Perioperative preparation for an osteosynthesis of an ankle fracture

Group discussion

Acknowledgements

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Review
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How to use this discussion?

Before the course
• Go through the presentation and make it your own. Add relevant pictures e.g. of drapes, material if you wish.
• Rehearse and make sure that the content is known.
• If you are two moderators (ORP and surgeon), decide on who will take the lead for which content.
• Some slides contain slide questions (titles).
• Other slides contain questions in the notes section which can be used.
• The hidden slides can be activated and discussed if wished.
• The reference list (slide 3) contains information for further reading.

During the course
• Lead the discussion by asking questions.
• Do not give another lecture!
• Motivate all participants to come up with the content.
# Reference list

<table>
<thead>
<tr>
<th>Topic</th>
<th>Reference</th>
</tr>
</thead>
</table>
Learning outcomes

At the end of the discussion the participants should be able to:

- Describe the fracture briefly
- Review the four AO principles of fracture fixation
- List nursing preparations for the fixation of a closed ankle fracture

How to use the ppt?
- Focus on the 3 learning outcomes.
- The participants
  - Describe briefly the fracture.
  - Discuss possible treatment(s). In this discussion the treatment with a third tubular plate and lag screw is discussed.
  - Focus on peri-operative preparations for this particular treatment.

If available, use the workshop instruments to allow hands on individual instruments and to discuss and/or try out functionality of instruments.
Case presentation

- 36-year-old woman fell while doing sport
- Closed left ankle fracture

Include (exclude) diabetes type 2 with poor skin conditions according to your public.

This slide can be printed for the participants in case you wish them to follow the case during the discussion.
Briefly review the four principles of fracture fixation (if required). The participants have learned about this in a previous lecture. Explain that the entire case including preparation, treatment and after-care is based on these four principles.
Describe the fracture

Bone
Segment
Fracture type

Other item(s) which can be discussed here is/are:

1. What x-rays, images are required? (Both x-ray views (lateral and AP) are needed. Both joints are checked.)
2. Which bone(s) is(are) broken?
3. Which segment is broken?
4. Which fracture type is this?
5. Is this an open fracture? (An open fracture is suspected when the bone sticks out, black bubbles are present (which indicates air) and/or dirt is visible (e.g. metal).)
Describe the fracture

<table>
<thead>
<tr>
<th>Bone</th>
<th>Tibia / Fibula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segment</td>
<td>Distal</td>
</tr>
<tr>
<td>Fracture type</td>
<td>Trans-syndesmotic</td>
</tr>
</tbody>
</table>
Describe type of malleolar fracture (1/2)

Tibia and fibula are regarded as one bone.

This slide can be included if wished.
Describe type of malleolar fracture (2/2)

- **Details**: Location of a fibula fracture

  - **A**: Infrasyndesmotic lesion
  - **B**: Transsyndesmotic fibula fracture
  - **C**: Suprasyndesmotic lesion

Discuss «syndesmosis» and fracture location of the fibula.

This slide can be included if wished.
How would you reduce the fracture?

How would you stabilize the fracture?

Other items which can be discussed here are:

1. What type of reduction will be performed? (direct or indirect, open or closed)
2. What are the principles of stabilization? (absolute or relative stability)
3. How could the fracture be fixed?
4. What healing is expected? (direct or indirect bone healing, primary or secondary bone healing)
For this ankle fracture

…a recommended treatment is internal fixation of the fibula with lag screw and 1/3 tubular plate and fixation of the medial malleolus with a lag screw.

This suggested treatment (see slide) will be discussed further in this discussion.

Another item which can be discussed here is:

1. What is the plate function of the suggested technique? Compression, splinting, buttressing or neutralization?
Discuss the nursing preparations related to this case.
In the next slides the following will be discussed in more detail:
1. Planning (including positioning, preparing of equipment etc. and draping)
2. Instrument- and implant check (including WHO-checklist)
3. Procedure (including approach and technique)

We use «P.I.P.» to facilitate the three steps (PIP of Planning, Instruments and Procedure).
Nursing preparations
Pre-, intra and post operative process

1. Planning
2. Instrument- and implant check
3. Procedure

Starting with the planning process....
What do you need to prepare?

• Instruments
• Implants
• Equipment

...what do you need to prepare?

Please discuss with your participants the following items. The participants should come up with items for each bullet point. The following slides are some illustrations of what should be prepared. You are free to include more slides with pictures if deemed required.
This slide shows only one set of instruments. The following hidden slides with instruments can be used if wished.

