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Open Tibia Fracture Treatment

Please complete the survey below.

Thank you!

This IRB approved survey requires 10-15 minutes to complete. Your participation is vital, and it will help identify differences in treatment patterns and barriers to care. The survey will provide useful data for follow-up studies that can lead to better allocation of resources to ameliorate barriers to care and improve the treatment of open tibia shaft fractures in Latin America.

Before proceeding, please review the Informed Consent document provided as a link in the survey invitation email.

If you have any questions or suggestions, please let us know, and we will find a solution for you. Thank you in advance for your participation.

Sincerely,

Dr.Theodore Miclau III, MD

Dr. David Shearer, MD MPH

I have read or had read to me and understand the informed consent document. I agree to all the terms and consent to be a part of this study

☐ Yes
☐ No

Please confirm that you would like to participate in the survey

☐ Yes
☐ No

Surgeon demographics and training background

Name

Hospital

Please list your country of practice

Gender

☐ Male
☐ Female

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What is your practice setting?

- ☐ Academic (formal affiliation with a university center)
☐ Private hospital
☐ Government
☐ Combination
☐ Other

Are you a currently practicing orthopaedic surgeon?

- ☐ Yes
☐ No

Have you completed residency training in orthopaedic surgery?

- ☐ Yes
☐ No

Number of years in practice following residency

- ☐ 0 to 5 years
☐ 5 to 10 years
☐ 10 to 20 years
☐ ≥ 20 years

If other practice setting, please describe:

Do you currently supervise residents?

- ☐ Yes
☐ No

Did you complete an orthopaedic surgery fellowship in musculoskeletal trauma?

- ☐ Yes
☐ No

Have you completed any other type of orthopaedic surgery fellowship training?

- ☐ Yes
☐ No

If yes, please describe:

Where is the primary location of your practice?

- ☐ Urban (City)
☐ Suburban (Near to city)
☐ Rural

What is the number of open tibia diaphyseal fractures that you treat per year on average?

- ☐ 0 to 10
☐ 10 to 20
☐ 20 to 30
☐ 30 to 40
☐ 40 to 50
☐ 50 to 75
☐ 75 to 100
☐ 100 to 200
☐ Greater than 200

What percentage of open tibia diaphyseal fractures present to your hospital within 24 hours of injury?

- ☐ < 10%
☐ 10-25%
☐ 25-50%
☐ 50-75%
☐ 75-90%
☐ >90%

Treatment of open tibia diaphyseal fractures

Do you have a written protocol at your institution for open tibia fracture management?

- ☐ Yes
☐ No

Please upload your written protocol

Irrigation and Debridement

For the majority of patients with open tibia fractures, where does the wound irrigation and debridement occur?

- ☐ Emergency Department ONLY
☐ Initial washout in Emergency Department followed by DEFINITIVE debridement in the operating theater
☐ Operating theater ONLY

In the EMERGENCY department, what solution do you typically use for irrigation of open tibia fractures?

- ☐ Normal saline alone
☐ Normal saline + antibiotics
☐ Normal saline + soaps/antiseptics
☐ Soaps (Castile)/antiseptics alone
☐ Distilled water
☐ Other

If other, please describe:

What type of wound dressing is typically used for open tibia fractures in the emergency department?

- ☐ Gauze only
☐ Gauze with saline
☐ Gauze with iodine
☐ Gauze with chlorhexidine
☐ No wound dressing
☐ Other

If other, please describe

In the OPERATING ROOM, what solution do you typically use for irrigation of open tibia fractures?

- ☐ Normal saline alone
☐ Normal saline + antibiotics
☐ Normal saline + soaps/antiseptics
☐ Soaps (Castile)/antiseptics alone
☐ Distilled water
☐ Other

If other, please describe:

Do patients typically receive any surgical preparation solution on the wound in the emergency department?

- ☐ Yes
☐ No

What type of surgical preparation solution is typically used for the surgery?

- ☐ Iodine (Yodo)
☐ Chlorhexidine (clorhexidina)
☐ Alcohol
☐ Other (otra)

If other, please describe:

For the majority of type I and II fractures, what do you believe is the ideal timeframe for the presentation of a wound debridement to occur at YOUR hospital?

- ☐ < 6 hours
☐ 6-24 hours
☐ 24-48 hours
☐ >48 hours
☐ I do not believe timing matters

For the majority of type I and II fractures, what is the actual timeframe for the DEFINITIVE wound debridement to occur at YOUR hospital?

- ☐ < 6 hours
☐ 6 to 24 hours
☐ 24-48 hours
☐ >48 hours

What is the most common reason for delayed DEFINITIVE debridement in type I and II fractures?

- ☐ Surgeon choice
☐ OR rooms and/or staffing not available
☐ Patient cannot afford to pay
☐ Equipment/implants not available
☐ Delayed patient presentation
☐ Other

If other, please describe

DEFINITIVE wound debridement to occur (from time of presentation) to 24-48 hours

For the majority of type III fractures, what do you believe is the ideal timeframe for the DEFINITIVE wound debridement to occur (from time of presentation)?

