KLS martin GROUP

UHP Ulnar Head Prosthesis

Standard and spherical

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We offer more than just standard solutions in the field of hand surgery, we also offer products for difficult, non-everyday situations. With our intelligent system solutions we therefore regard ourselves as a true, highly specialized partner for all questions pertaining to hand surgery.

Contents


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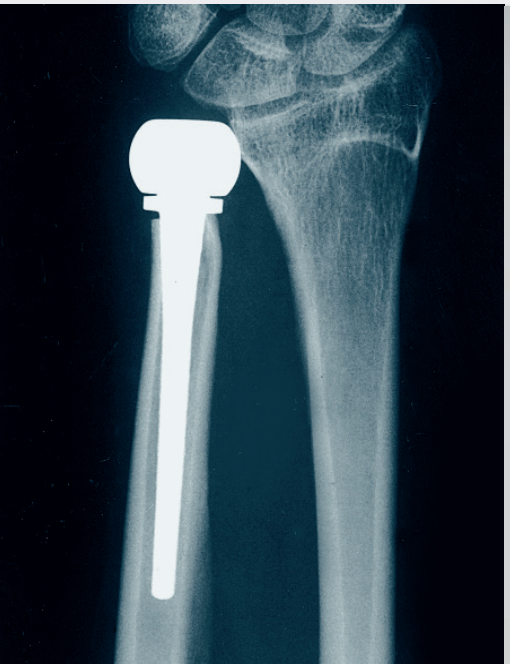
UHP Ulnar Head Prosthesis
Standard and spherical

Disorders of the distal radio-ulnar joint are common. Clinically, the main symptoms include painful restriction of supination or pronation accompanied by a loss of strength and potential instability of the distal radio-ulnar joint.

The aim of surgical treatment is to restore pain-free forearm rotation while maintaining stability of the distal radio-ulnar joint as well as the ulnar wrist compartment.

For a long time, there was no reliable surgical procedure which guaranteed both pain-free forearm rotation while also correcting length discrepancies between the radius and ulna or instability. For this reason, treatment of the distal radio-ulnar joint proved controversial.
The ulnar head prosthesis was developed more than 20 years ago to restore pain-free mobility. At the same time, the length ratio of the radius and ulna can be restored using the ulnar head prosthesis. The stability of the distal radio-ulnar joint is achieved by soft tissue reconstruction using a special ulnar-shaped soft tissue flap with simultaneous reconstruction of the ulno-carpal complex (TFCC).
Numerous studies have meanwhile proven that UHP can be used to provide effective treatment.

Feature, function, and benefit

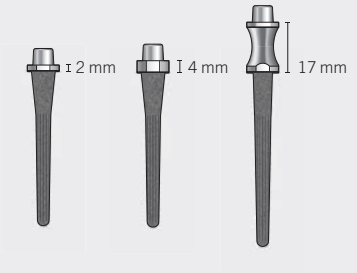
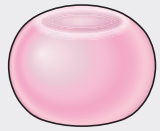
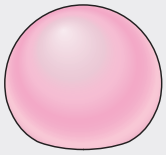
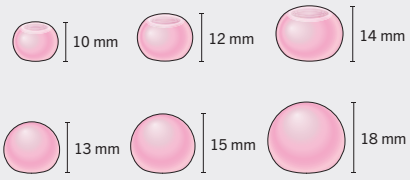
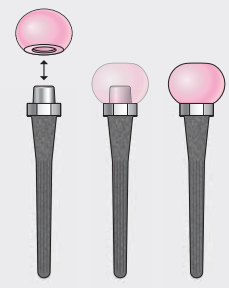
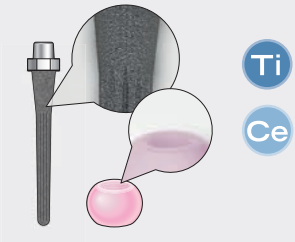


The UHP prosthesis consists of a prosthetic stem and a prosthetic head. The prosthetic stem features a conical design. With this shape, it follows the anatomical course of the ulna and thus ensures natural embedding in the medullary cavity. The porous coating made of pure titanium also provides the best possible prerequisites for secure anchoring – entirely without the need for cement, and for optimally promoted osseointegration.

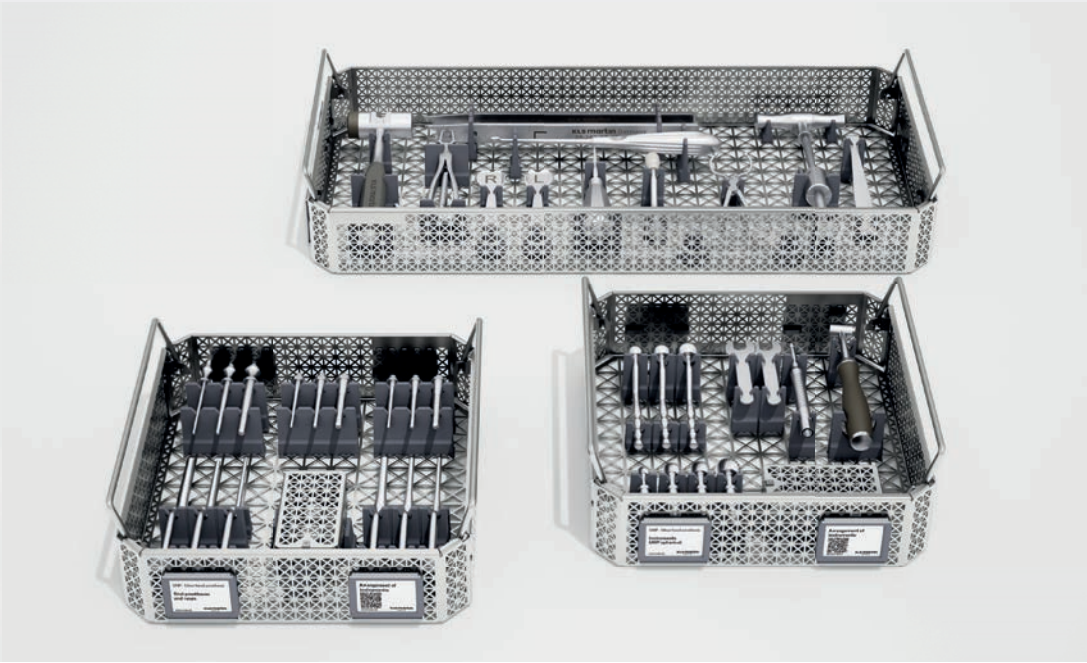
To meet clinical requirements, the prosthetic stem is available in three sizes. In addition, each size is available in three collar designs: standard, standard+, and revision. All stem variants allow the use of the standard or spherical trial head. These are also available in three sizes each. This concept thus enables individualized and optimal treatment.

In addition to the UHP-standard and standard+ prosthesis for treating disorders of the distal radio-ulnar joint, the UHP-prosthesis with a spherical head was developed specifically to restore continuity of the ulna following unsatisfactory Sauvé-Kapandji surgery. Here, the stem stabilizes the remaining ulnar stump, while the spherical head articulates with a specially milled joint socket. The original arthrodesis of the radio-ulnar joint is preserved, and increases the stability of the newly created joint – a safe solution for revisions.

UHP –implants

	Feature and function	Benefit
	▪ Prosthetic stem available in three different collar designs **standard (collar 2 mm)** **standard+ (collar 4 mm)** **revision (collar 17 mm)** as well as in three sizes resp. stem diameters.	▪ Choice ensures optimal individual care. ▪ Revision prosthesis with built-up collar length to compensate for a shortened ulna resulting from previous surgical procedures.
	▪ Prosthetic head **standard** with concave-shaped, distal head end	▪ Special shape to prevent excessive pressure on the underside of the ulno-carpal ligament complex.
	▪ Prosthetic head **spherical**, developed for revision following unsatisfactory Sauvé-Kapandji surgery	▪ Spherical head articulated with a specially milled joint socket. ▪ Allows the existing arthrodesis of the radio-ulnar joint to be maintained to increase the stability of the newly created joint.
	▪ Ceramic prosthetic head variants available in three different sizes each: **small** **medium** **large**	▪ Choice ensures optimal individual care. ▪ Intraoperative flexibility
	▪ Uniform conical press fit as connection between prosthesis stem and head	▪ Allows modular use and free combination of the prosthetic components. ▪ High intraoperative flexibility
	▪ Prosthesis stem made of titanium alloy with pure titanium coating ▪ Ceramic prosthesis head	▪ Cement-free anchoring of the prosthesis stem in the ulna ▪ Osseointegration through titanium coating ▪ Excellent biocompatibility and optimal biomechanical conditions

Feature, function, and benefit

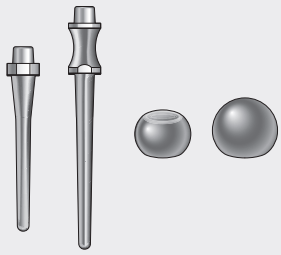
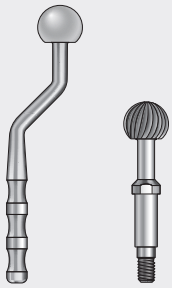
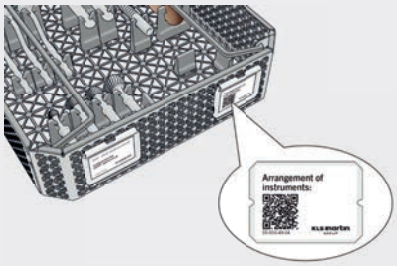


The instruments are perfectly matched to the prostheses. They round off the system and thus contribute to maximum user support and a reliable surgical procedure.

Storage is characterized above all by its simple and efficient handling.

The QR code attached to the cage for scanning contains an overview of the arrangement of the instruments in the storage tray, making it easier to rearrange them after use.
The wide grid pattern ensures optimized reprocessing due to large openings, thus meeting the requirements of all parties involved in the process equally.

UHP – instruments and storage

	Feature and function	Benefit
	▪ Trial prostheses available for all prosthesis components and variants.	▪ Enable easy determination of the definitive prosthesis to be used later. ▪ Reliable and easy verification of the correct fit of the prosthesis.
	▪ Special instruments for the UHP prosthesis with spherical head.	▪ Available as an addition to the standard instrument set.
	▪ Instrument storage with wide grid pattern and silicone fixation elements.	▪ Safe storage and protection of instruments.
	▪ Label with QR code for scanning attached to the storage cage.	▪ Indicates the arrangement of the instruments in the storage container. ▪ Efficient loading after use and reprocessing.

Step by step to optimal treatment

Fields of use

The standard UHP-ulnar head prosthesis is used in cases of

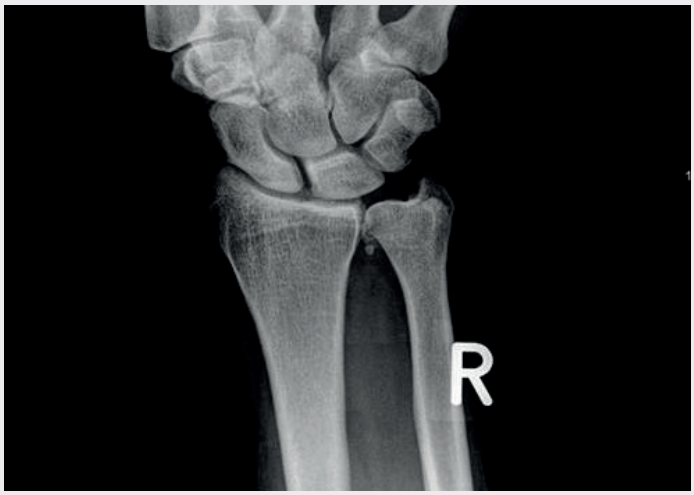
- Painful distal radio-ulnar joint, if the pain cannot be improved by conservative therapy, as a result of:
  - Primary osteoarthritis
  - Post-traumatic osteoarthritis following:
    - Radius fractures
    - Tears in the ulno-carpal ligament complex
    - Ulna impaction syndrome
    - Rheumatoid arthritis
- Destruction of the distal radio-ulnar joint, e.g., due to tumors
- As revision in cases of painful instability due to unsatisfactory results after a:
  - Darrach surgical procedure
  - Bowers surgical procedure
  - Sauvé-Kapandji surgical procedure

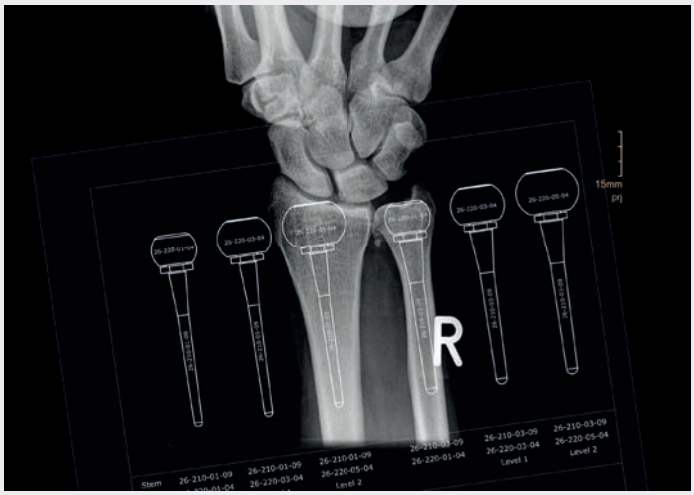
The UHP spherical is used in cases of

- Revision in cases of painful instability due to unsatisfactory results after a:
  - Sauvé-Kapandji surgical procedure

Surgical techniques

Osteoarthritis of the distal radio-ulnar joint (DRUJ)





Preoperative planning

The patient is a 59-year-old man with painful primary osteoarthritis of the distal radioulnar joint (DRUJ).

