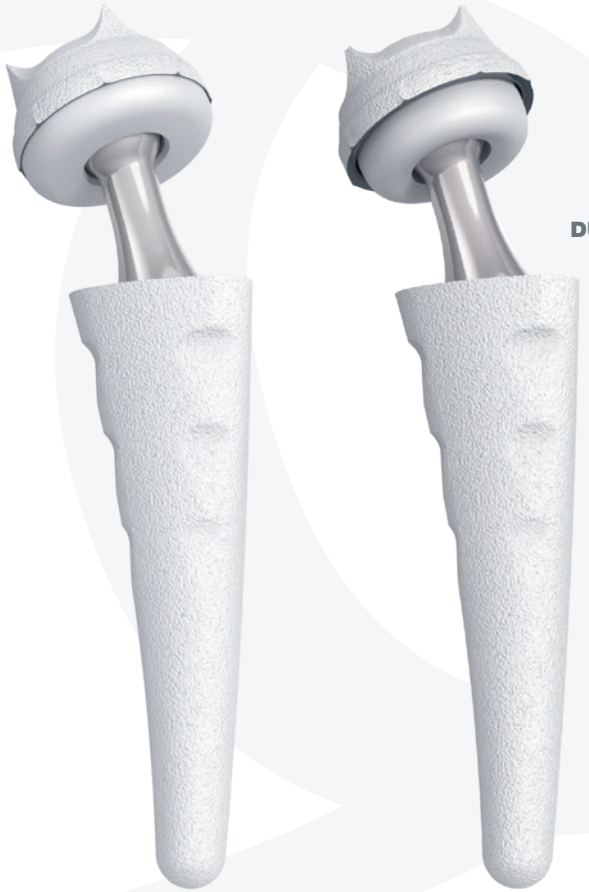
TRAPEZIOMETACARPAL JOINT PROSTHESIS

MAÏA™



SURGICAL TECHNIQUE

groupe lépine

Depuis 1714

SUMMARY

MAÏA™ STANDARD & DUAL MOBILITY

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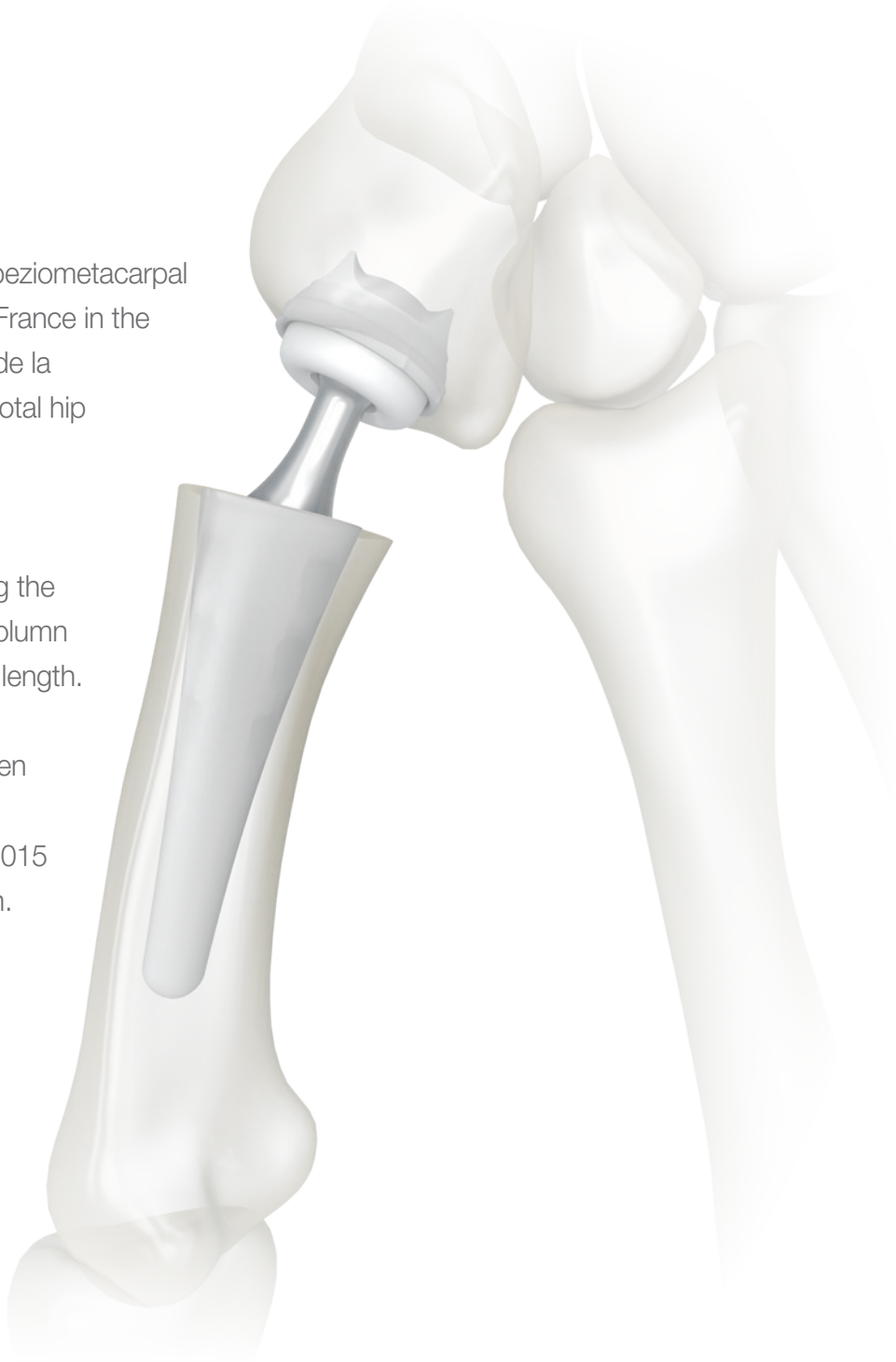
CONCEPT OF THE TRAPEZIOMETACARPAL PROSTHESIS

STANDARD & DUAL MOBILITY



The ball-and-socket total trapeziometacarpal prosthesis was introduced in France in the 1970s, by Doctor Jean-Yves de la Caffinière, on the principle of total hip prostheses.

