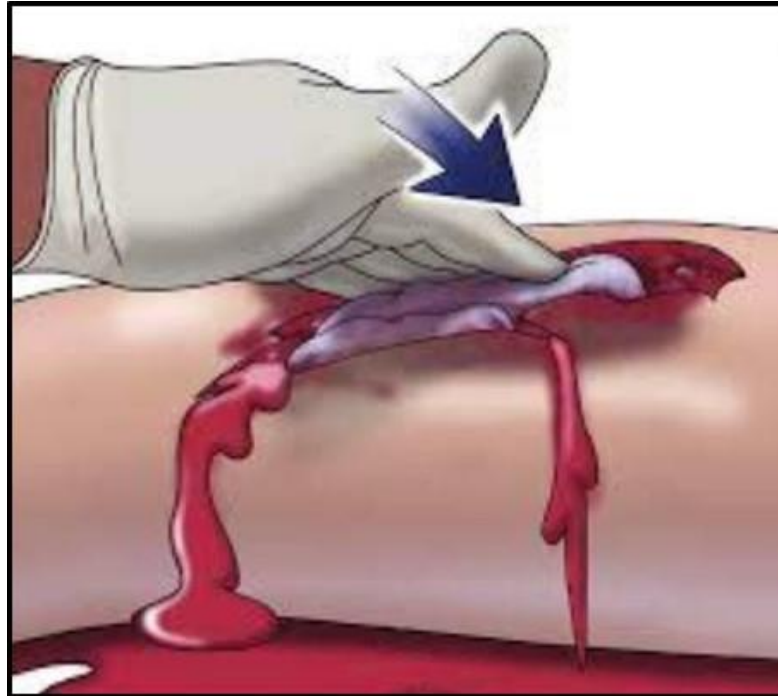


**Case #13**

*Photographer Unknown*



# Tourniquet Assessment: Yes or No?



## Case #14

*Image: American College of Surgeons*



# Tourniquet Assessment: Yes or No?

*And yet – this arm  
had a tourniquet  
applied. The  
fingertip amputation  
was the only wound.*



**Case #15**

*Photo: Dr. Andy Fisher*



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*Holcomb  
BACS 2015*



# Reassess, Reassess, Reassess!

- **Reassess applied tourniquets frequently: convert, reposition, or remove the tourniquet as indicated.**
- **The rate of bleeding and need for a tourniquet may change over time:**
  - **Muscle relaxation**
  - **Tourniquet loses pressure**
  - **Casualty movement**
  - **Fluid resuscitation**



# Thank You!



*Photo – MSG (ret) Harold Montgomery*