If available, use the workshop instruments to allow hands on individual instruments and to discuss and/or try out functionality of instruments.

1. Discuss material and equipment necessary for this type of intervention (Image intensifier, etc...).
2. Discuss which specific plates could be used.
3. Discuss which screws could be used (repeat lag screw procedure).
4. Discuss specific instruments for fracture fixation with conventional screws. Note: Not all instruments are on this picture!
5. Discuss use and intra-operative care and maintenance of specific instruments.
Instruments for cannulated screws if used.
Reduction tools, bending tool
Implants
How would you position the patient?

Reference: https://www2.aofoundation.org/wps/portal/surgery
How would you position the patient?

Supine position
The patient is positioned supine on a radiolucent table with a sandbag under the ipsilateral buttock.

The injured leg may be placed on a foam block, or on blankets, with the knee slightly flexed. This position allows free access to both the lateral and the medial sides by hip rotation. Moving the leg towards the edge of the table stabilizes the position of leg and ankle.

Alternatively, tilt the table to lower the side of the uninjured leg (approximately 30 degrees).

A well-padded tourniquet may be applied on the thigh. Use of a tourniquet is determined by surgeon's preference.

Reference: https://www2.aofoundation.org/wps/portal/surgery

Other item(s) which can be discussed here is/are:

1. Which possibilities for positioning exist?
2. Discuss safe positioning for the patient (accessories, OR-table,
etc...).
3. Discuss tips and tricks.
4. Which complications might occur?
5. How can these complications be prevented?
What about these possibilities?

Reference: https://www2.aofoundation.org/wps/portal/surgery
How would you drape for this case?
Nursing preparations
Pre-, intra and post operative process

1. Planning
   • Preparing (Equipment, instruments and implants)
   • Positioning
   • Draping

2. Instrument- and implant check

3. Procedure

Only repeat this if deemed required. This subject is possibly already discussed in the previous discussion.

Questions which can be asked are:

Ask your participants:
1. What is the final check before skin incision? (refer to Surgical Safety Checklist, see next slides)
2. Who does this systematically?
3. What is exactly checked? (availability of instruments and implants or more)

Ask those participants who perform systematically a safety check:
1. If they use a checklist adapted to their hospital?
2. If they use a general type of list (see WHO-checklist, AOTrauma checklist)?
This is probably discussed in previous discussions. Discuss this slide if wished and required.

Discuss the WHO checklist if wished.
This is probably discussed in previous discussions. Discuss this slide if wished and required.

Also AOTrauma has created a time-out checklist as example.
Note that the time-out is only 1 part of the surgical safety checklist.
Nursing preparations
Pre-, intra and post operative process

1. Planning
   • Positioning
   • Preparing (Equipment, instruments and implants)
   • Draping

2. Instrument- and implant check
   • WHO-checklist/AOTrauma-checklist

3. Procedure
   • Approach
   • Technique

Discuss the procedure step-by-step starting with the approach.
What approach could be done?

Other items which can be discussed here are:

1. Discuss the open, closed and/or minimally invasive approach.
2. What is the impact regarding the soft tissues?
What approach could be done?

Reference: https://www2.aofoundation.org/wps/portal/surgery
Participants come up with the steps of procedure. The next slide is a reminder and help which can be used once the participants have given their input.
What are the steps of procedure?

1. Reduction
2. Gliding hole
3. Thread hole
4. Countersink
5. Measure
6. Tap
7. Insert screw
What kind of mobilization after surgery is aimed for?

Other items which can be discussed here are:

1. Discuss the mobilization after surgery. (Movements of injured limb, weight bearing, …)
2. What are available community resources in your country to help mobilize the patient so that they get back home quicker?
3. How does the diabetes influence the healing process?
Let a participant make a summary on hand of the four AO principles of fracture fixation. Relate/Refer to the case discussed!

1. Type of reduction (direct or indirect, open or closed)
2. Principles of stabilization and fixation (absolute or relative stability) with healing expected
3. Impact of soft tissue (approach)
4. Expected mobilization after surgery (limb, patient as a whole, weight bearing)
Conclusion

• The 36-year-old sporty woman with a closed ankle fracture is treated with lag screws and a neutralization plate.
• Open reduction is performed.
• Internal fixation will provide absolute stability and primary bone healing.
• The case is prepared following «P.I.P.».