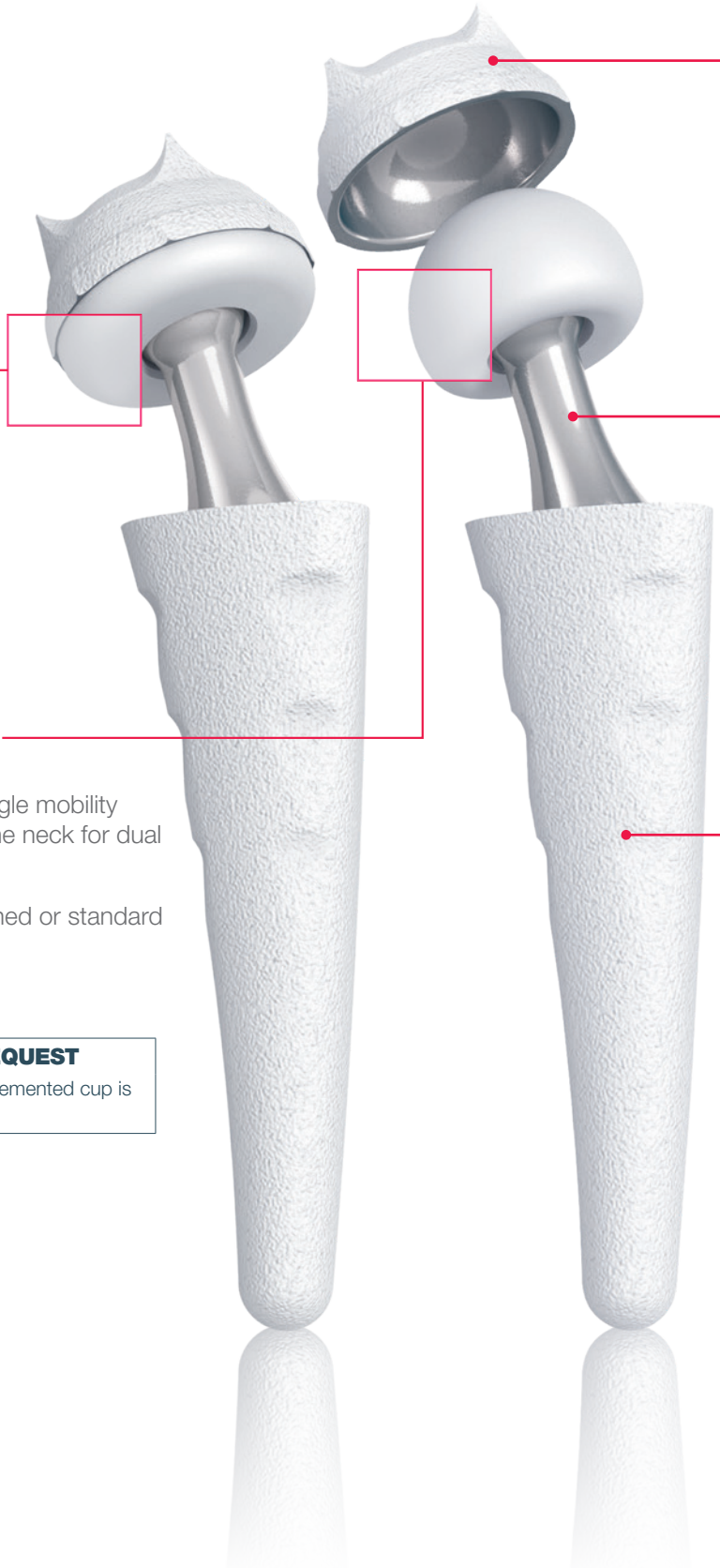
Indicated in the treatment of rhizarthrosis, it allows restoring the biomechanics of the thumb column by maintaining or restoring its length.

The MAÏA™ prosthesis has been implanted since 2005 for the Standard version, and since 2015 for the Double Mobility version.

CHARACTERISTICS AND DESIGN OF
MAÏA™ IMPLANTS

The **MAÏA**™ prosthesis consists of a hemispherical cup, a modular neck and of an anatomical metacarpal stem. Its fixation is cementless.

It offers a complete range of implants allowing the choice between single and double mobility.



PE* liner

- It is impacted:
  - in the cup for single mobility
  - on the head of the neck for dual mobility.
- It is semi-constrained or standard for simple mobility.

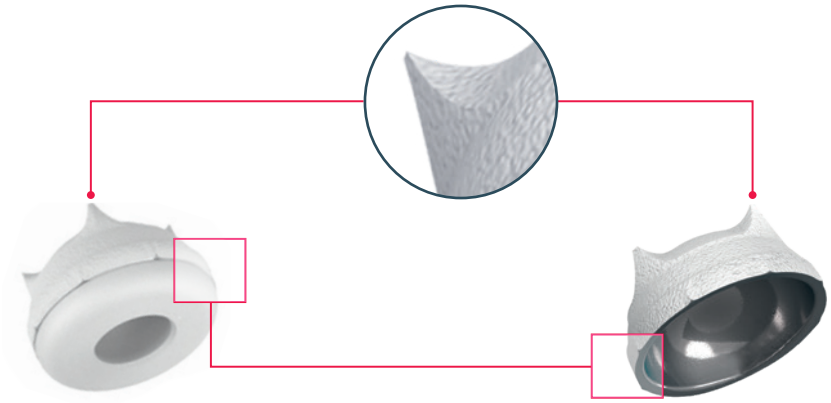
AVAILABLE ON REQUEST

For revision, a full PE* cemented cup is available.