Standard exposures are made of both lower arms and wrists in the neutral position with an A/P and lateral beam.

A direct comparison with the opposite, healthy wrist is helpful in determining the exact resection level and the probable stem and head size of the prosthesis.

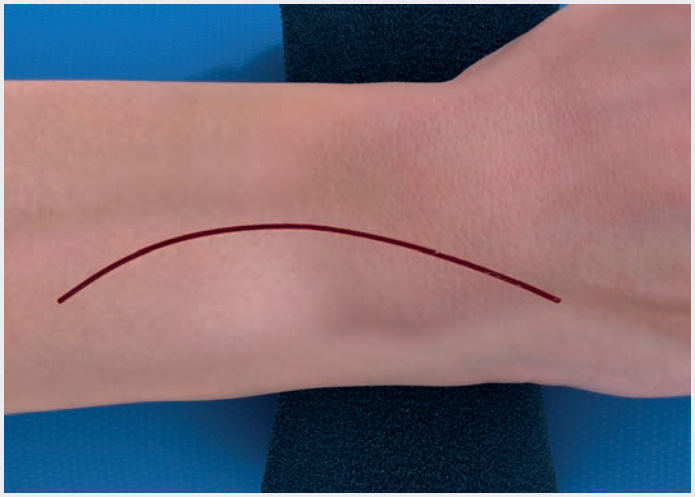
Preoperative planning of the post-resection level and prosthesis components (stem and head size) for revision surgery is based on the X-ray image of the contralateral side as a matter of principle.

Note

X-ray templates (magnification factor 1:1.1) are available to assist in the preoperative determination of the optimal resection level as well as the likely required stem and head sizes:

X-ray templates		
UHP stem standard	Head standard	90-666-52-21
UHP stem standard+	Head standard	90-667-52-21
UHP stem revision	Head standard	90-668-52-21
UHP stem standard	Head spherical	90-195-52-21
UHP stem standard+	Head spherical	90-196-52-21
UHP stem revision	Head spherical	90-197-52-21

A direct comparison with the opposite, healthy wrist is also helpful in determining the exact resection level.



1. Positioning the patient

The patient is placed in the supine position on the operating table.

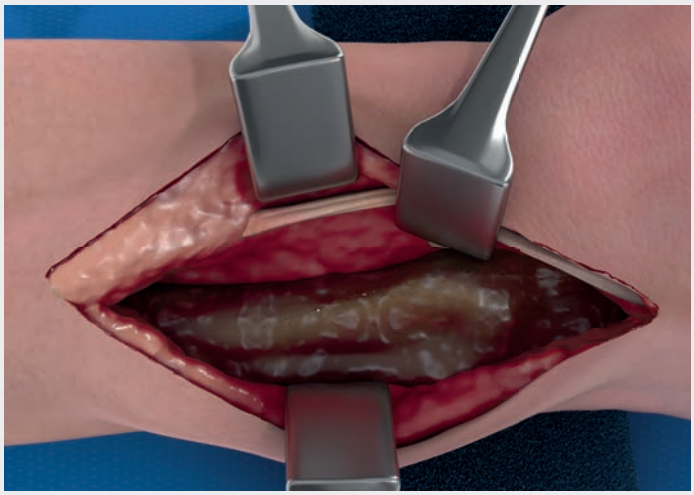
The lower arm to be operated on is placed on the side extension table in full pronation position, with the upper arm completely deprived of blood.

Intraoperative X-ray monitoring using an image converter is necessary.

2. Approach

A 6–8 cm long, slightly curved, dorsal longitudinal incision is made centrally above the distal radio-ulnar joint (DRUJ).
In the case of revision surgery, existing scars should be taken into account when making the incision, and the incision should be extended proximally so that the ulnar shaft can be properly exposed.

Distally, the first branches of the dorsal ramus of the ulnar nerve may cross the incision. These must be preserved. In addition, a transverse branch of this nerve may occasionally run radially along the extensor retinaculum, and this must also be preserved. Next, the fifth extensor tendon compartment is opened longitudinally and the extensor digiti minimi tendon is mobilized and retracted radially.

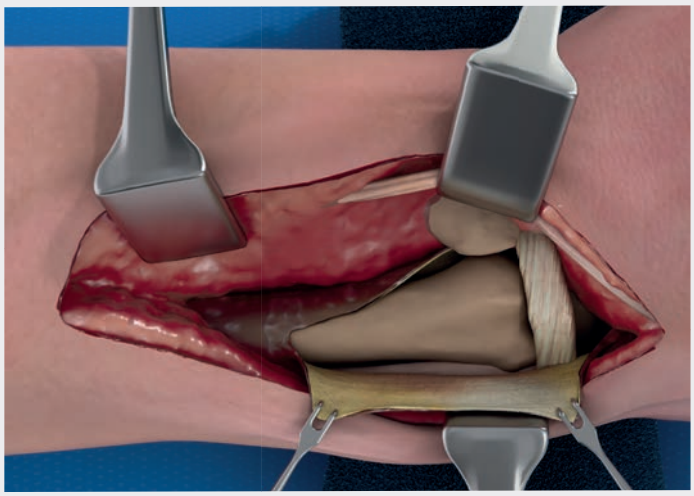


3. Elevating the soft tissue flap (part 1)

The capsular retinaculum soft tissue flap is marked.
The flap begins distally above the dorsal triquetrum and runs proximally along the floor of the opened fifth extensor compartment, over the dorsal DRUJ, and then continues proximally in a slight arc toward ulnar, extending to the dorsal distal ulna.

Then, one can begin lifting the flap. First, the floor of the fifth extensor compartment and the dorsal capsule of the ulnocarpal hand joint are opened distally. At the margin of the ulnar notch of the radius, the floor of the fifth extensor compartment and the dorsal capsule of the DRUJ are opened proximally.

The flap is then dissected sharply in a single layer distally, opening up the ulnocarpal joint, and proximally from the head of the ulna and the distal ulna along the dorsal radioulnar ligament, which acts as the dorsal border of the ulnocarpal ligament complex, toward the ulnar side.

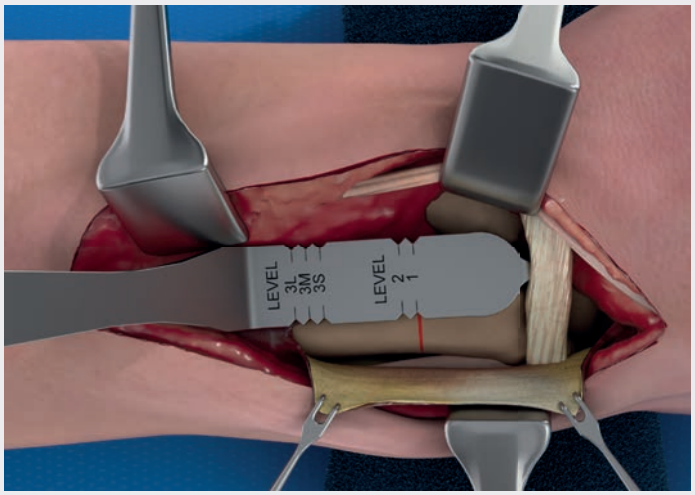


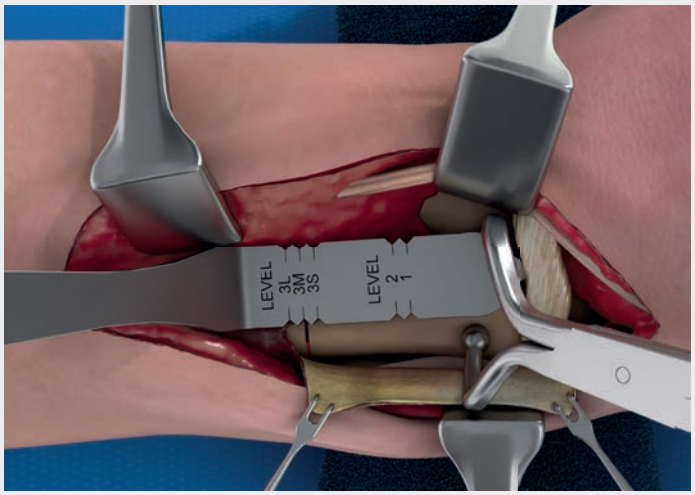
4. Elevating the soft tissue flap (part 2)

The soft tissue flap is now retracted so that both the distal radio-ulnar joint and the ulno-carpal joint are exposed. It should be noted that the sixth extensor tendon compartment (extensor carpi ulnaris tendon) should not be opened, as this forms a significant part of the flap base.

If the floor of the sixth extensor tendon compartment is open, the continuity of the extensor tendon compartment must be restored after removing the ulnar head and prior to implanting the prosthesis using fine single-button sutures so that the extensor carpi ulnaris tendon is no longer visible in the flap base.

In revision procedures, the soft tissues between the proximal ulna and the distal flap end are opened lengthwise and dissected ulnarly as a scar soft tissue block to expose the distal end of the ulna.





5. Determining the resection level

The resection level is marked using the resection guide. This ensures that the prosthesis head is optimally positioned approx. 2 mm proximal to the ulno-carpal ligament complex.

Positioning of the instrument:
The tip of the resection guide is placed on the ulnar edge of the distal end of the radius for this purpose.

Level 1 is the first resection level for primary operations and is used for the standard prosthesis with a medium head size.

Level 2 can be considered when there is insufficient bone structure to place the prosthesis sufficiently distally (e.g., following Bowers surgery).
In this case, the standard+ prosthesis stem must be used to ensure the optimal length of the prosthesis (i.e., 2 mm ulnar-minus in relation to the radial joint surface).

Due to the difference in length between the three different head sizes (+/– 2 mm) and the difference in length between the standard and standard+ stems (2 mm), all necessary combination options can be accomplished with reconstruction levels 1 and 2.

Illustration of possible combinations for different resection levels

Head / Stem	Small 26-220-01-04	Medium 26-220-03-04	Large 26-220-05-04
Standard		Level 1	Level 2
Standard+	Level 1	Level 2	

Illustration of possible combinations for different resection levels

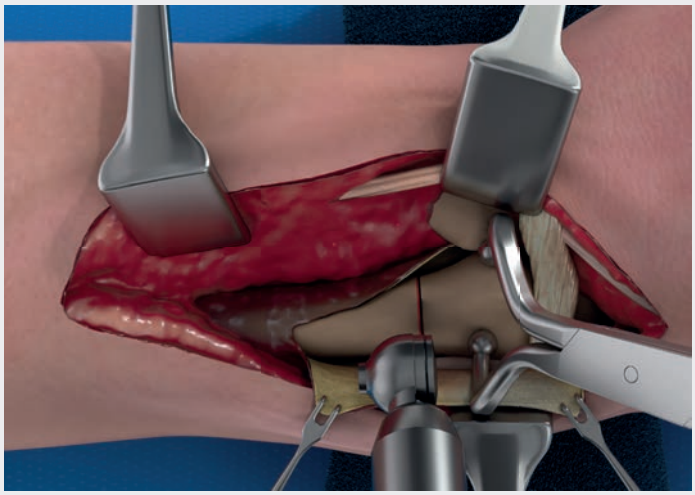
Level 3 is only used in conjunction with the revision stem in cases of an extremely short ulna (e.g., following previous Darrach surgery).

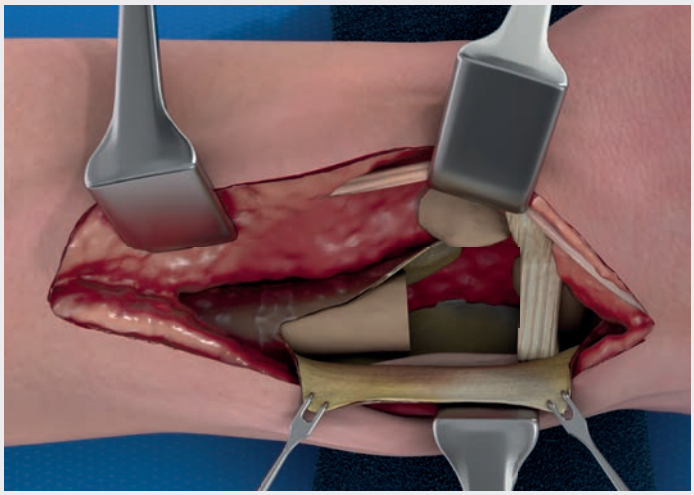
The optimal resection level 3 depends on the head size used here and is marked accordingly on the resection gauge:

Level 3/S: small head
Level 3/M: medium head
Level 3/L: large head

26-265-05-07
Resection guide

26-265-13-07
Bone holding forceps





6. Resection of the ulnar head

In the present indication, resection is performed at Level 1 in combination with the standard stem and the medium head size.

After marking the appropriate level, an osteotomy of the ulnar head is performed using a motor-driven saw.

The head of the ulna is then grasped with the holding forceps and rotated such that the soft tissue attachments and the anchoring of the TFCC can be carefully dissected subperiosteally, partly sharply and partly bluntly. This way, the soft tissues laterally and ulnarly, as well as distally to the TFCC, remain intact as a continuous soft-tissue flap.

In the case of a pseudoarthrotic styloid ulnar process fragment, this is removed and any defect of the soft tissue flap is carefully closed with sutures.