- ☐ < 6 hours
☐ 6 to 24 hours
☐ 24 to 48 hours
☐ I do not believe timing matters

For the majority of type III fractures, what is the actual timeframe for the DEFINITIVE wound debridement to occur at YOUR hospital?

- ☐ < 6 hours
☐ 6 to 24 hours
☐ 24-48 hours
☐ >48 hours

What is the most common reason for delayed DEFINITIVE debridement in type III fractures?

- ☐ Surgeon choice
☐ OR rooms and/or staffing not available
☐ Patient cannot afford to pay
☐ Equipment/implants not available
☐ Delayed patient presentation
☐ Other

If other, please describe

What solution pressure do you typically use for debridements?

- ☐ Low pressure (e.g bulb syringe or gravity with tubing)
☐ High pressure (e.g. pulse lavage)

What volume of solution do you typically use for type I and II open tibia diaphyseal fractures?

- ☐ < 3L
☐ 3 to 6 L
☐ 7 to 9 L
☐ >9 L

What volume of solution do you typically use for type III open tibia diaphyseal fractures?

- ☐ < 3L
☐ 3 to 6 L
☐ 7 to 9 L
☐ >9 L

Do you routinely perform multiple debridements on type I and II open tibia diaphyseal fractures?
 Do you routinely perform multiple debridements on type III open tibia diaphyseal fractures?

- ☐ Yes
☐ No
 Yes
 No

What are your indications for doing repeat debridements on an open fracture?

- ☐ Gustilo-Anderson Grade
☐ Severe contamination
☐ Crush injury
☐ Other

Other reason for multiple debridements

Antibiotic prophylaxis

Do you treat all open tibia diaphyseal fractures with systemic antibiotic prophylaxis?

- ☐ Yes
☐ No

What are the common reasons you do not treat all open tibia diaphyseal fractures with antibiotic prophylaxis?

- ☐ Lower severity of fracture
☐ Lack of availability of antibiotics in my region
☐ Cost of antibiotics
☐ Other

If other, please describe:

What method of antibiotic delivery do you use for the majority of type I and II open tibia diaphyseal fractures?

- ☐ IV antibiotics (systemic) alone
☐ Local antibiotics (eg. antibiotic beads, powder, topical, etc) alone
☐ IV + Local antibiotics
☐ Other

If other, please describe:

What method of antibiotic delivery do you use for the majority of type III open tibia diaphyseal fractures?

- ☐ IV antibiotics (systemic) alone
☐ Local antibiotics (eg. antibiotic beads, powder, topical, etc) alone
☐ IV + Local antibiotics
☐ Other

If other, please describe:

What is your optimal timeframe to provide antibiotics for the majority of type I and II open tibia diaphyseal fractures after patient presentation to the hospital?

- ☐ < 3 hours
☐ 3 to 6 hours
☐ 6 to 24 hours
☐ >24 hours

What is the average timeframe that you provide antibiotics for the majority of type I and II open tibia diaphyseal fractures after patient presentation to the hospital?

- ☐ < 3 hours
☐ 3 to 6 hours
☐ 6 to 24 hours
☐ >24 hours

☐
☐

What is the average timeframe that you provide antibiotics for the majority of type III open tibia diaphyseal fractures after patient presentation to the hospital?

- ☐ < 3 hours
☐ 3 to 6 hours
☐ 6 to 24 hours
☐ >24 hours

For how long AFTER surgery do you typically provide antibiotic prophylaxis for the majority of type I and II open tibia diaphyseal fractures after wound closure?

- ☐ None provided
☐ 24hrs
☐ 48hrs
☐ 72hrs
☐ >72hrs

For how long AFTER do you typically provide antibiotic prophylaxis for the majority of type III open tibia diaphyseal fractures after wound closure?

- ☐ None provided
☐ 24hrs
☐ 48hrs
☐ 72hrs
☐ >72hrs

If the wound is not closed at the initial debridement (e.g. Gustilo type 3B), do you continue antibiotics until the wound has been closed definitively?

- ☐ Yes
☐ No

What is your typical antibiotic regimen for non-contaminated type I and II open tibia fractures?

- ☐ 1st generation cephalosporin (Eg. cefazolin, cephalixin, etc)
☐ 3rd generation cephalosporin (Eg. ceftriaxone, cefdinir, ceftazidime, etc)
☐ Aminoglycoside (Eg. Gentamycin, tobramycin, etc)
☐ Penicillin
☐ Vancomycin
☐ Piperacillin/tazobactam
☐ Metronidazole
☐ Other

If other, please describe

What is your optimal timeframe to provide < 3 hours antibiotics for the majority of type III open tibia 3 to 6 hours diaphyseal fractures after patient presentation to 6 to 24 hours the hospital? >24 hours

What is your typical antibiotic regimen for
non-contaminated type III open tibia fractures?