*PE: polyethylene

The cup

- It has a hemispherical shape.
- It is made of titanium alloy.
- The presence of 4 tropical spikes ensures primary stability by avoiding the rotation of the cup.
- The equatorial extra thickness guarantees a good press-fit.



STANDARD

Sizes Ø9 and Ø10

DUAL MOBILITY

Sizes Ø8, Ø9 and Ø10

The neck

- The offset neck preserves the anatomical offset between the trapezium and the 1st metacarpal.
- It is made of stainless steel.

AVAILABLE ON DEMAND

For simple mobility:
➔ straight necks
➔ Titanium necks for nickel allergic people.

STANDARD

Sizes M, L and XL

DUAL MOBILITY

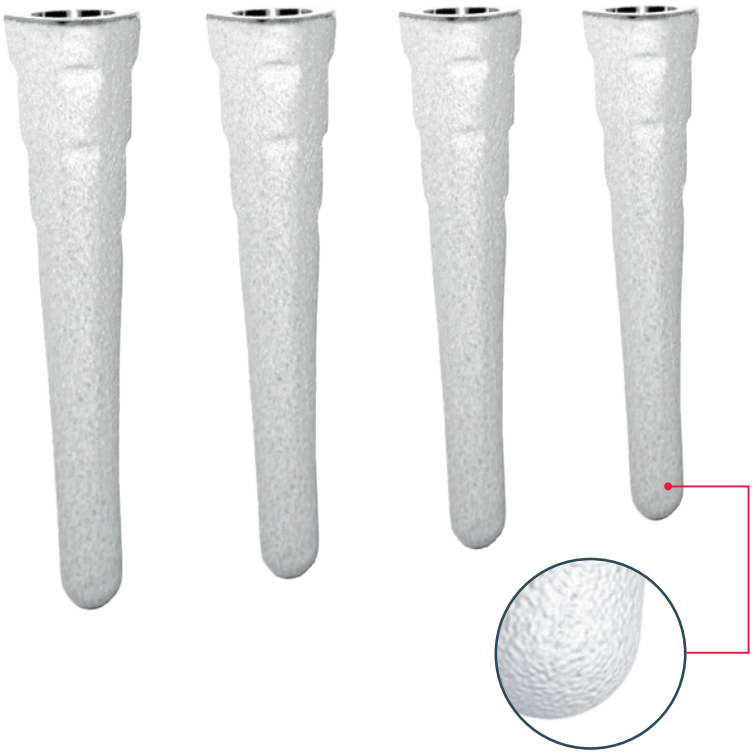
Sizes M, L and XL

The stem

- It is available in 4 homothetic sizes:
  7S (24 mm)
  8S (26 mm)
  9S (28 mm)
  10 (30 mm)
- It is made of titanium alloy.
- Its shape is anatomical with a triangular section, a flat dorsal side and a curved palmar side.
- The presence of scale-shaped macrostructures on the edges of the stem ensures primary stability avoiding rotation and sinking.

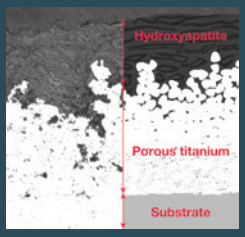
AVAILABLE ON DEMAND

Sizes 7, 8 and 9:
➔ long stems (30 mm)



The bilayer coating

Cementless fixation of the cup and stem is provided by bilayer coating by plasma spraying of porous titanium (vacuum) and hydroxyapatite.



