Bone & Joint Open

# Supplementary Material

10.1302/2633-1462.38.BJO-2022-0079.R1

*Confidential*

# Demographics

| **Demographics** | |
|---|---|
| NHS Number: | _____ (NHS number required once consented) |
| Age: | _____ |
| Gender: | ◯ Male<br>◯ Female |
| Ethnicity: | ◯ Asian or Asian British<br>◯ Black, African, Black British or Caribbean<br>◯ Mixed or Multiple ethnic groups<br>◯ White<br>◯ Another ethnic group<br>◯ Unknown |
| Primary Spoken Language: | ◯ English<br>◯ Other<br>◯ Unknown |
| Other Spoken Language: | _____ |
| Employed? | ◯ Yes<br>◯ No |
| Social Grade: | ◯ AB - Higher and intermediate managerial, administrative, or professional positions<br>◯ C1 - Supervisory, clerical, and junior managerial/administrative/professional positions<br>◯ C2 - Skilled manual workers<br>◯ DE - Semi-skilled and unskilled manual workers; those on state benefit/unemployed, & lowest grade workers<br>◯ Unknown |
| Smoker? | ◯ Yes<br>◯ No<br>◯ E-cigarettes |
| Diabetic? | ◯ Yes<br>◯ No |

| | |
|---|---|
| Mechanism of Injury? | ◯ Vehicle Incident / Collision<br>◯ Fall more that 2 metres<br>◯ Fall less than 2 metres<br>◯ Blast<br>◯ Blow<br>◯ Burn<br>◯ Crush<br>◯ Shooting<br>◯ Stabbing<br>◯ Other<br>(Tick Appropiate) |
| | _____<br>(Please Specify) |
| Type of Injury? | ◯ Isolated Injury<br>◯ Polytrauma |

If Polytrauma and more than one Open Fracture please complete a Fracture CRF for each fracture.

Please note that this form should be completed as a Survey;

1. Click the drop-down Survey option box located on the top right hand corner of this page.
2. Select Open Survey.
3. Complete form in the survey mode with patient.
4. Once complete, submit survey.
5. Click close survey on the pop-up box and then click leave with out saving changes on the second box.
6. This will automatically update the consent status along with sending a PIS and completed consent form copy to the patient.
7. Select next eCRF (assessment) to start data capture.

## Patient Information Sheet Study Title: Open fracture Patient Evaluation Nationwide

Background You have been given this information sheet because you have been diagnosed as having an open fracture. An open fracture, also called a compound fracture, is a fracture in which there is an open wound or break in the skin near the site of the broken bone. Most often, this wound is caused by a piece of bone breaking through the skin at the time of the injury.

What is the OPEN study?

The OPEN Study is a service evaluation to establish more information about open fractures occurring in the United Kingdom. This study will help us to better understand who these injuries happen to, what type of fractures they have and also how they happened.

What will this mean for you?

The orthopaedic team at your hospital will collect routine data about the management of your injury as part of this service evaluation. This study will not affect or change the treatment you receive. The orthopaedic team at your hospital will be able to explain what treatment you need and the aftercare that you will get.

We are seeking your consent to enable the study team to contact you for some additional follow up data for the OPEN study. If you choose to take part, over the next 12 months you will receive an email at 3, 6 and 12 months from the date of your consent. The email will have a web-link to a short online questionnaire that we ask participant to complete. This should not take more than 5 minutes to complete.

How will your information help?

Information from this study will help to further our understanding of open fractures occurring in the United Kingdom. This will help to establish current standards, identify gaps and guide future management.

What will happen to your information and will you be contacted in future?

The study team will securely store your data for five years from the end of the service evaluation and during this time you may be contacted to assist with further research with your permission.

You can withdraw from the questionnaire follow up at any time by contacting open.study@nhs.net

Do you have to take part take part?

If you would rather not take part, routine hospital data will be collected as part of the service evaluation and you will not be contacted for any follow up questionnaires. Your choice of participation will not affect the standard of care you receive.

Who do I contact for further information?