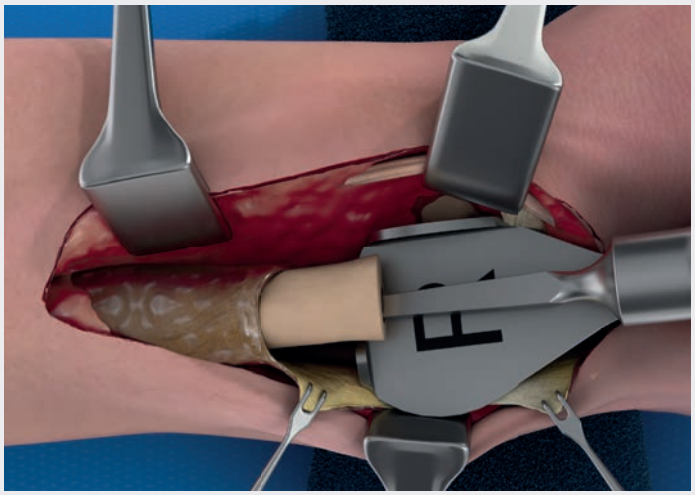
7. Reconstruction of the ulno-carpal ligament complex

After resection of the ulnar head, the ulno-carpal ligament complex is carefully examined from proximal and distal. All tears or other defects are sutured using non-resorbable 4/0 suture material.

Assessment of the joints

The ulnar notch is examined and cleared of any scar tissue or osteophytes that could interfere with the positioning of the prosthetic head. Sometimes it may prove necessary to deepen the ulnar notch with a bone burr to improve stability. However, care must be exercised not to open the cancellous compartment.

26-265-13-07
Bone holding forceps



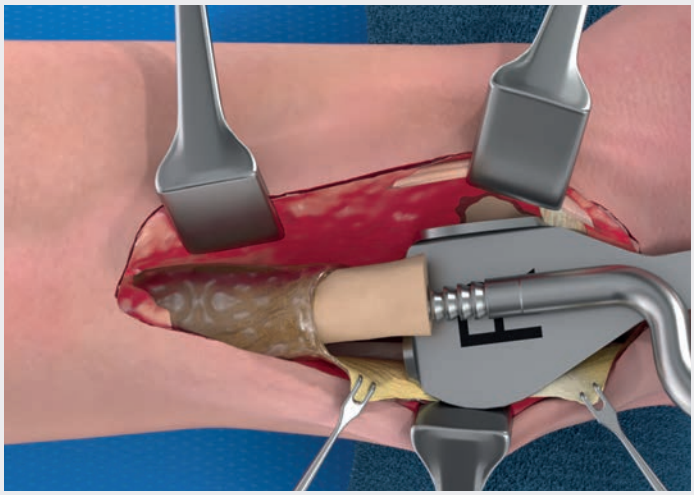
8. Opening of the bone marrow cavity

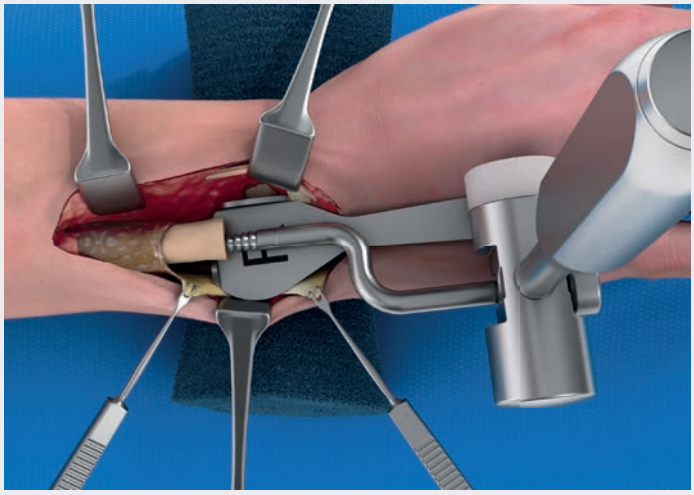
For protective purposes, the soft-tissue retractor is placed under the distal end of the ulna.

The bone marrow cavity is opened using the pointed awl.

26-265-20-07
Soft tissue retractor, right

22-130-14-07
Bone reamer





9. Inserting the rasp into the opened medullary canal

First, the small **standard** rasp is inserted into the opened medullary canal and driven in with a hammer to the stop.

Using the two blows in, one blow out method, excess bone material can be removed.

The rasp should now be firmly in place in the bone.
If this is not the case, the next rasp size (medium or large) is to be used.

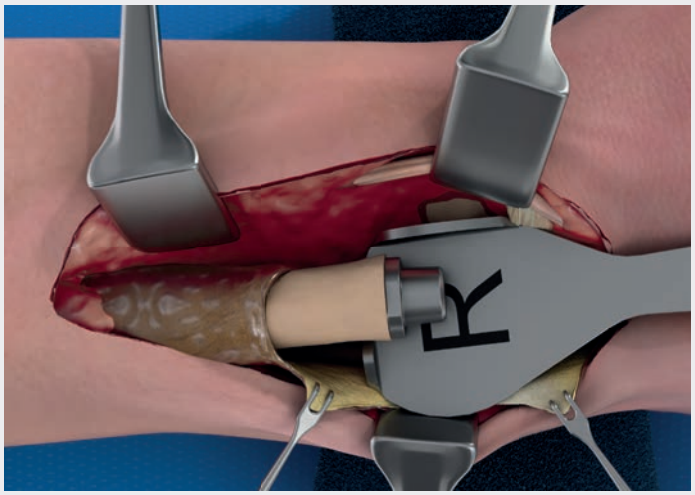
Note:
In the case of revision surgery, only use the special revision rasps applying the same procedure.

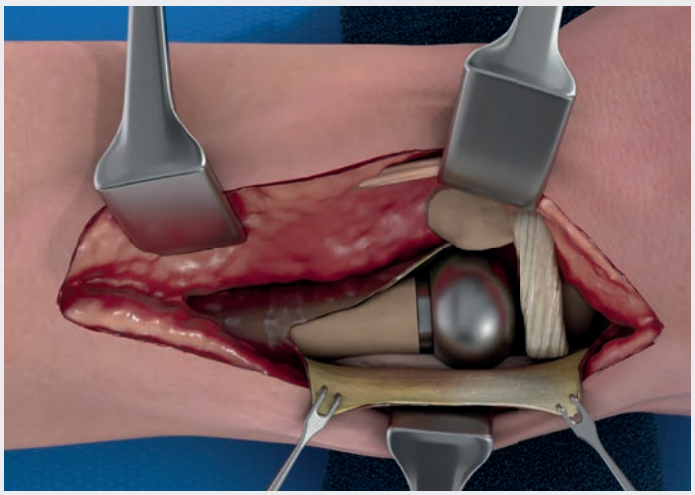
The milled recess in the head of the hammer is used to knock out the rasp again after having been inserted to its full length.

26-265-20-07
Soft tissue retractor, right

26-250-01-07
standard rasp, small

23-264-19-04
Hammer





10. Inserting the trial prosthesis and assessment

The trial stem and trial head are inserted.

The trial stem is selected based on the final rasp size and should slide relatively easily into the opened medullary canal. The final prosthesis fits more securely owing to its porous coating.

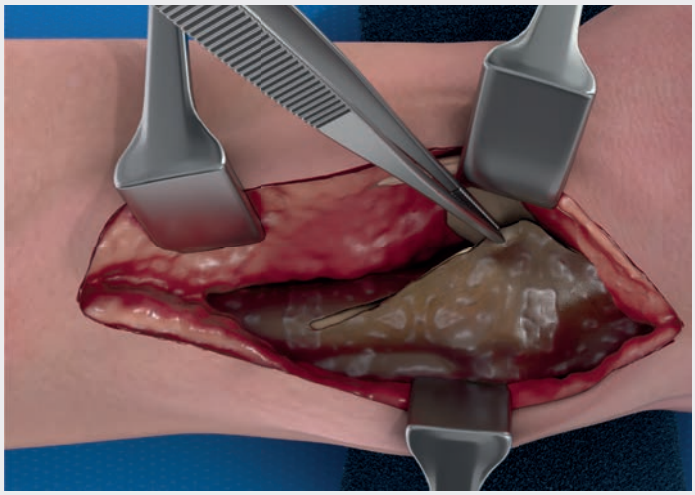
Using image intensifier fluoroscopy control, now check that the stem fits well and that the head is in the correct position approximately 2 mm below the ulno-carpal ligament complex.

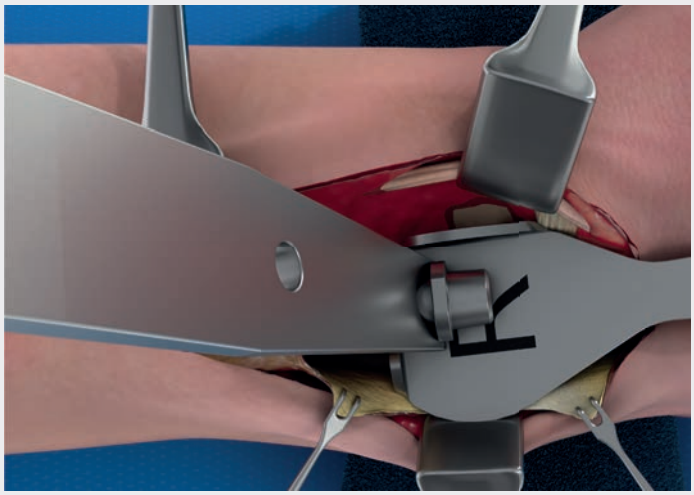
The correct fit of the trial prosthesis must be verified with image intensifier fluoroscopy with the forearm in a neutral rotational position.

26-265-20-07
Soft tissue retractor, right

26-211-01-05
Trial stem, standard collar

26-221-01-05
Trial head, small





11. Inserting the trial prosthesis and assessment

Then guide the soft tissue flap radially over the ulnar head to check whether it can be reattached securely to the radius and also whether it provides sufficient stability. If the flap appears too tight, try using the small head. When using the small head, the standard stem must be replaced with a standard+ stem to ensure that the length of the prosthesis is correct again. If, however, the flap appears too loose, the large head should be used. In this case, the ulna must be shortened to level 2 to ensure an optimal prosthesis length (2 mm ulna minus).

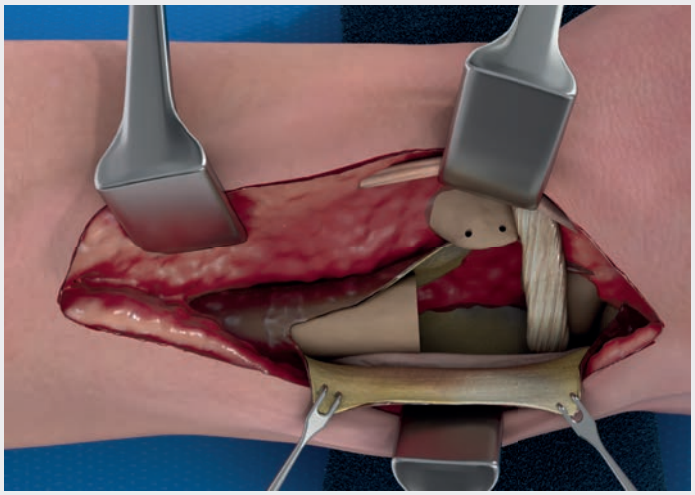
Next, check the forearm rotation. If a limitation is found, the cause must be analyzed and eliminated (e.g., blockage by osteophytes, contracted interosseous membrane, etc.).

12. Removal of the trial prosthesis

The trial prosthesis is then removed, if necessary with the aid of the explantation chisel, and the wound and bone marrow canal are thoroughly rinsed.

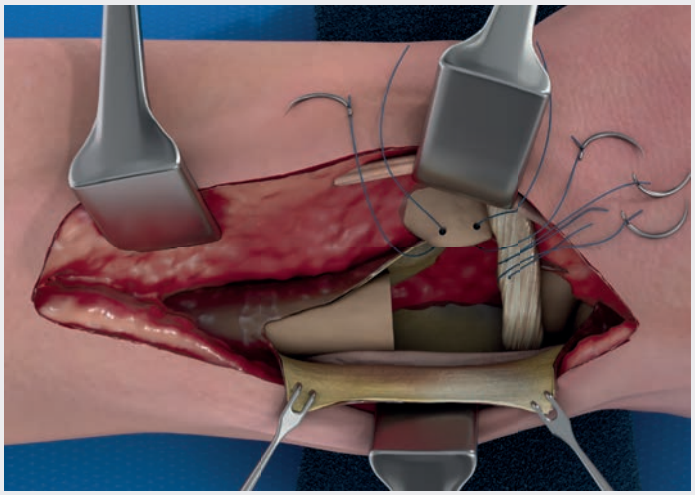
26-265-20-07
Soft tissue retractor, right

26-265-35-07
Explantation chisel, small



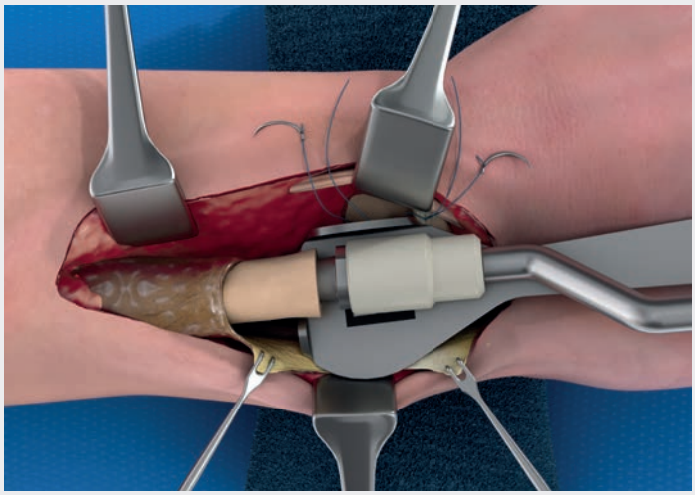
13. Creating the transosseous holes

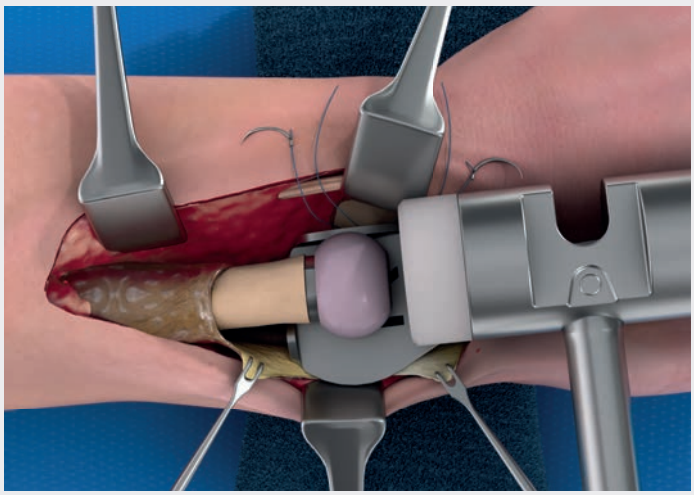
At this point, at least two drill holes should be made at the dorsal edge of the ulnar notch using a 1.0 mm Kirschner wire, which will later be used for transosseous refixation of the soft tissue flap.