SURGICAL TECHNIQUE

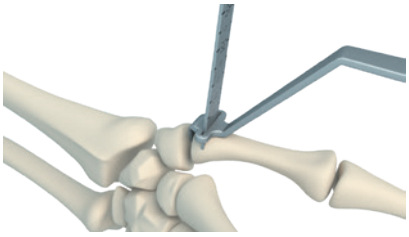
MAÏA™ STANDARD & DUAL MOBILITY

Surgical approach

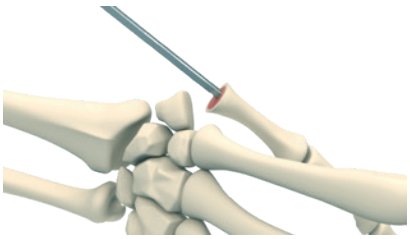
- A lateral approach, approximately 3-cm long, centered over the trapeziometacarpal joint is required.
- The incision is located between the extensor pollicis brevis (EPB) and the abductor pollicis longus (APL).
- Start with a rectangular capsular flap with dorsal hinge to expose the base of the metacarpal, alongside the APL, and then expose the trapezium. Protect the radial artery.

Metacarpal preparation

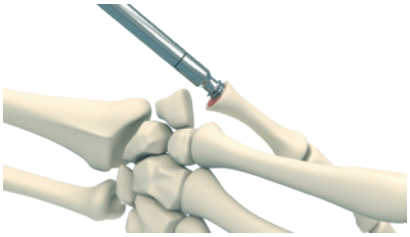
- Resect 5 mm from the base of the metacarpal.



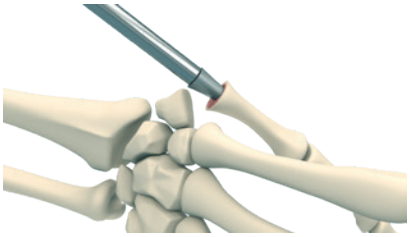
- Remove the metacarpal fragment and then locate the medullary canal using an awl. Resect any osteophytes.



- Use successively larger rasps until you find one that fits tightly in the metacarpal and is in line with the cut surface. This will indicate the size of the implanted stem.



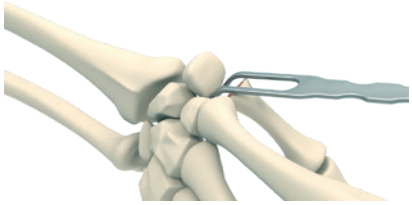
- Insert the corresponding trial stem to protect the metacarpal bone.



MATERIALS USED

MAIA METACARPAL CUTTING GUIDE	M100 6000
MAIA RASP	M100 51xx
MAIA TRIAL STEM	M100 50xx
MAIA STEM IMPACTOR-EXTRACTOR	M100 6200

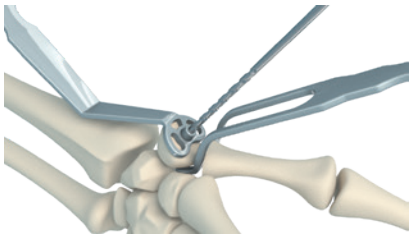
- Use the viper retractor to expose the trapezium. Resect the horns and the medial osteophytes (if applicable).



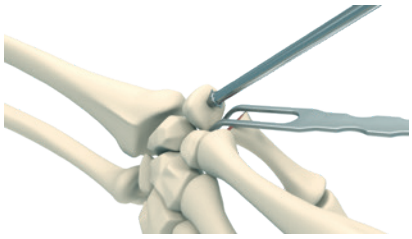
OPTION 1: Non-cannulated instruments

Use the trapezal centering guide and the Ø1,9 drill bit to prepare the entry point for the conical reamer.

Centering is a crucial point and a scopic check is recommended.



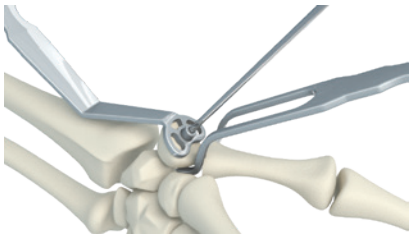
Use the conical reamer to start preparing the bone.