The orthopaedic team at your hospital will be able to provide further details and answer any queries you may have prior to consent. If you wish to contact the open study team regarding your follow up please email open.study@nhs.net

References

https://difference.guru/difference-between-an-open-and-a-closed-fracture/

Patient Information Sheet V1.0 06/FEB/2021

| **Participant Consent Form Study Title: Open fracture Patient Evaluation Nationwide** | |
|---|---|
| Consent to be contacted for the Open Study:<br><br>(If under 18 years of age, select patient unable to consent) | ◯ Patient Consent<br>◯ Patient unable to consent<br>◯ Patient refused consent |
| I have read the participant information sheet dated 06 FEB 2021, Version 1.0, for the OPEN study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. | ◯ Check Box if you Agree |
| I agree to be contacted regarding future research opportunities and Patient and Public Involvement (PPI) activities, during the time frame of this study. | ◯ Yes<br>◯ No |
| Full Name: | _____ |
| Email Address: | _____ |
| Patient Signature: | _____ |
| Upload Consent:<br><br>(Paper-based consent only) | |
| Date of Consent: | _____ |
| Reason: | ◯ Cognitive impairment<br>◯ Under 18 yrs<br>◯ No Email Address<br>◯ Other |
| Other: | _____ |

No Patient Questionnaire Follow up,Proceed with Hospital Forms ONLY.

# Assessment

## Assessment

| | |
|---|---|
| Is the admitting hospital an Orthoplastic Unit: | ◯ Yes<br>◯ No |
| Was this patient transferred from another hospital? | ◯ Yes<br>◯ No |
| From which hospital was the patient transferred? | _____ |
| Has the patient been discussed with your local orthoplastic unit? | ◯ Yes<br>◯ No |
| Date & Time of presentation to hospital? | _____<br>(Please use 24hr clock) |
| Was a photograph taken of the wound in the emergency department? | ◯ Yes<br>◯ No |
| | ◯ Photo Printed and Added to Notes<br>◯ Photo Uploaded to Electronic Notes |
| Was the patient given antibiotic's before they where transferred from the above hospital? | ◯ Yes<br>◯ No |
| Initial antibiotic administration: | ◯ Single Antibiotic<br>◯ More than One Antibiotic<br>◯ Information Unavailable |
| What antibiotic was given? | ◯ Co-amoxiclav<br>◯ Teicoplanin<br>◯ Cephalosporin<br>◯ Other |
| Please provide name of other antibiotic given: | _____ |
| Select all antibiotics given: | ☐ Co-amoxiclav<br>☐ Teicoplanin<br>☐ Cephalosporin<br>☐ Other |
| Please provide name(s) of other antibiotic(s) given: | _____ |
| Initial presentation to this hospital: | _____ |

Date and Time of Initial antibiotic administration:

_____

Initial antibiotics administrations:

◯ Single Antibiotic
◯ More than One Antibiotic
◯ Information Unavailable

What antibiotic was given?

◯ Co-amoxiclav
◯ Teicoplanin
◯ Cephalosporin
◯ Other

Please provide name of other antibiotic given:

_____

Select all antibiotics given:

☐ Co-amoxiclav
☐ Teicoplanin
☐ Cephalosporin
☐ Other

Please provide name(s) of other antibiotic(s) given:

_____

Location of initial dose:

◯ Pre-Hospital
◯ Emergency Department
◯ Trauma Ward

Date and Time of Diagnostic Radiograph:

_____

## Charlson Comorbidity Index

Charlson Comorbidity Index Points:

_____

Charlson Comorbidity Index - Estimated 10-year survival:

_____
(Percentage (%))

## Rockwood Clinical Frailty Score

Rockwood Clinical Frailty Score:

◯ 1 - Very Fit
◯ 2 - Well
◯ 3 - Managing Well
◯ 4 - Vulnerable
◯ 5 - Mildly Frail
◯ 6 - Moderately Frail
◯ 7 - Severely Frail
◯ 8 - Very Severely frail
◯ 9 - Terminally ill

# Classification of fracture and soft tissue injury

## Demographics

Study ID: _____

If polytrauma and have multiple open fractures, please complete one fracture eCRF for each fracture.

Once the first eCRF is complete and saved, please select Record Status Dashboard and on 'Record Status Dashboard' click the + button next to the Classification of Fractures eCRF for the same patient ID to add another fracture eCRF.

## Muller AO Classification

Mueller AO Classification:

◯ 1. Humerus ◯ 2. Radius / Ulna ◯ 3. Femur ◯ 4. Tibia / Fibula ◯ 5. Other

Muller AO Classification - Humerus:

◯ Type 11 - Proximal
◯ Type 12 - Diaphyseal
◯ Type 13 - Distal

Type 11 - Proximal

◯ 11-A1 - Tuberosity
◯ 11-A2 - Impacted Metaphyseal
◯ 11-A3 - Nonimpacted Metaphyseal
◯ 11-B1 - With Metaphyseal Impaction
◯ 11-B2 - Without Metaphyseal Impaction
◯ 11-B3 - With Glenohumeral Dislocation
◯ 11-C1 - With Slight Displacement
◯ 11-C2 - Impacted with Marked Displacement
◯ 11-C3 - Dislocated