14. Placing the sutures

Non-absorbable 0-gauge sutures are placed in the drill holes, as well as slow-absorbing or non-absorbable 3-0-gauge sutures along the dorsal edge of the TFCC, which are later secured to the underside of the capsular soft tissue flap.





15. Insertion of the final prosthesis

After verifying the size and fit of the prosthesis, the sterile-packed prosthetic components of the same size are inserted.

The stem is gently driven into place using the conical driving instrument and the hammer.

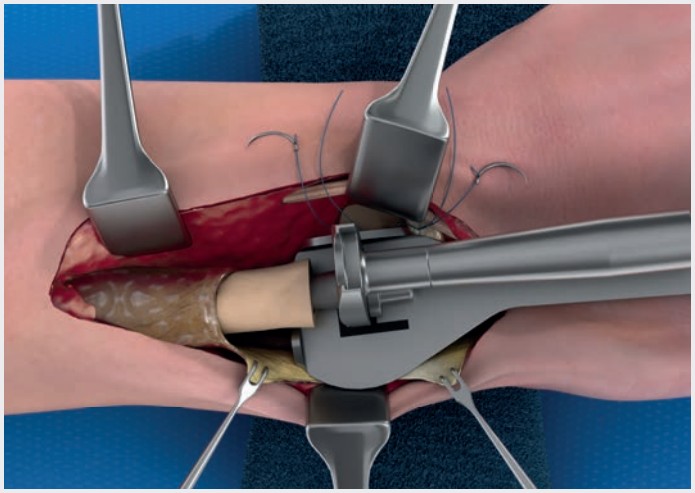
Warning:
Never use excessive force during insertion. If the stem appears to become jammed during insertion, it should be removed again and the medullary cavity of the ulna should be rasped further.

The conical end of the prosthesis neck must be clean and dry before the ceramic head is applied by tapping it lightly with the plastic side of the hammer.

The two prosthetic components are finally checked under fluoroscopic control.

26-265-30-07
Cone impactor

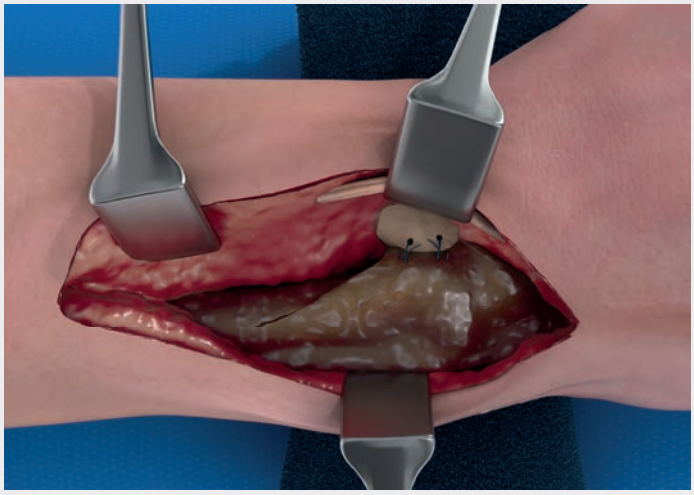
23-264-19-04
Hammer

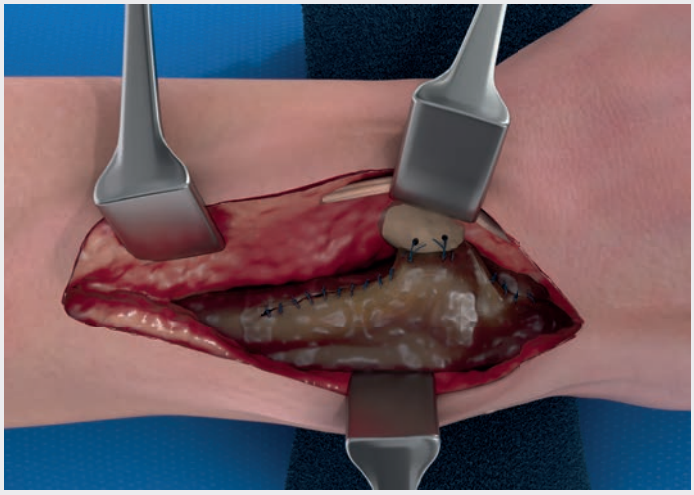


Optional: Removal of the prosthesis

In special cases, if the prosthesis needs to be removed again, the stem extraction device can be used.

26-265-07-07
Extractor, T-handle





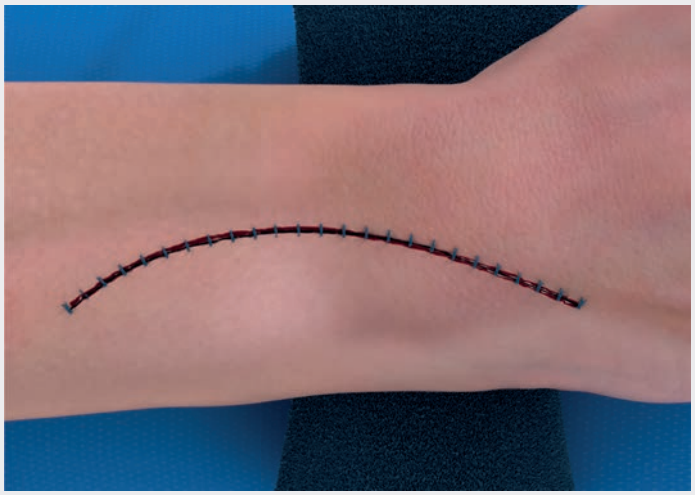
16. Closure of the soft tissue flap

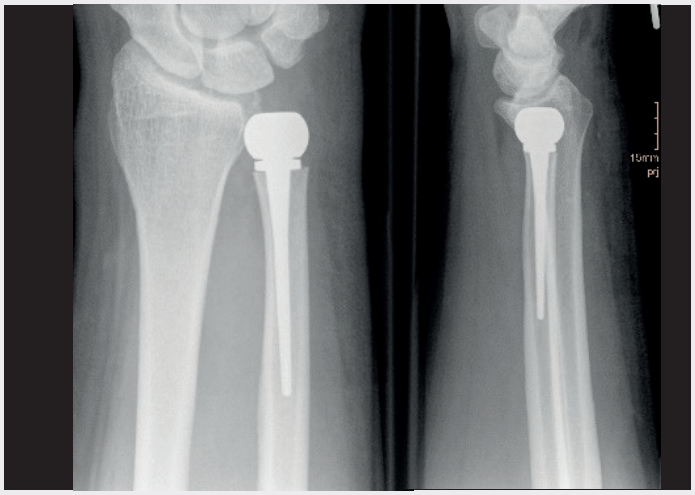
The dorsal edge of the ulno-carpal ligament complex is now attached to the underside of the soft tissue flap using the applied, non-resorbable single button sutures. The elbow is now bent at a 90° angle, and the forearm is supinated to 60°. The rest of the procedure is performed in this position.

The flap is then pulled radially until it is tight enough to provide good stability, yet without restricting rotation. Repositioning is simplified if the assistant pronates the carpus by pushing up the pisiform bone and repositioning it by applying dorsal pressure to the ulna proximal to the flap.

The flap should then be attached to the dorsal edge of the ulnar notch using the applied transosseous sutures and applying appropriate tension (non-resorbable suture material size 0 is recommended).

If necessary, the remaining part of the flap is sutured in two overlapping layers. The little finger extensor tendon (extensor digiti minimi tendon) remains subcutaneous. The proximal portion of the soft tissue flap is sutured over the ulnar stem, and the distal portion over the ulno-carpal wrist. A final check is now performed to ensure that full rotation is achieved and that neither radio-ulnar nor ulno-carpal crepitation or instability occur.





Wound closure

After inserting a suction drain, the wound is closed in a suitable manner and a firm, padded, and elastic wound dressing is applied.

To protect the reconstructed soft tissues, the wrist and forearm are ultimately fixated by applying an ulnar-encircling upper arm plaster cast at 30° wrist extension, 60° forearm supination, and 70° elbow joint flexion.

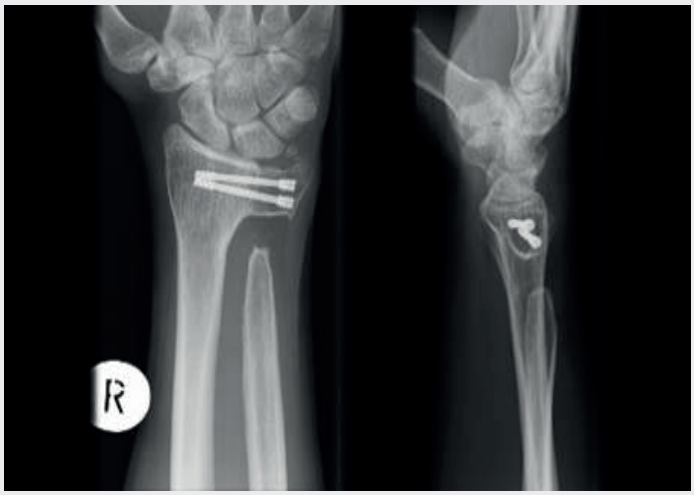
Postoperative measures

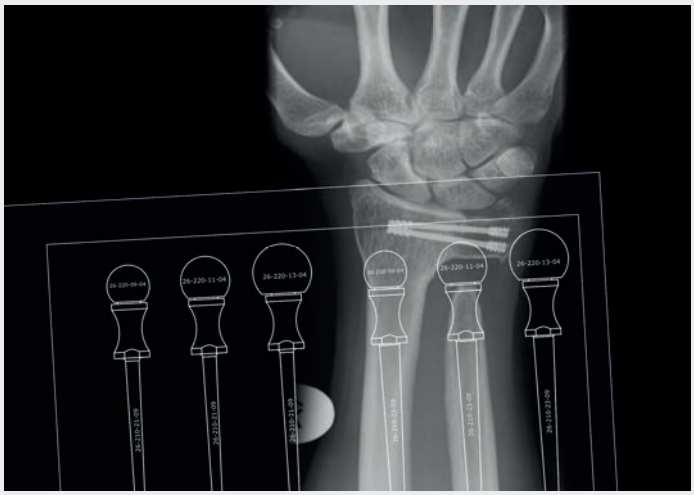
The sutures should be removed after 12 – 14 days. Finger mobilization in the plaster splint must begin immediately after surgery, and full fist closure with free finger extension must be achieved.

Immobilization in the upper arm cast should last for three weeks, after which a forearm cast or thermoplastic splint should be fitted for an additional three weeks, limiting pronation and supination to approximately 40°.

A full clinical and radiological follow-up examination with assessment is carried out after six weeks. Depending on the underlying pathology (e.g., multiple prior surgeries with preoperative instability) and the current examination findings, the splint may either be removed at this point and a cautious, active mobilization and strengthening exercise regimen may be started, or splint treatment may be extended for another two weeks. Full loading is not permitted until after 12 weeks.

Revision surgery following an unsatisfactory Sauvé-Kapandji procedure





Preoperative planning

Standard exposures are made of both lower arms and wrists in the neutral position with an A/P and lateral beam.

The surgical indication only applies if, following a Kapandji procedure, the fused head of the ulna on the affected side has fused bony with the radius and the situation at the ulnocarpal joint is ulna zero or ulna minus. Otherwise, a persistent ulnar impaction syndrome can lead to lasting ulnocarpal pain.

In addition, the fused head of the ulna must have sufficient width and depth to allow for secure positioning of the distal portion of the spherical prosthetic head after the socket has been milled beneath the proximal fused head of the ulna.