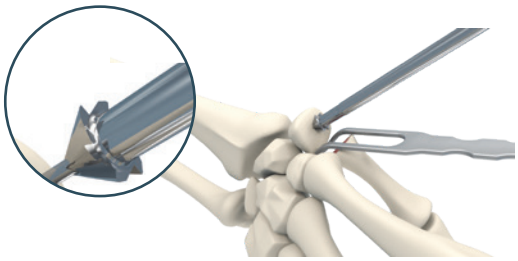
OPTION 2: Cannulated instruments

Use the trapezal centering guide and the Ø1,5 K-wire to prepare the reamer entry point.

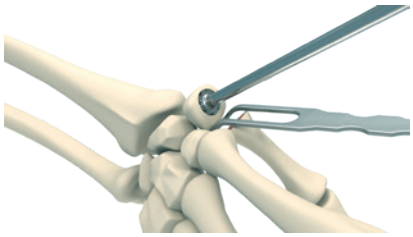
Centering is a crucial point and a scopic check is recommended.



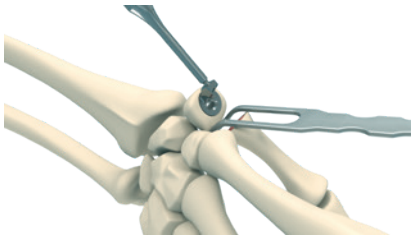
Use the conical cannulated reamer or the powered cannulated reamers Ø4 then Ø6.



- Use the spherical reamer matching the selected size of the cup (8, 9, 10).



- Use the trial cup matching the selected size of the cup to assess the press-fit of the final cup.



MATERIALS USED	
MAIA VIPERED RETRACTOR	M100 7100
MAIA TRAPEZAL CENTERING GUIDE	M100 7000
SCALED DRILL Ø1.9 AO	OVAMG119
MAIA CONICAL REAMER	M100 6300
or POWERED CONICAL REAMER	M100 6507
MAIA SPHERICAL REAMER	M100 61XX
or POWERED SPHERICAL REAMER	M100 64xx
MAIA TRIAL CUP Ø9	M100 6009
or MAIA TRIAL CUP Ø8 / Ø10	M100 6810

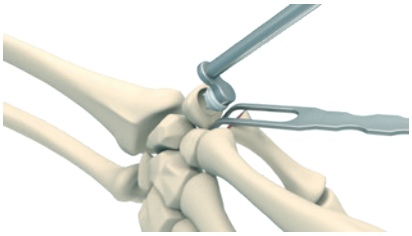
MATERIALS USED	
MAIA VIPERED RETRACTOR	M100 7100
MAIA TRAPEZAL CENTERING GUIDE	M100 7000
KIRSCHNER 1TROCAR Ø1.5 L150	BS015T/150
CANNULATED CONICAL REAMER	M100 6807
POWERED CANNULATED REAMER	M100 670X
MAIA SPHERICAL REAMER	M100 61XX
MAIA TRIAL CUP Ø9	M100 6009
or MAIA TRIAL CUP Ø8 / Ø10	M100 6810

Placement of the final cup

To place the final cup, before positioning it:

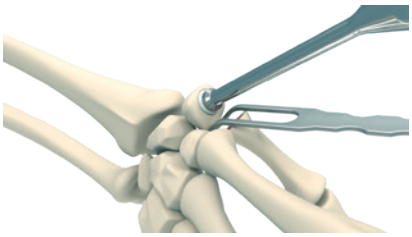
MAÏA™ standard mobility

Check that its positioning is at an angle of 30° to the axis of the 2nd metacarpal in the sagittal and frontal planes.



