	Trauma Services	No. 4085
	Title: Microvascular Injuries- Shared	Page: 1 of 2 Effective Date: 07/17/2020

PURPOSE:

To provide for the optimum care of patients who require interventions for microvascular replantation injuries.

- I. **Replantation:** Patients who arrive at WakeMed with detached and potentially salvageable body parts should be evaluated for the suitability for replantation or revascularization in the Emergency Department, or in some circumstances in the Operating Room
 - a. Consult orthopedic services as appropriate.
 - b. Detached body parts will be evaluated in the ED or OR using sterile technique
 - c. Stabilize the patient hemodynamically and fully evaluate to ensure safety of the transfer and to increase chances of a successful replantation.
 - d. Life threatening injuries should take priority and be addressed prior to transfer and should take precedence over replantation.
 - e. Parts should be sealed tightly in a plastic bag, which is then placed in a separate plastic bag filled with ice. The inner plastic bag should be covered with ice to ensure even cooling. Ice should not directly touch the body part.
 - i. Properly cooled digits can survive 12 hours or more of cool ischemia time, while body parts with more muscle do not tolerate ischemia as well and require more expedient replantation within 4-6 hours.
 - f. An accurate estimate of the time of the injury should be documented in the chart as well as written on a patient label and affixed to the bag.
 - g. Appropriate sterile compressive dressings should be placed on the limb suffering the amputation and should ensure homeostasis without impairing circulation.
 - h. Prophylactic antibiotics as per routine for open fractures.
 - i. Patients with amputated parts deemed suitable for replantation will be immediately referred to a regional center of excellence for microsurgical replantation with the transfer initiated by the Attending Physician.
 - i. Properly cooled digits can survive 12 hours or more of cool ischemia time, while body parts with more muscle do not tolerate ischemia as well and require more expedient replantation within 4-6 hours.

- II. **Patient Selection:** In general, the cleaner the amputation (sharper injury) the better success or suitability for replantation. Heavily contaminated parts or those with multiple levels of injury are much less likely to survive replantation.
 - a. Avoidance of unnecessary transfer is paramount, and the Attending Physician must make careful consideration of less than ideal candidates.
 - b. Generally, patients with good health histories or with mild problems are good candidates.
 - i. Comorbidities such as diabetes, ischemic heart disease, advanced age, or severe co-existing injuries may prove to be barriers to the decision to perform replantation.
 - c. Single digit replants can take over 4 hours and multiple digits or hand replants


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can take over 12 hours. Suitability of the patient for these prolonged cases must be considered.

- d. Other factors include level of amputation, patient's occupation, future ability to undergo rehabilitation, etc.

III. **Pre-Hospital/Transfers:**

- a. Patients may be accepted from outside facilities or from the scene to manage the amputated limb.
 - i. If conditions are deemed more favorable, transfer to a center for replantation can be initiated from WakeMed.
- b. Patients considered good candidates should be referred directly to regional replantation centers unless coexisting life-threatening injuries supersede and warrant direct transport to WakeMed for management of their life-threatening injuries.
 - i. Subsequent transfer after these have been dealt with can still result in a successful replantation if the parts are properly managed and preserved.

- IV. **Non Limb Parts:** On occasion, non-limb parts suffer amputation with retrieval of adequately preserved portions of the part to consider for replantation (penis, ear, and scalp). These instances are rare but if encountered the same principles of part management and transfer should be initiated.

<u>Appropriate Candidates:</u>	<u>Questionable Candidates</u>
<ul style="list-style-type: none"> • All thumb amputations • All children • Multiple digits • Partial or whole hand • Wrist or forearm • Elbow or above, if sharp amputation • Individual digits distal to the FDS insertion • Multiple digits even with severe injuries. Some digits may be used in orthotropic locations. 	<ul style="list-style-type: none"> • Single digit (except thumb), especially index finger in zone II • Severe crush or comminution • Through joints (although immediate arthrodesis may allow functional length preservation) • Prolonged warm ischemia time (depends on how distal) • Patients with arteriosclerosis • Mentally unstable patients • Multiple level of injury • Avulsion injuries with obviously stretched vessels • Patient desire (unreasonable) is not always a good indication. Thoughtful discussion with the patient if replantation success is unlikely should be done before transfer.

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