Type 12 - Diaphyseal

◯ 12-A1 - Spiral
◯ 12-A2 - Oblique (>30 degrees)
◯ 12-A3 - Transverse (< 30 degrees)
◯ 12-B1 - Spiral Wedge
◯ 12-B2 - Bending Wedge
◯ 12-B3 - Fragmented Wedge
◯ 12-C1 - Spiral
◯ 12-C2 - Segmental
◯ 12-C3 - Irregular

| | |
|---|---|
| Type 13 - Distal | ◯ 13-A1 - Apophyseal Avulsion<br>◯ 13-A2 - Metaphyseal Simple<br>◯ 13-A3 - Metaphyseal Multifragmentary<br>◯ 13-B1 - Sagittal Lateral Condyle<br>◯ 13-B2 - Sagittal Medial Condyle<br>◯ 13-B3 - Coronal<br>◯ 13-C1 - Articular Simple, Metaphyseal Simple<br>◯ 13-C2 - Articular Simple, Metaphyseal Multifragmentary<br>◯ 13-C3 - Articular Multifragmentary |
| Muller AO Classification - Radius / Ulna | ◯ Type 21 - Proximal<br>◯ Type 22 - Diaphyseal<br>◯ Type 23 - Distal |
| Type 21 - Proximal | ◯ 21-A1 - Ulna Fractured, Radius Intact<br>◯ 21-A2 - Radius Fractured, Ulna Intact<br>◯ 21-A3 - Both Bones<br>◯ 21-B1 - Ulna Fractured, Radius Intact<br>◯ 21-B2 - Radius Fractured, Ulna Intact<br>◯ 21-B3 - One Bone Articular Fracture, Other Extraarticular<br>◯ 21-C1 - Simple<br>◯ 21-C2 - One Artic. Simple, Other Artic. Multifragmentary<br>◯ 21-C3 - Multifragmentary |
| Type 22 - Diaphyseal | ◯ 22-A1 - Ulna Fractured, Radius Intact<br>◯ 22-A2 - Radius Fractured, Ulna Intact<br>◯ 22-A3 - Both Bones<br>◯ 22-B1 - Ulna Fractured, Radius Intact<br>◯ 22-B2 - Radius Fractured, Ulna Intact<br>◯ 22-B3 - One Bone Wedge  Other Simple or Wedge<br>◯ 22-C1 - Ulna Complex, Radius Simple<br>◯ 22-C2 - Radius Complex, Ulna Simple<br>◯ 22-C3 - Both Bones Complex |
| Type 23 - Distal | ◯ 23-A1 - Ulna Fractured, Radius Intact<br>◯ 23-A2 - Radius Simple and Impacted<br>◯ 23-A3 - Radius Multifragmentary<br>◯ 23-B1 - Sagittal<br>◯ 23-B2 - Coronal, Dorsal Rim<br>◯ 23-B3 - Coronal, Palmar Rim<br>◯ 23-C1 - Articular Simple, Metaphyseal Simple<br>◯ 23-C2 - Articular Simple, Metaphyseal, Metaphyseal Multifragmentary<br>◯ 23-C3 - Articular Multifragmentary |
| Muller AO Classification - Femur | ◯ Type 31- Proximal<br>◯ Type 32 - Diaphyseal<br>◯ Type 33 - Distal |

| | |
|---|---|
| Type 31 - Proximal | ◯ 31-A1 - Pertrochanteric Simple<br>◯ 31-A2 - Pertrochanteric Multifragmentary<br>◯ 31-A3 - Intertrochanteric<br>◯ 31-B1 - Subcapital with Slight Displacement<br>◯ 31-B2 - Transcervical<br>◯ 31-B3 - Subcapital, Displaced, Nonimpacted<br>◯ 31-C1 - Split (Pipkin)<br>◯ 31-C2 - With Depression<br>◯ 31-C3 - With Neck Fracture |
| Type 32 - Diaphyseal | ◯ 32-A1 - Spiral<br>◯ 32-A2 - Oblique (>30 degrees)<br>◯ 32-A3 - Transverse (< 30 degrees)<br>◯ 32-B1 - Spiral Wedge<br>◯ 32-B2 - Bending Wedge<br>◯ 32-B3 - Fragmented Wedge<br>◯ 32-C1 - Spiral<br>◯ 32-C2 - Segmental<br>◯ 32-C3 - Irregular |
| Type 33 - Distal | ◯ 33-A1 - Simple<br>◯ 33-A2 - Metaphyseal Wedge and/or Fragmented Wedge<br>◯ 33-A3 - Metaphyseal Complex<br>◯ 33-B1 - Lateral Condyle, Sagittal<br>◯ 33-B2 - Medial Condyle, Sagittal<br>◯ 33-B3 - Coronal<br>◯ 33-C1 - Articular Simple, Metaphyseal Simple<br>◯ 33-C2 - Artic. Simple, Metaphyseal Multifragmentary<br>◯ 33-C3 - Articular Multifragmentary |
| | |
| | |
| Mueller AO Classification - Tibia / Fibula | ◯ Type 41 - Proximal<br>◯ Type 42 - Diaphyseal<br>◯ Type 43 - Distal<br>◯ Type 44 - Malleolar Segment |
| Type 41 - Proximal | ◯ 41-A1: Avulsion ◯ 41-A2: Metaphyseal Simple ◯ 41-A3: Metaphyseal Multi-fragmentary ◯ 41-B1: Pure Split<br>◯ 41-B2: Pure Depression<br>◯ 41-B3: Split-depression<br>◯ 41-C1: Articular Simple, Metaphyseal Simple ◯ 41-C2: Articular Simple, Metaphyseal Multi-fragmentary<br>◯ 41-C3: Articular Multi-fragmentary |
| Type 42 - Diaphyseal | ◯ 42-A1: Spiral ◯ 42-A2: Oblique (>30)<br>◯ 42-A3: Transverse (< 30)<br>◯ 42-B1: Spiral Wedge<br>◯ 42-B2: Bending Wedge<br>◯ 42-B3: Fragmented Wedge<br>◯ 42-C1: Spiral ◯ 42-C2: Segmental<br>◯ 42-C3: Irregular |

| | |
|---|---|
| Type 43 - Distal | ◯ 43-A1: Simple ◯ 43-A2: Wedge<br>◯ 43-A3: Complex ◯ 43-B1: Pure Split<br>◯ 43-B2: Split-depression<br>◯ 43-B3: Multi-fragmentary Depression<br>◯ 43-C1: Articular Simple, Metaphyseal Simple ◯ 43-C2: Articular Simple, Metaphyseal Multi-fragment<br>◯ 43-C3: Articular Multi-fragmentary |
| Type 44 - Malleolar Segment | ◯ 44-A1: Isolated ◯ 44-A2: with Fractured Medial Malleolus ◯ 44-A3: with Posteromedial Fracture<br>◯ 44-B1: Isolated ◯ 44-B2: with Medial Lesion ◯ 44-B3: with Medial Lesion and Volkmann's Fracture ◯ 44-C1: Fibular Diaphyseal Fracture, Simple<br>◯ 44-C2: Fibular Diaphyseal Fracture, Multi-fragmentary ◯ 44-C3: Proximal Fibular Lesion |
| Fracture Location: | _____ |
| Fracture Type: | _____ |

## Gustilo Anderson Classification

| | |
|---|---|
| Wound Classification: | ◯ Type 1<br>◯ Type 2<br>◯ Type 3 |
| Type 1: | ◯ Type 1 - Skin wound less than 1 cm<br>◯ Type 1 - Clean<br>◯ Type 1 - Simple fracture pattern |
| Type 2: | ◯ Type 2 - Skin wound more than 1 cm<br>◯ Type 2 - Soft-tissue damage not extensive<br>◯ Type 2 - No flaps or avulsions<br>◯ Type 2 - Simple fracture pattern |
| Type 3: | ◯ Type 3 - High-energy injury involving extensive soft-tissue damage<br>◯ Type 3 - Multifragmentary fracture, segmental fracture, or bone loss irrespective of the size of skin wound<br>◯ Type 3 - Severe Crush Injuries<br>◯ Type 3 - Vascular Injury requiring repair<br>◯ Type 3 - Severe contamination including farmyard injuries |

## OTS Open Fracture Classification

| | |
|---|---|
| Wound Closure requiring reconstruction procedure? | ◯ Simple<br>◯ Complex |
| Wound closed after debridement | |
| Complex reconstructive procedure: | ☐ A. Soft tissue injury but adequate cover of bone, primary closure.<br>☐ B. Soft tissue injury and inadequate cover of bone not suitable for primary closure.<br>☐ C. Soft tissue injury with fracture. Associated arterial injury requiring repair. |

## Index Procedure

| | |
|---|---|
| Has a discussion between both plastic and orthopaedic consultants occurred? | ◯ Yes<br>◯ No |
| Was this discussion documented? | ◯ Yes<br>◯ No |
| Has a management plan been documented? | ◯ Yes<br>◯ No |
| Date and Time of 1st debridement:<br><br>(Please use date and time from image intensifier, if avaliable) | _____<br>(Please use 24hr Clock) |
| Antibiotic given at first debridement: | ◯ Single Antibiotic<br>◯ More than One Antibiotic<br>◯ Information Unavailable |
| What antibiotic was given? | ◯ Co-amoxiclav<br>◯ Teicoplanin<br>◯ Cephalosporin<br>◯ Other |
| Please provide name of other antibiotic given: | _____ |
| Select all antibiotics given: | ☐ Co-amoxiclav<br>☐ Teicoplanin<br>☐ Cephalosporin<br>☐ Other |
| Please provide name(s) of other antibiotic(s) given: | _____ |
| Subsequent antibiotic prescription: | ◯ Single Antibiotic<br>◯ More than One Antibiotic<br>◯ No Further Antibiotic |

| | |
|---|---|
| What antibiotic was given? | ◯ Co-amoxiclav<br>◯ Teicoplanin<br>◯ Cephalosporin<br>◯ Other |
| Please provide name of other antibiotic given: | _____ |
| Select all antibiotics given: | ☐ Co-amoxiclav<br>☐ Teicoplanin<br>☐ Cephalosporin<br>☐ Other |
| Please provide name(s) of other antibiotic(s) given: | _____ |
| Highest grade of orthopaedic surgeon present: | ◯ Trainee<br>◯ Consultant |
| Highest grade of plastic surgeon (if present): | ◯ Trainee<br>◯ Consultant<br>◯ Not present |
| Was a picture taken in theatre? | ◯ Yes<br>◯ No |
| Has the picture been added to the patients notes? | ◯ Yes<br>◯ No |
| Was the wound extended? | ◯ Yes<br>◯ No |
| Was it documented in the patients notes? | ◯ Yes<br>◯ No |
| Were the bone edges delivered through the wound? | ◯ Yes<br>◯ No |
| Was it documented in the patients notes? | ◯ Yes<br>◯ No |
| Were the bone edges debrided? | ◯ Yes<br>◯ No |
| Was it documented in the patients notes? | ◯ Yes<br>◯ No |
| Skeletal Stabilisation: | ◯ Provisional<br>◯ Definitive |
| Method Employed | ◯ Nothing<br>◯ Removable Splint<br>◯ Cast<br>◯ External Fixator |

| | |
|---|---|
| Method Employed: | ◯ Monolateral External Fixator<br>◯ Plate / Screws<br>◯ Circular Frame<br>◯ K-Wires<br>◯ Intramedullary Nail<br>◯ Flexible Intramedullary Nail<br>◯ Cast<br>◯ Amputation |
| What level was the amputation performed: | _____ |
| Was there definitive wound cover at index procedure? | ◯ Yes<br>◯ No |
| Method Employed: | ◯ Primary Closure (only if performed at initial procedure)<br>◯ Skin Graft<br>◯ Local Flap<br>◯ Free Flap |
| Type of Wound Dressing: | ◯ Standard Dressing i.e. not Negative Pressure<br>◯ VAC<br>◯ PICO<br>◯ Other |
| Other Dressing | _____ |
| Was further surgery performed? | ◯ Yes<br>◯ No |
| Date and Time of surgery: | _____<br>(Please use 24hr clock) |
| Highest grade of orthopaedic surgeon present: | ◯ Trainee<br>◯ Consultant<br>◯ Not Applicable |
| Highest grade of plastic surgeon: | ◯ Trainee<br>◯ Consultant<br>◯ Not Applicable |
| Was a definitive closure achieved? | ◯ Yes<br>◯ No |
| Method Employed: | ◯ Primary Closure (only if performed at initial procedure)<br>◯ Delayed Primary Closure<br>◯ Skin Graft<br>◯ Local Flap<br>◯ Free Flap |

| | |
|---|---|
| Definitive method of Skeletal Stabilisation: | ◯ Monolateral External Fixator<br>◯ Plate / Screws<br>◯ Circular Frame<br>◯ K-Wires<br>◯ Intramedullary Nail<br>◯ Flexible Intramedullary Nail<br>◯ Cast |
| Were antibiotics continued following definitive closure? | ◯ Yes<br>◯ No |
| How long? | _____<br>(Days) |
| Total number of times taken to theatre including definitive procedures: | _____ |

# Discharge

## Demographics

Study ID:

_____

## Discharge

Date of Discharge:

_____

Length of stay:

_____
(Days)

Weight bearing status at discharge?

◯ Full-weight bearing
◯ Partial-weight bearing
◯ No-weight bearing

Discharged to orthoplastic centre?

◯ Yes
◯ No

Is patient still an inpatient at data closure?

◯ Yes
◯ No