MATERIALS USED	
MAIA CUP HOLDER	M100 6010

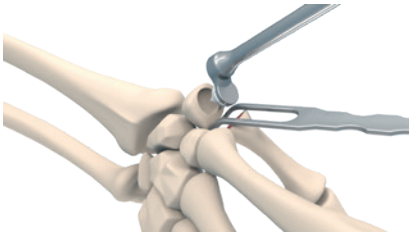
Carefully impact the cup using light hammer blows until the PE rests on the bone edge.



MATERIALS USED	
MAIA CUP STRAIGHT IMPACTOR	M100 6011

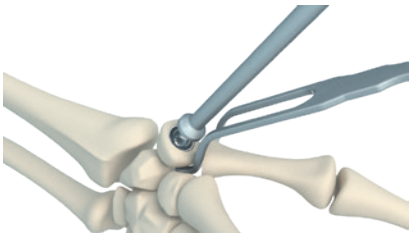
MAÏA™ dual mobility

This positioning requirement is less important for double mobility, given the corrective effect provided by the mobility of the insert. However, an orientation of 30° to the axis of the 2nd metacarpal is recommended.



MATERIALS USED	
DUAL MOBILITY HOLDER Ø9 / Ø10	M100 8319 or M100 8309
or DUAL MOBILITY HOLDER Ø8	M100 8318 or M100 8308

Carefully impact the cup using light hammer blows until it is flush with the bone edge without going beyond it.

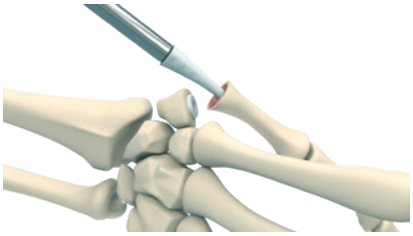


MATERIALS USED	
DUAL MOBILITY CUP IMPACTOR	M100 8011

Make sure the positioning of the implanted cup is correct and stable.

Placement of the final stem

- Remove the trial stem, and then insert the final stem into the medullary canal up to the cut surface, respecting the palmar curvature (the back of the stem is free of scale).



MATERIALS USED	
MAIA STEM IMPACTOR-EXTRACTOR	M100 6200

Placement of the final neck

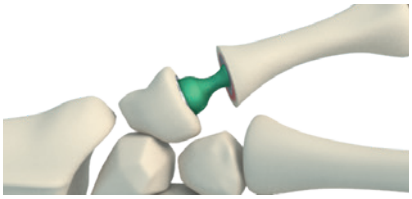
MAÏA™ standard mobility

Determine the correct neck length using the modular trial necks to achieve the best possible mobility and stability of the prosthetic assembly (a pistoning equal to the thickness of the ball is recommended).

MATERIALS USED	
MAIA NECK THIN HOLDER PLIER	M100 6211
MAIA OFFSET TRIAL NECK	M100 561x
or MAIA STRAIGHT TRIAL NECK	M100 560x

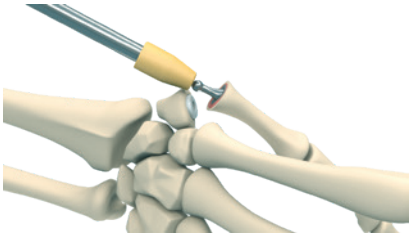
MAÏA™ dual mobility

Determine the correct neck length using the modular trial necks to achieve prosthetic stability (a pistoning corresponding to half the ball is recommended here).

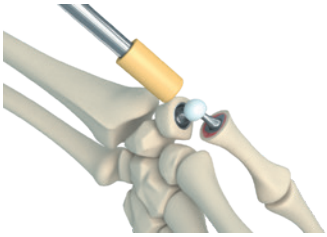


MATERIALS USED	
MAIA NECK THIN HOLDER PLIER	M100 6211
DUAL MOBILITY TRIAL NECK Ø9 / Ø10	M100 569x
or DUAL MOBILITY TRIAL NECK Ø8	M100 568x

Set up and impact the chosen final neck before reduction.
Make sure the cup is dry before reducing the prosthetic joint.