X-ray templates (magnification factor 1:1.1) are available for preoperative planning; these can be used to determine the resection height at the distal end of the ulna, the likely required stem and head sizes, and the positioning of the spherical prosthetic head beneath the fused ulnar head:

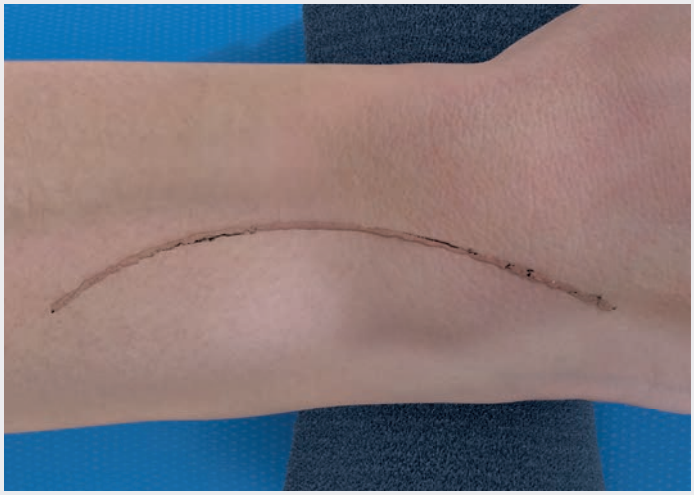
X-ray templates		
UHP stem standard	Head standard	90-666-52-21
UHP stem standard+	Head standard	90-667-52-21
UHP stem revision	Head standard	90-668-52-21
UHP stem standard	Head spherical	90-195-52-21
UHP stem standard+	Head spherical	90-196-52-21
UHP stem revision	Head spherical	90-197-52-21

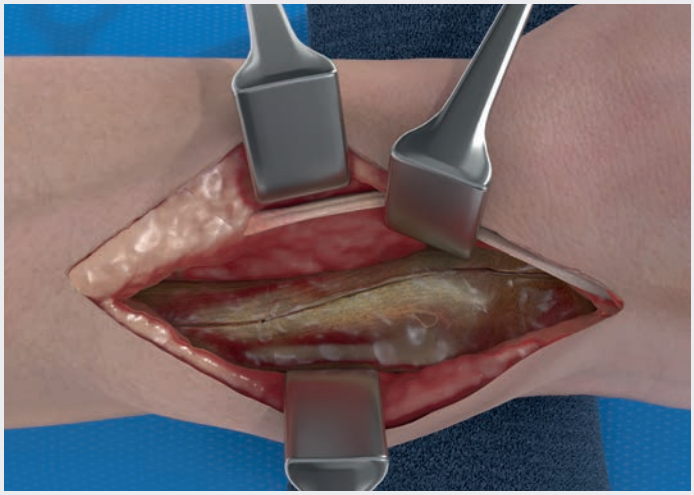
1. Positioning the patient

The patient is placed in the supine position on the operating table.

The lower arm to be operated on is placed on the side extension table in full pronation position, with the upper arm completely deprived of blood.

Intraoperative x-ray monitoring using an image converter is necessary.



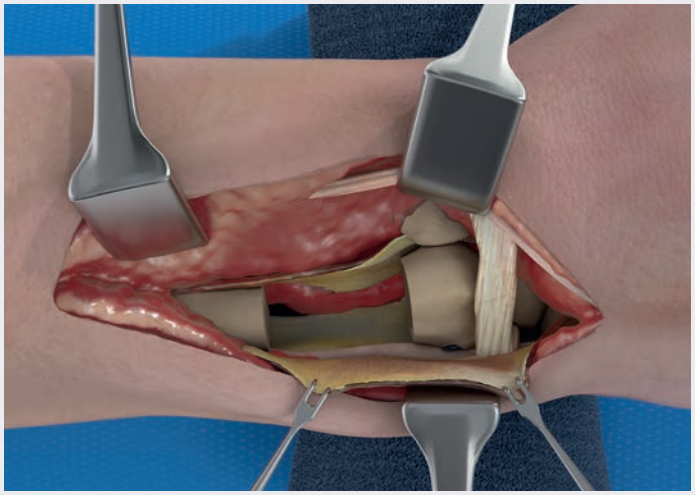


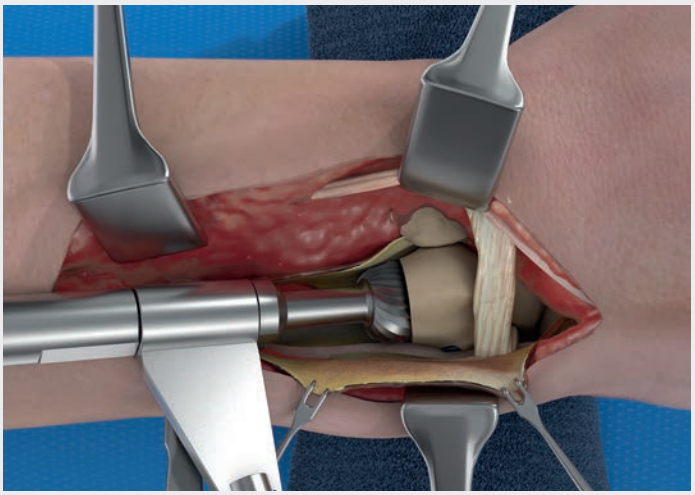
2. Approaching and elevating the soft tissue flap

Approach is gained by reopening the original approach or by opening the scar, which is located either dorsally over the DRUJ or laterally over the fused head of the ulna, and is then extended dorsally and proximally over the distal end of the ulna.

If the scar is located dorsally above the DRUJ, this scar is used as approach, and the skin is dissected freely from the ulnar side far away from the scar tissue. The extensor digiti minimi tendon is retracted radially.

In the case of a lateral scar, the skin flaps are mobilized dorsally and palmarly from the underlying scar tissue in the subcutaneous layer. In this context, care must be taken with regard to the ramus dorsalis of the ulnar nerve, which may be fused in the distal scar area or may cross same from the palmar to the dorsal side.





3. Disclosing the ulnar head and the proximal ulnar stump

A deep longitudinal incision is then made dorsally over the fused DRUJ, the resection cavity proximal to the head of the ulna, and the distal end of the ulna. The retinaculum extensorum and the entire scar plate are then dissected subperiosteally on the fused ulnar head, and proximally, the scar is dissected in a single layer toward the ulnar and palmar sides. In this process, the sixth extensor tendon compartment should not be opened; instead, the entire subperiosteal tissue, along with the contained ulnar carpal extensor tendon, should be mobilized from the bone in the palmar and ulnar directions. At this point, any potentially disruptive osteosynthesis material can be removed from the head of the ulna. Any scar tissue present between the distal end of the ulna and the proximal head of the ulna is removed.

4. Milling the ulnar head

First, the distal end of the ulna is mobilized in the palmar direction and retracted using a Hohmann hook positioned laterally beneath the ulnar border of the radius.
The proximal surface of the fused head of the ulna is milled using a special ball cutter.
As a general rule, one begins with the smallest drill bit (9 mm), which must be inserted exactly from proximal into the center of the fused ulnar head. If necessary, the small, medium, and large milling cutters can be used, but under no circumstances should the edges of the acetabular socket beneath the ulnar head be thinned too much. If in doubt, always use the smaller size.

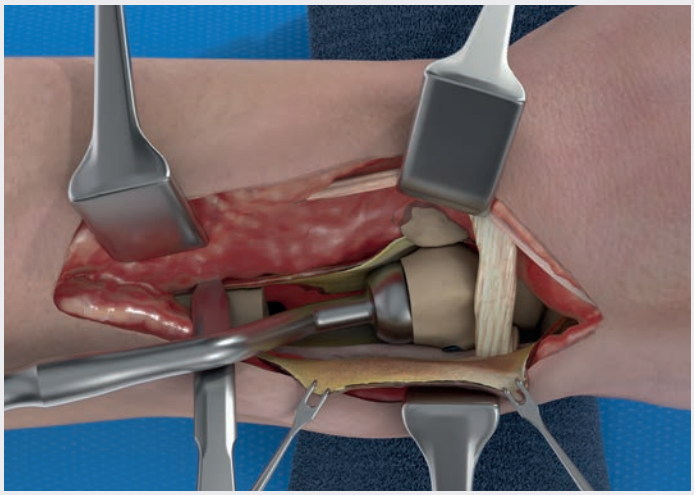
The milling cutter is attached to the bending shaft and held in place using the special handle during the milling process. Overall, this not only improves visibility but also allows for a high degree of flexibility during milling. Use the open-end spanner to securely tighten the milling cutter and the bending shaft together.

26-241-09-07 Ball cutter, mini

26-241-03-07 Flexible shaft for ball cutter

26-241-99-07 Key

26-241-01-07 Handle for flexible shaft



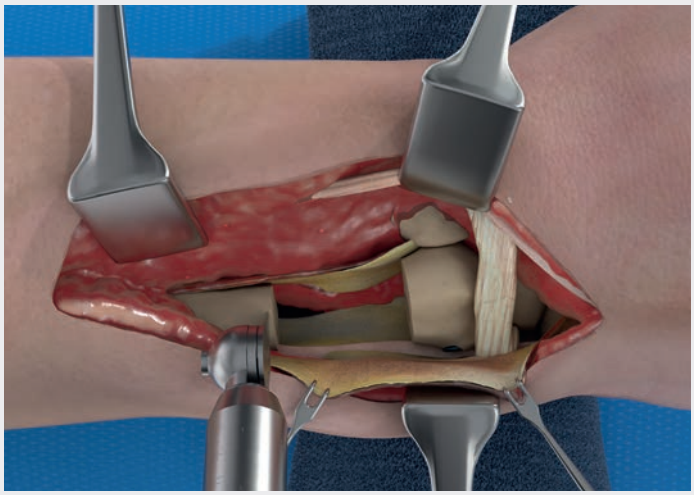
5. Checking the milled recess with the head gauge

Under X-ray guidance, the depth and shape of the milled cavity or the resulting joint socket in the head of the ulna are verified.

For this purpose, the special head gauge, which simulates the spherical prosthetic head, is inserted into the milled ulnar head.

The head gauge is available in three sizes: small, medium, and large, and should be selected based on the size of the ball end mill.

The bony joint socket should accommodate 2/3 of the prosthetic head. Milling must be performed with extreme care to avoid fracturing the DRUJ arthrodesis or damaging the bony margins of the socket.

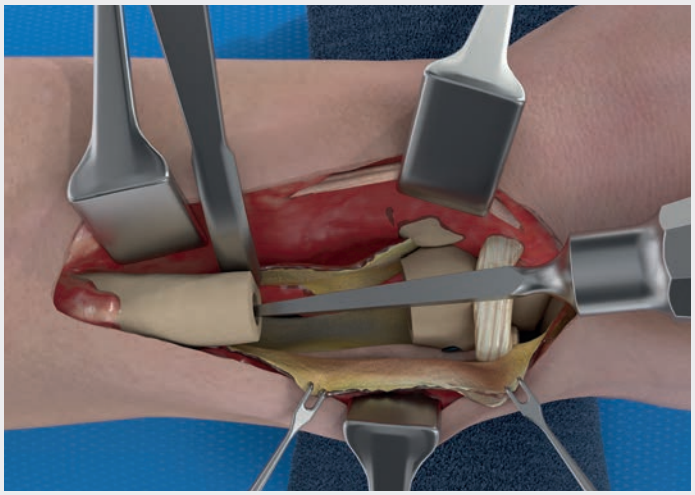


6. Revising the resection level of the distal ulna

The resection level is planned in advance using X-ray templates to determine the appropriate collar size of the implant.

Now that the head size has been definitively determined by the milling process at this stage of the procedure, a trial prosthesis with the shortest possible neck length is used; the corresponding trial head is attached and placed next to the ulnar stem. The post-resection level at the distal end of the ulna is now determined using the trial prosthesis. Subsequent resection is performed using an oscillating saw.

26-241-19-07
Head gauge for UHP head, spherical, small

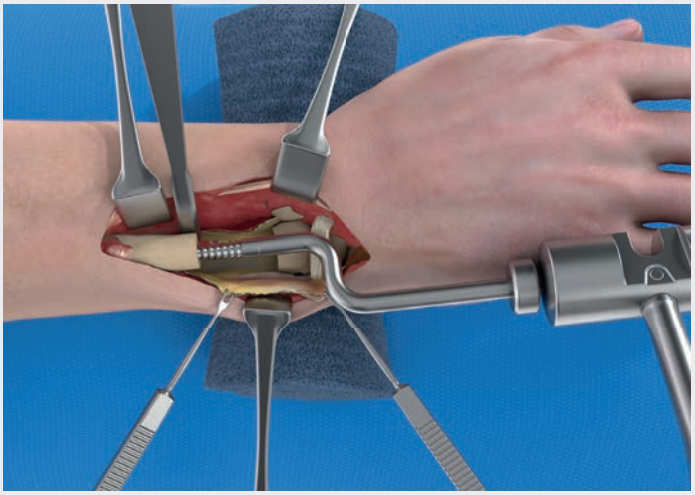


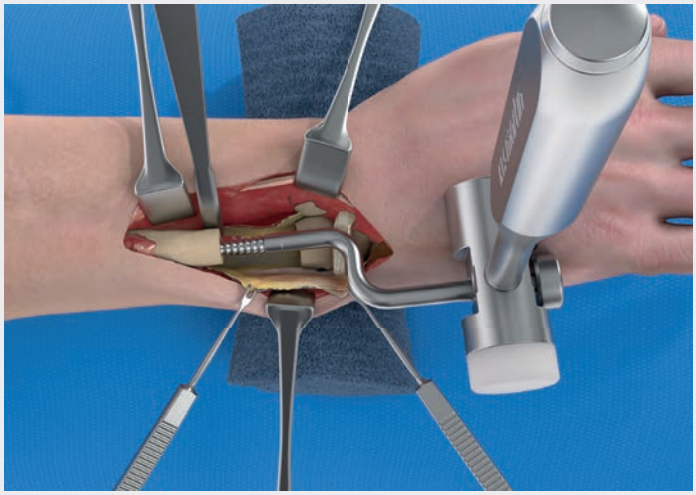
7. Opening of the bone marrow cavity

To protect the thin milled margins at the proximal head of the ulna, a Hohmann hook is placed under the distal end of the ulna and positioned on the dorsal ulnar margin of the radius. This pushes the distal end of the ulna dorsally.

The bone marrow cavity is opened using the pointed awl.

22-130-14-07
Bone reamer





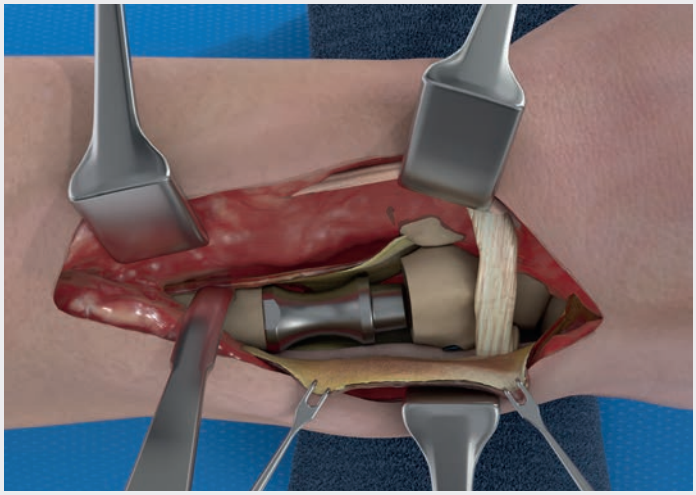
8. Rasping of the ulna

First, the small revision rasp is inserted into the opened medullary canal and driven in with a hammer to the stop. Using the two blows in, one blow out method, excess bone material can be removed.

The rasp should now be firmly in place in the bone. If this is not the case, the next rasp size (medium or large) is to be used. The milled recess in the head of the hammer is used to knock out the rasp again after having been inserted to its full length.

26-260-01-07
revision rasp,
small

23-264-19-04
Hammer

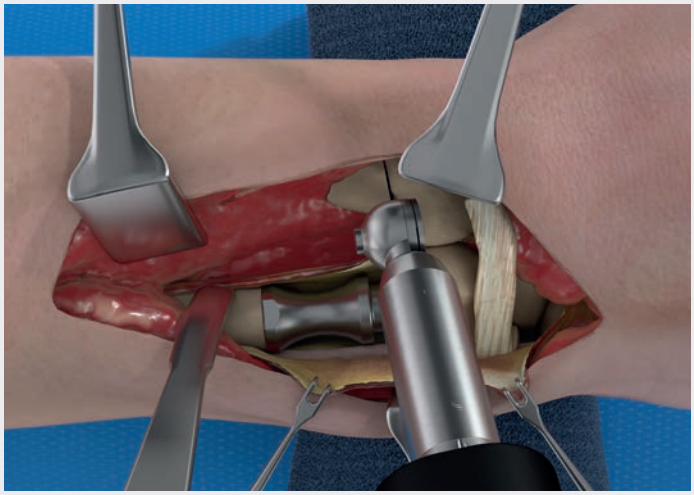


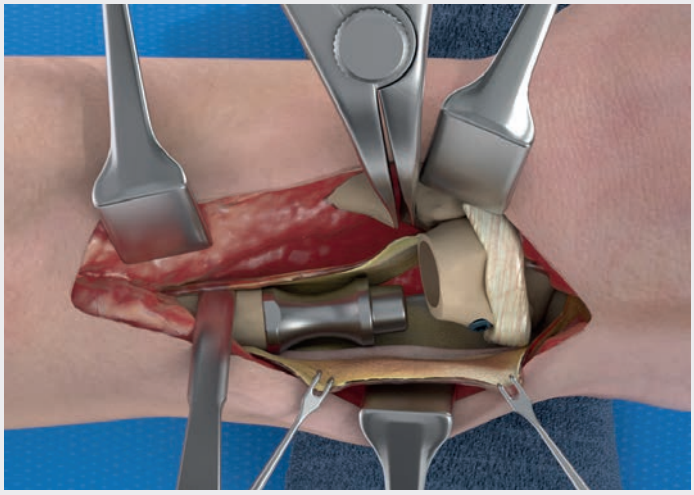
9. Placement of the trial stem

The trial stem is selected based on the final rasp size and should slide relatively easily into the opened medullary canal. The final prosthesis fits more securely owing to its porous coating.

Using image intensifier fluoroscopy control, now check that the stem fits well.

26-211-21-05
Trial stem
revision collar,
small



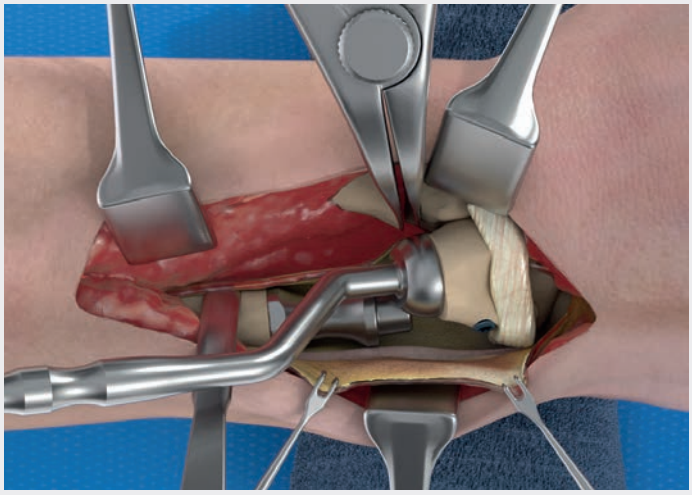


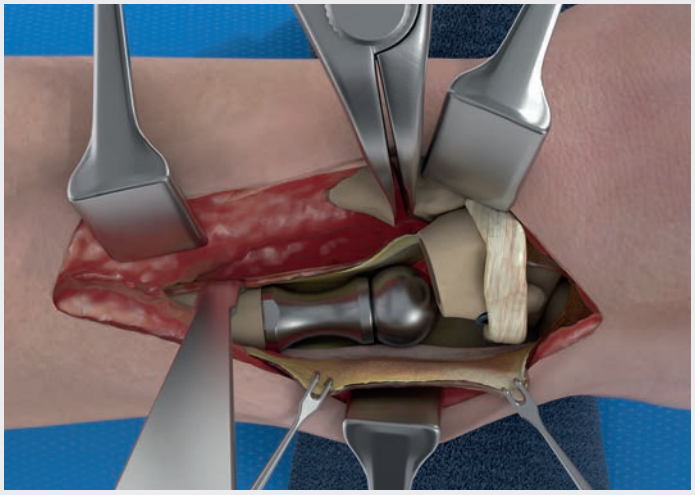
10. Performing a radial osteotomy

To prevent fractures of the thin bone edge of the ulnar head, it is recommended to perform indirect reduction of the new joint socket to the spherical head by means of an oblique, incomplete radius osteotomy.

The osteotomy of the radius is performed proximal to the DRUJ arthrodesis, without sawing through the radial cortex of the radius.

The osteotomy gap is then carefully widened with forceps.





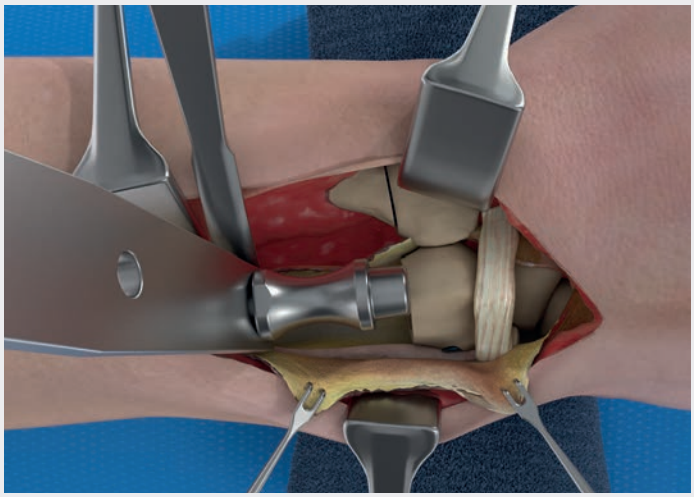
11. Size verification and inserting the trial head

The trial head is mounted on the trial stem, and the radial osteotomy is closed again with indirect reduction of the prosthetic head into the bony socket in the head of the ulna.

The correct fit of the trial prosthesis must be verified with image intensifier fluoroscopy with the forearm in a neutral rotational position.

26-241-19-07
Head gauge for UHP head, spherical, small

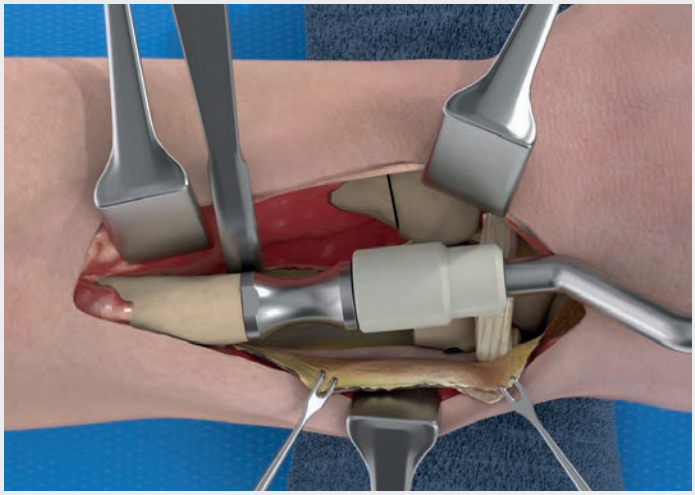
26-231-09-05
Trial head, spherical, small

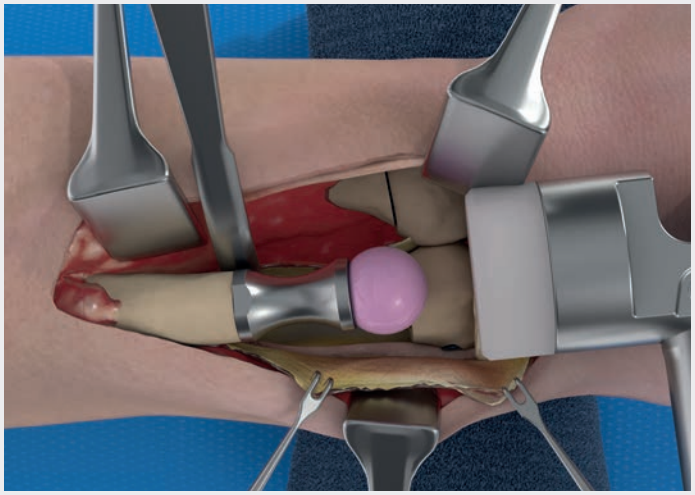


12. Removal of the trial prosthesis

The trial prosthesis is then removed, if necessary with the aid of the explantation chisel, and the wound and bone marrow canal are thoroughly rinsed.

26-265-35-07
Explantation chisel,
small





13. Insertion of the final prosthesis (part 1)

After verifying the size and fit of the prosthesis, the sterile-packed prosthetic components of the same size are inserted.

The stem is gently driven into place using the conical driving instrument and the hammer.

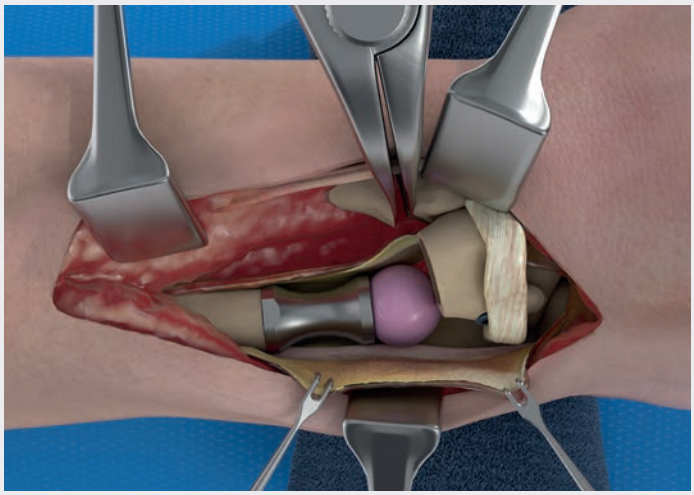
Warning:
Never use excessive force during insertion. If the stem appears to become jammed during insertion, it should be removed again and the medullary cavity of the ulna should be rasped further.

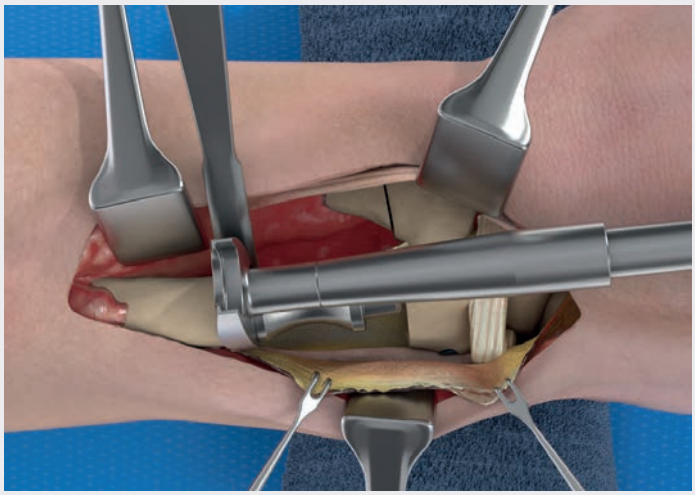
The conical end of the prosthesis neck must be clean and dry before the ceramic head is applied by tapping it lightly with the plastic side of the hammer.

The ceramic head is applied by tapping it lightly with the plastic side of the hammer.

26-265-30-07
Cone impactor

23-264-19-04
Hammer





14. Insertion of the final prosthesis (part 2)

When placing the head of the prosthesis, care must be taken to ensure that the bone gap at the radius remains sufficiently opened to prevent fissures in the thin, milled ulnar head.

Provided that preoperative length planning is correct, the prosthesis head should fit precisely into the spherical joint socket once the bone gap in the radius is closed.

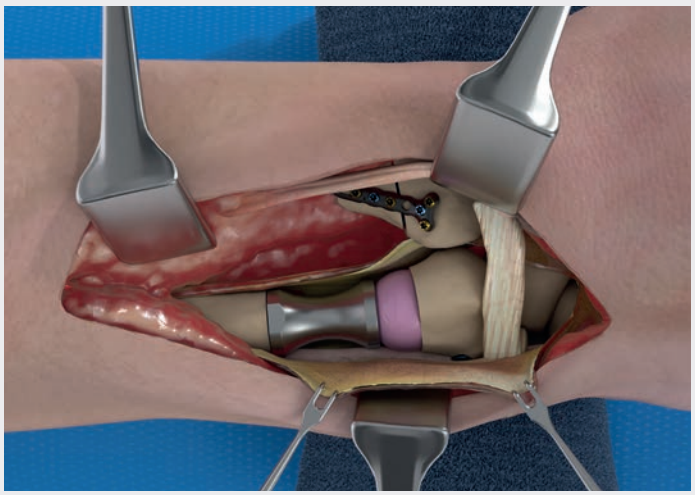
Postoperatively, a 1–2 mm gap forms between the prosthesis head and the joint socket.

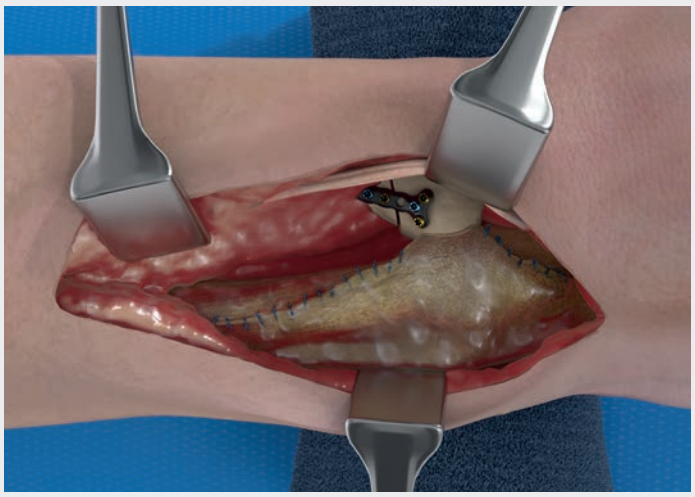
The two prosthetic components are finally checked under fluoroscopic control.

Optional: Removal of the prosthesis

In special cases, if the prosthesis needs to be removed again, the stem extraction device can be used.

26-265-07-07
Extractor,
T-handle

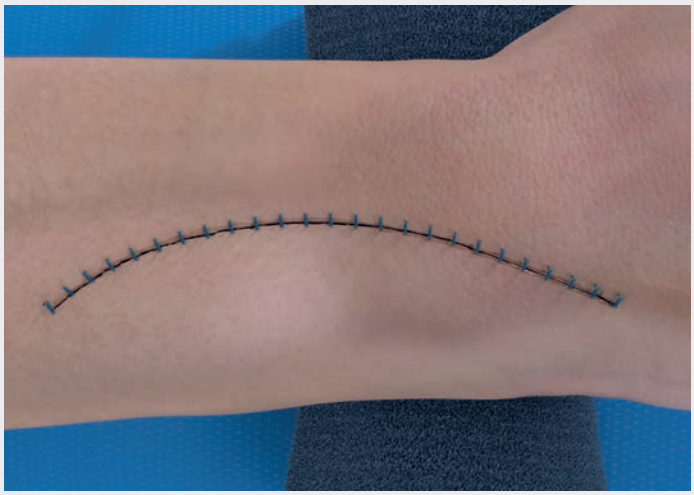


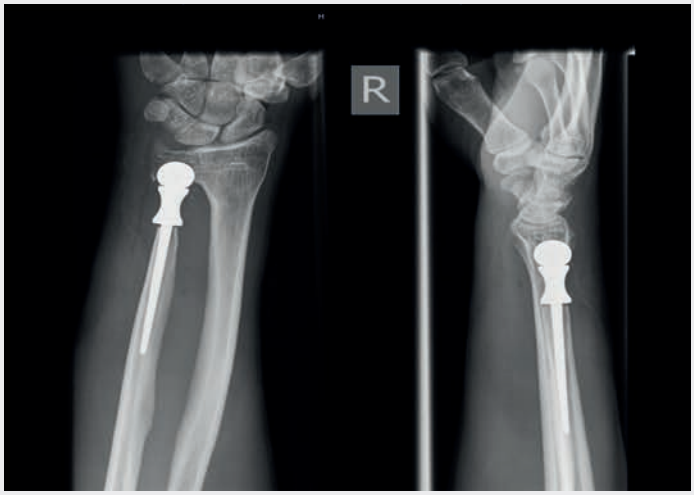


15. Closing the radial osteotomy gap

The osteotomy gap is fixed dorsoulnarly using a suitable osteosynthesis plate (e.g., from the Ixos system).

The scar tissue can be used to form a tight cuff around the neck and head of the prosthesis.





Wound closure

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A full clinical and radiological follow-up examination with assessment is carried out after six weeks. Depending on the current examination findings, the splint may either be removed at this point and a cautious, active mobilization and strengthening exercise regimen may be started, or splint treatment may be extended for another two weeks. Full loading is not permitted until after 12 weeks.

Implants **UHP**

UHP stem

Standard (collar height 2 mm)

26-210-01-09

small
distal stem:
Ø 6.2 mm

26-210-03-09

medium
distal stem:
Ø 8.2 mm

26-210-05-09

large
distal stem:
Ø 10.2 mm

Standard+ (collar height 4 mm)

26-210-11-09

small
distal stem:
Ø 6.2 mm

26-210-13-09

medium
distal stem:
Ø 8.2 mm

26-210-15-09

large
distal stem:
Ø 10.2 mm

Explanation of icons

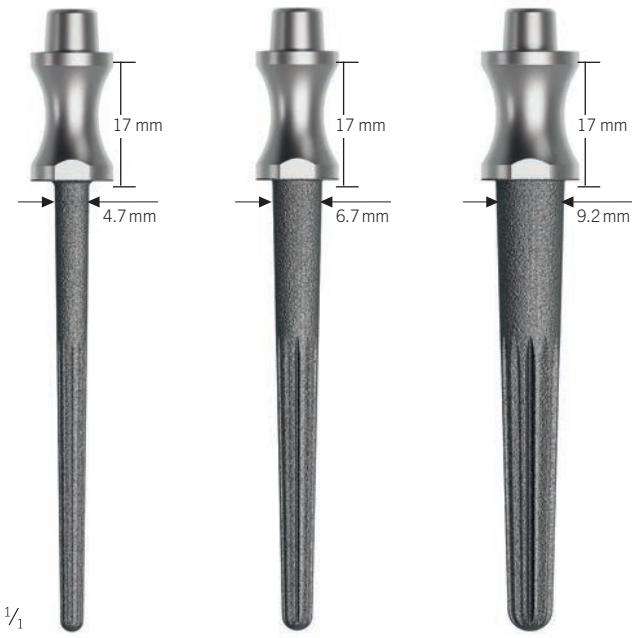
Ti Pure titanium

1 QTY Packaging unit

STERILE R Sterile packaged implants

UHP stem

Revision (collar height 17 mm)



1/1

26-210-21-09	26-210-23-09	26-210-25-09
small distal stem: Ø 4.7 mm	**medium** distal stem: Ø 6.7 mm	**large** distal stem: Ø 9.2 mm

Implants **UHP**

UHP head

Standard

Ø 15 mm

1/1

26-220-01-04

small
height 10 mm,
Ø 15 mm

Ø 18 mm

26-220-03-04

medium
height 12 mm,
Ø 18 mm

Ø 21 mm

26-220-05-04

large
height 14 mm,
Ø 21 mm

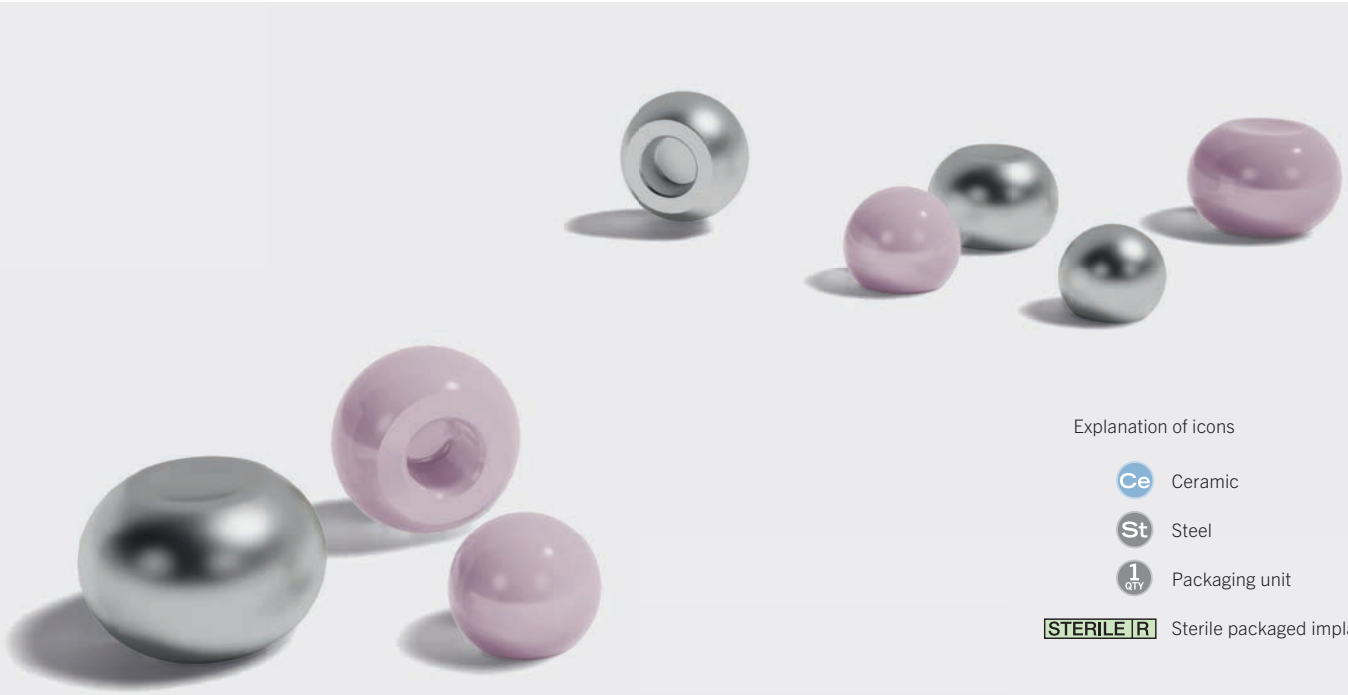
Trial heads

1/1

26-221-01-05

26-221-03-05

26-221-05-05



Explanation of icons

Ce Ceramic

St Steel

1 QTY Packaging unit

STERILE R Sterile packaged implants

UHP head Ce 1 QTY
Spherical

Ø 13 mm

1/1

26-220-09-04

small
height 11 mm,
Ø 13 mm

Ø 15 mm

26-220-11-04

medium
height 13 mm,
Ø 15 mm

Ø 18 mm

26-220-13-04

large
height 15 mm,
Ø 18 mm

Trial heads St 1 QTY

1/1

26-231-09-05

26-231-11-05

26-231-13-05

Instruments **UHP**

Standard rasp St 1 qty
for UHP stem standard and standard+

26-250-01-07	26-250-03-07	26-250-05-07
small	**medium**	**large**

Explanation of icons

St Steel

1 QTY Packaging unit

Revision rasp St 1 QTY
for UHP stem revision

1/1

26-260-01-07
small

26-260-03-07
medium

26-260-05-07
large

Instruments **UHP**

Trial stems St 1
Standard (collar height 2 mm)

26-211-01-05

26-211-03-05

26-211-05-05

Standard+ (collar height 4 mm)

26-211-11-05

26-211-13-05

26-211-15-05

Explanation of icons

St Steel

1 QTY Packaging unit

Trial stems St 1 QTY
Revision (collar height 17 mm)

26-211-21-05 26-211-23-05 26-211-25-05

Instruments **UHP**

Standard instruments

½

26-265-05-07

16 cm / 6 ⅜"

Resection guide

St 1 qty

½

26-265-13-07

15 cm / 5 ⅞"

Bone holding forceps

St 1 qty

23-730-92-98

½

23-730-17-07

17 cm / 6 ⅝"

Bone holding forceps; Kern

St 1 qty

½

26-265-20-07

11.5 cm / 4 ⅝"

Soft tissue retractor, right

St 1 QTY

½

26-265-22-07

11.5 cm / 4 ⅝"

Soft tissue retractor, left

St 1 QTY

½

22-130-14-07

14 cm / 5 ½"

Bone reamer

St 1 QTY

½

26-265-15-07

21 cm / 6 ⅜"

Bone curette

St 1 QTY

½

23-264-19-04

19 cm / 7 ⅝"

Hammer

St 1 QTY

Instruments **UHP**

Standard instruments

½

26-265-30-07

9.5 cm / 3 ⅝"

Cone impactor

St 1 qty

½

26-265-35-07

24.5 cm / 9 ⅝"

Explantation chisel small

St 1 qty

½

26-265-37-07

24.5 cm / 9 ⅝"

Explantation chisel large

St 1 qty

Explanation of icons

St Steel

1 QTY Packaging unit

½

26-265-07-07

22 cm / 8 ⅝"

Extractor, T-handle

St 1 QTY

Instruments **UHP** spherical

Additional instruments for UHP spherical

Note:
The instrument set for the UHP spherical is supplementary to the standard instrument set and can only be used in combination with same.

Art. no.		Instruments	Reaming depth
26-241-09-07	St	mini	9 mm
26-241-13-07	St	small	13 mm
26-241-15-07	St	medium	15 mm
26-241-18-07	St	large	18 mm

½

26-241-01-07

Handle for flexible shaft

St 1 qty

½

26-241-03-07

Flexible shaft for ball cutter

St 1 qty

½

26-241-99-07

Key for tightening the flexible shaft and ball cutter

St 1 qty

Explanation of icons

St Steel

1 QTY Packaging unit

½

26-241-19-07

Head gauge for UHP head,
spherical
height 11 mm,
Ø 13 mm
small

St 1 QTY

½

26-241-21-07

Head gauge for UHP head,
spherical
height 13 mm,
Ø 15 mm
medium

St 1 QTY

½

26-241-23-07

Head gauge for UHP head,
spherical
height 15 mm,
Ø 18 mm
large

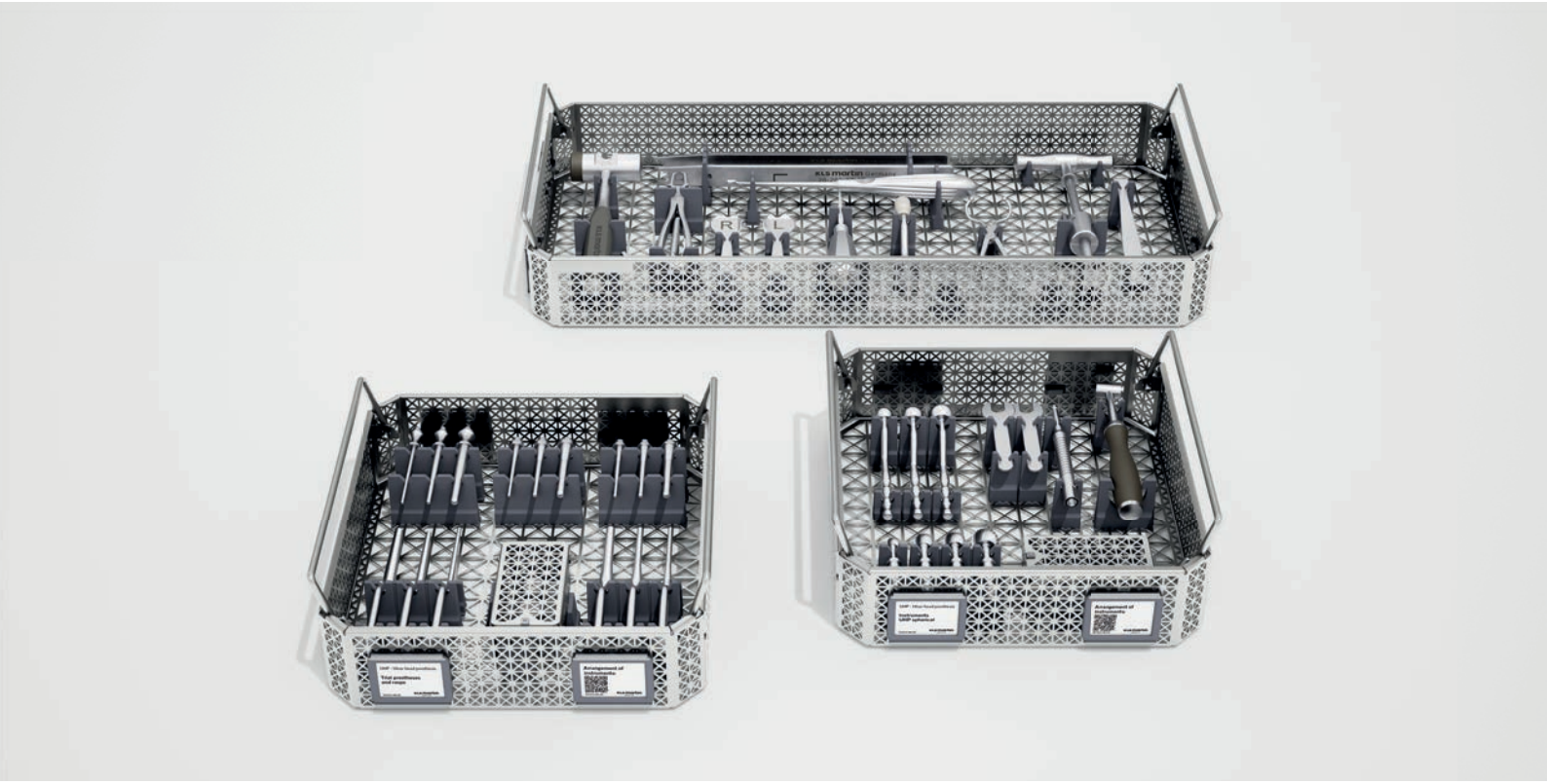
St 1 QTY

Instrument Storage **UHP**

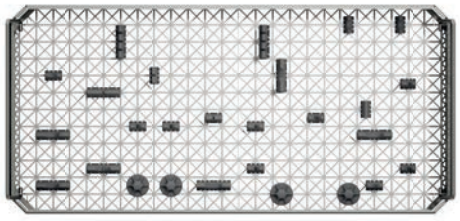
UHP storage is characterized above all by its simple and efficient handling. This way, all instruments needed for the surgical procedure are stored individually next to each other and clearly arranged. The silicone fixation elements provide reliable protection for the instruments.

The QR code attached to the cage for scanning contains an overview of the arrangement of the instruments in the storage tray, making it easier to rearrange them again after use.

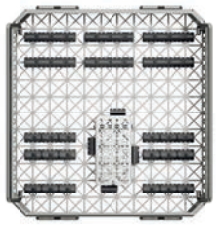
The wide grid pattern ensures optimal reprocessing due to large openings, thus meeting the requirements of all parties involved in the process equally.



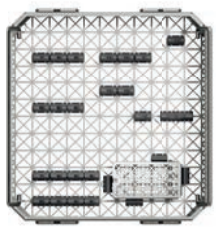
55-910-47-04	**UHP storage for standard instruments, consisting of:**
	Storage cage 1/1, size 532 x 251 x 64 mm
	Lid 1/1, size 535 x 255 mm



55-910-48-04	**UHP storage for trial prostheses and rasps, consisting of:**
	Storage cage 1/2, size 540 x 251 x 64 mm
	Small parts storage with sliding lid for trial heads standard
	Lid 1/2, size 243 x 255 mm



55-910-49-04	**UHP storage for instruments UHP spherical, consisting of:**
	Storage cage 1/2, size 240 x 251 x 64 mm
	Small parts storage with sliding lid for trial heads spherical
	Lid 1/2, size 243 x 255 mm

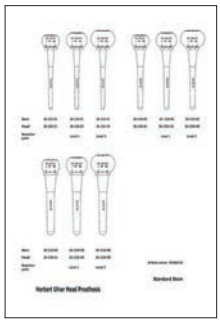


Service and information materials

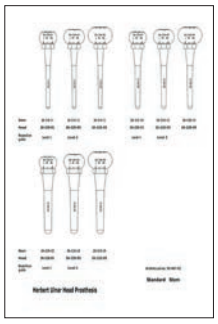
Preoperative planning

X-ray templates for preoperative planning can be obtained optionally.

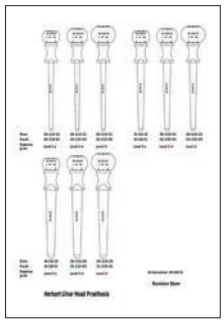
Treatment with UHP standard



Standard
90-666-52-21

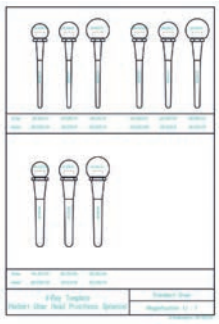


Standard+
90-667-52-21

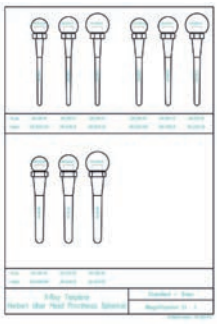


Revision
90-668-52-21

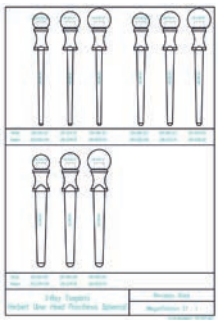
Treatment with UHP spherical



Standard
90-195-52-21

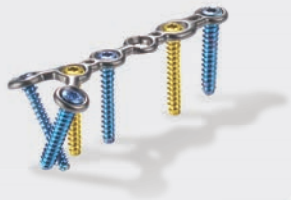


Standard+
90-196-52-21



Revision
90-197-52-21

Linos



HBS 2

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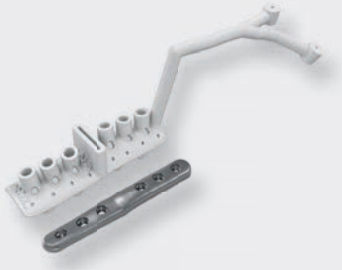
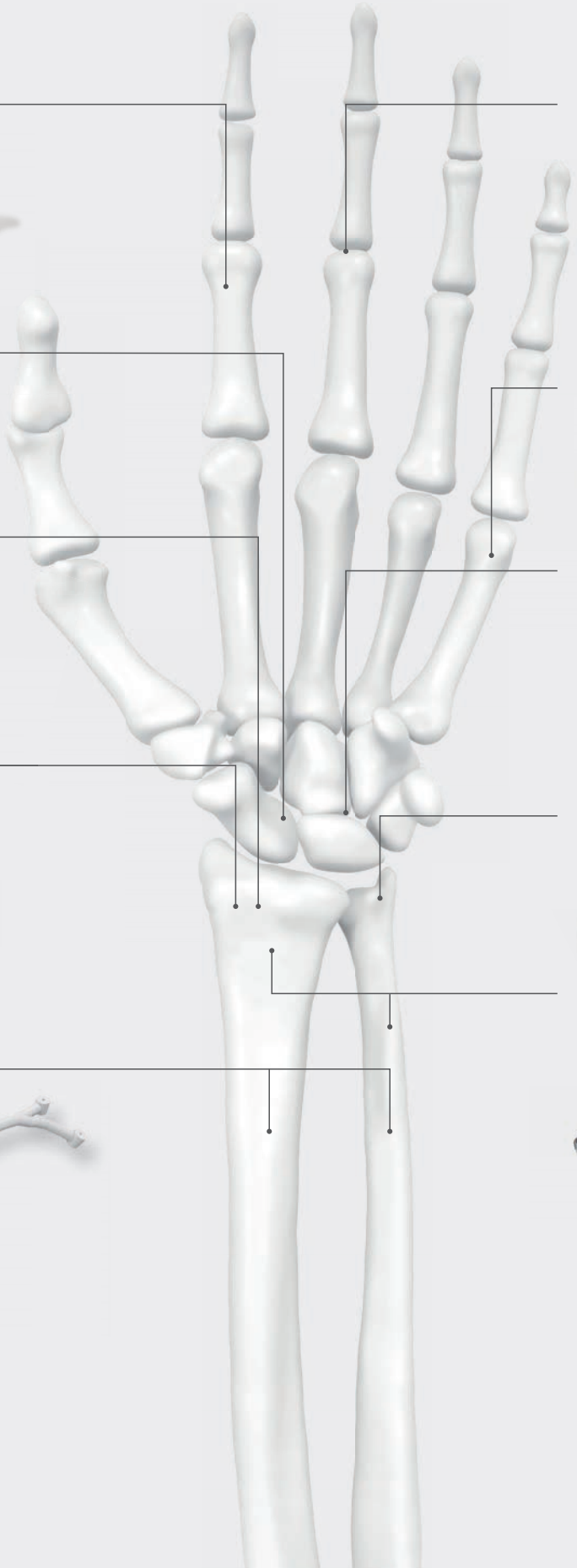
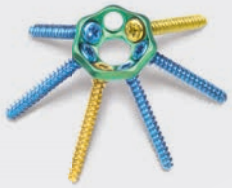




CapFlex PIP

Genos

FlowerPlate



UHP

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