- ☐ 1st generation cephalosporin (Eg. cefazolin, cephalexin, etc)
- ☐ 3rd generation cephalosporin (Eg. ceftriaxone, cefdinir, ceftazidime, etc)
- ☐ Aminoglycoside (Eg. Gentamycin, tobramycin, etc)
- ☐ Penicillin
- ☐ Vancomycin
- ☐ Piperacillin/tazobactam
- ☐ Metronidazole
- ☐ Other

If other, please describe:

Fracture Stabilization

How would you characterize your current treatment Internal fixation (Plate or IMN) definitively at pattern for the majority of type I and II open tibia the time of the initial debridement

- ☐ fixation
- ☐ Definitive external fixation
- ☐ Definitive plaster cast/splint
- ☐ Plaster cast/splint at the initial debridement and conversion to internal fixation

What is your most common method of internal fixation for the majority of type I and II open tibia diaphyseal fractures?

- ☐ Locking plate
- ☐ Non-locking plate
- ☐ Unreamed intramedullary nail
- ☐ Reamed intramedullary nail

What type of intramedullary nail is typically used for the majority of type I and II open tibia diaphyseal fractures?

- ☐ Solid (SIGN) (Sólido)
- ☐ Slotted(Küntscher) (Ranurado)
- ☐ Cannulated (Canulado)
- ☐ Other

If other, please describe

diaphyseal fractures?

Initial external fixation with delayed internal

If you most commonly use delayed internal fixation for type I and II open tibia diaphyseal fractures, choose the most important determining factor:

- ☐ Risk of Infection
- ☐ Cost of implants
- ☐ Training and/or comfort level
- ☐ Other

If other, please describe:

If you most commonly use definitive external fixation for type I and type II open tibia diaphyseal fractures, choose the most important determining factor:

- ☐ Risk of Infection
- ☐ Cost of implants
- ☐ Training and/or comfort level
- ☐ Other

If other, please describe

How would you characterize your current treatment pattern for the majority of type III open tibia diaphyseal fractures?

- ☐ Internal fixation (Plate or IMN) definitively at the time of the initial debridement
- ☐ Initial external fixation with delayed internal fixation
- ☐ Definitive external fixation
- ☐ Definitive plaster cast/splint
- ☐ Plaster cast/splint at the initial debridement and conversion to internal fixation

What is your most common method of internal fixation for the majority of type III open tibia diaphyseal fractures?

- ☐ Locking plate
- ☐ Non-locking plate
- ☐ Unreamed intramedullary nail
- ☐ Reamed intramedullary nail

What type of intramedullary nail is typically used for the majority of type III open tibia diaphyseal fractures?

- ☐ Solid (SIGN) (Sólido)
- ☐ Slotted(Küntscher) (Ranurado)
- ☐ Cannulated (Canulado)
- ☐ Other

If other, please describe

If you most commonly use delayed internal fixation for type III open tibia diaphyseal fractures, choose the most important determining factor:

- _____
- ☐ Risk of Infection
 - ☐ Training and/or comfort level
 - ☐ Other

If other, please describe:

Cost of implants

If you most commonly use definitive external fixation for type III open tibia diaphyseal fractures, choose the most important determining factor:

- ☐ Risk of Infection
- ☐ Cost of implants
- ☐ Training and/or comfort level
- ☐ Other

If other, please describe:

Wound Management

I treat the majority of Type I and II open tibia diaphyseal fractures with:

- ☐ Primary closure
- ☐ Delayed closure

I treat the majority of Type III open tibia fractures with:

- ☐ Primary closure
- ☐ Delayed closure

What factors are most commonly involved in your decision to use delayed wound closure?

- ☐ Skin loss
- ☐ Delay from injury to debridement
- ☐ Unstable skeletal fixation after primary surgery
- ☐ Skin under tension
- ☐ Contaminated wound
- ☐ Other

If other, please describe:

Are the majority of type 3B open tibia fractures at your institution treated with a soft-tissue flap/coverage procedure?

- ☐ Yes
☐ No

Who commonly performs the soft-tissue coverage procedures at your hospital?

- ☐ Orthopaedic Surgery
☐ Plastic Surgery
☐ General Surgery
☐ Other

If other, please describe

What are the primary reasons for not using soft-tissue flaps/coverage at your institution?

- ☐ Training and/or comfort level
☐ Surgeon choice
☐ OR rooms and/or staffing not available
☐ Patient cannot afford to pay
☐ Equipment/implants not available
☐ Plastic surgeons unavailable
☐ Other
 (check all that apply)

If other, please describe:

What type of soft-tissue coverage procedures do you (or colleagues in plastic surgery at your hospital) commonly perform?

- ☐ Split thickness skin graft
☐ Rotational muscle flap
☐ Free flap (with microvascular anastomosis)
☐ Other
 (check all that apply)

If other, please describe:

When I am unable to close a wound for an open fracture, I primarily use the following for wound management:

- ☐ Negative pressure wound therapy
☐ Saline soaked dressings
☐ Antibiotic bead pouch
☐ Other

If other, please describe:
