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Introduction
Preface

IMC - Intra Medullary Claw for the treatment of subcapital humeral fractures.

In the case of the percutaneous intramedullary (k-wire) pinning procedure, which is in itself a relatively gentle technique and which reduces the risk of necrosis of the head compared to the open technique, the wires often slip out due to frequently occurring osteoporotic bones, and thus secondary displacements of fragments occur. Furthermore, problems regarding healing of bone often occur. In order to avoid these disadvantages, the IMC has been developed in such a way that it combines in itself the advantages of minimal osteosynthesis, intramedullary position and spongiosa screw.
• Easy insertable head D=8.0mm
• 1 central guide wire D=2.2mm
• 3 anchor wires D=1.6mm
• Length: 260mm
• Material: 1.4441 ESU
• Simple set of instruments
• Short operation time
• Short image amplifier time
• Stable conditions after insertion
• Implant remains where it is, it does not move
Indications & Contraindications

Indications:
- All subcapital humeral fractures except those requiring a prosthesis.
- Fractures which may need additional screws for the tubercula are therefore also appropriate.

Contraindications:
- Children and young people with open epiphyseal fusions
- Existing infections in the fracture zone and operation area
- Common situations that do not allow osteosynthesis
- Obesity
- Lack of patient compliance

Surgical Technique
Aim of the operation

- Gentle, osteosynthesis of proximal and subcapital humeral fractures using the ligamentotaxis of the soft parts of the shoulder.
- Especially suitable for patients with osteoporotic bones.

Surgical Technique

- General or regional anaesthetic.
- Supine position.
- Hypomochlion (roll in the axilla) for easier reduction.
- Image amplifier at 2 planes (with 2 image amplifiers).
- 4 - 5cm long incision at the height of the deltoideus plane of insertion or slightly distal to it; to protect the N. radialis, aim to carry this out a bit further forward.
- The musculature is prised apart with blunt instrument.
- Bare the anterior and posterior margins of the shaft of the humerus using 2 Hohmann hooks.
• On the adjacent arm, drill the D=2.2mm drill wire into the medullary space diagonally (ca. 30° - 40°) and strictly laterally between anterior and posterior margin of the shaft of the humerus along the axis of the shaft of the humerus.
• Over drill using cannulated 8 mm drill and thus open the medullary space.
• **Tip:** It is enough to open the medullary space – do not drill down to the opposite cortex since this will cause a notch there which will prevent the IMC from being pushed past.
• Insert the implant, if necessary tapping it in carefully and lightly until it reaches the fracture using the affixed impact sleeve.
• Reposition while checking using image amplifier.
• Push implant further over the fracture until its head lies just proximal to the fracture.
• The tip of the implant should now be lying at both levels in the centre of the head. It is possible that this can only be achieved by provisional over correction.
• Remove the rear part of the impact sleeve by drawing back the whole sleeve until the end of the wires are visible (1).
• Then pull the rear part upwards and remove (2).
• Push the remaining sleeve with its diagonal end forward until it comes into contact with the bone (3).
• Then bend the central, somewhat thicker wire over the edge.
• The implant is now fixed in position and cannot be pushed any further forward.
• While checking progress with the image intensifier, tap the single D=1.6mm wires forward with light hammer blows using the thin striking sleeve until they lie just on the surface of the head (exercise caution at both levels!) or until a clear resistance is felt in the case of good bone quality when hammering gently.
• The drill wires are marked for easy identification at their protruding ends.
• Bend back the central D=2.2mm wire and remove the impact sleeve.
• Nip off the wires about 1cm above the level of the bone.
• Suture skin.
• Shoulder-arm immobilizer for 1-3 weeks.

Postoperative treatment

• Immobilization: 1-3 weeks, shoulder-arm immobilization without therapy
• Active and passive therapy to start after approx. 3 weeks
**Explantation**

Principally, it is not recommended to remove the claw from very old patients. If removal is nevertheless necessary or desirable, it should be removed after approx. 3 months, otherwise the D=8.0mm hole on the cortex will increase slightly.

- Make the incision along the old scar.
- Pull out the 3 thin drill wires. In doing so, the distributor head usually slips back a little until it gets stuck in the narrower medullary space.
- In any case over drill the remained central guide wire with the D=8.0mm cannulated drill bit to clean the medullary space of ingrown tissue.
- Pull out the head of the remaining central guide wire. Often a slightly tilt movement makes sense, sometimes the hole has to be extended a little bit proximal with a Luer.
- Suture skin.

**Case studies**

![Image of case studies](image_url)

Information
## Order list

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Code</th>
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<tbody>
<tr>
<td>IMC Intra Medullary Claw</td>
<td>IMC-2216-260</td>
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<tr>
<td>Rod Sleeve, Insert Rod</td>
<td>IMC-100-101</td>
</tr>
<tr>
<td>Notch Sleeve, Insert Rod</td>
<td>IMC-100-102</td>
</tr>
<tr>
<td>Impact Sleeve</td>
<td>IMC-100-103</td>
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<td>Spiral Drill, Cannulated, IMC, D=8.0mm, L=170mm, Titanium 5</td>
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<td>Guide Wire, Steel, D=2.4mm, L=200mm, TR</td>
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<td>Sterilization Tray, IMC</td>
<td>50164</td>
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</tbody>
</table>

For detailed cleaning and sterilization instructions, please refer to package insert.
Tray
Notes