MATERIALS USED	
HANDLE M6	M100 6002
MAIA NECK IMPACTOR	M100 6210



MATERIALS USED	
HANDLE M6	M100 6002
DUAL MOBILITY NECK IMPACTOR	M100 8210

Closure and postoperative course

- Dorsalize the APL by fixing it firmly to the base of M1 with a U-shaped suture.
- Close the capsular flap to cover and protect the prosthesis.
- Close the skin with 3 or 4 separate sutures.
- Immobilize with a splint opening the first commissure for 3 or 4 weeks. Self-rehabilitation is usually sufficient afterwards.

Removal

- Remove the neck using the MAÏA™ neck thin holder pliers.
- Remove the stem using the MAÏA™ stem impactor-extractor.
- Remove the cup using an osteotome (standard instrumentation in the operating room).

MATERIALS USED	
MAIA NECK THIN HOLDER PLIER	M100 6211
MAIA STEM IMPACTOR-EXTRACTOR	M100 6200

MAÏA™ STANDARD MOBILITY

TRAPEZIOMETACARPAL COMPONENTS

MAÏA™ trapeziometacarpal cup

DESIGNATION	REF
MAIA TRAPEZ CUP STANDARD Ø9	M100 1009
MAIA TRAPEZ CUP RET Ø9	M100 2009
MAIA TRAPEZ CUP STANDARD Ø10	M100 1010
MAIA TRAPEZ CUP RET Ø10	M100 2010

MAÏA™ offset neck

DESIGNATION		REF
MAIA OFFSET NECK M	medium	M100 0600
MAIA OFFSET NECK L	long	M100 0601
MAIA OFFSET NECK XL	extra-long	M100 0602

MAÏA™ metacarpal stem

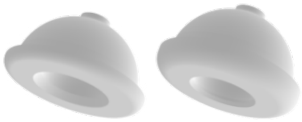
DESIGNATION	REF
MAIA STEM S7s	M100 0017
MAIA STEM S8s	M100 0018
MAIA STEM S9s	M100 0019
MAIA METACARPAL STEM S10	M100 0010

MAÏA™ STANDARD OPTIONS

TRAPEZIOMETACARPAL COMPONENTS

MAÏA™ «rescue» or revision cup

DESIGNATION	REF
MAIA CEMENTED CUP Ø9	M100 4009



MAÏA™ revision liner

DESIGNATION	REF
MAIA LINER Ø9	M100 1109
MAIA RETENTIVE LINER Ø9	M100 2109

MAÏA™ long stem

DESIGNATION	REF
MAIA METACARPAL STEM S7	M100 0007
MAIA METACARPAL STEM S8	M100 0008
MAIA METACARPAL STEM S9	M100 0009

MAÏA™ straight neck

DESIGNATION		REF
MAIA STRAIGHT NECK M	medium	M100 0500
MAIA STRAIGHT NECK L	long	M100 0501
MAIA STRAIGHT NECK XL	extra-long	M100 0502

MAÏA™ offset neck XXL

DESIGNATION		REF
MAIA OFFSET NECK XXL	super extra-long	M100 0603

MAÏA™ titanium alloy neck (for allergic patient)

DESIGNATION		REF
MAIA TITANIUM OFFSET NECK M	medium	M100 0610
MAIA TITANIUM OFFSET NECK L	long	M100 0611
MAIA TITANIUM OFFSET NECK XL	extra-long	M100 0612
MAIA TITANIUM OFFSET NECK XXL	super extra-long	M100 0613

MAÏA™ DUAL MOBILITY

TRAPEZIOMETACARPAL COMPONENTS

MAÏA™ dual mobility trapeziometacarpal cup

DESIGNATION	REF
MAIA DUAL MOBILITY CUP Ø9	M100 3009
MAIA DUAL MOBILITY CUP Ø10	M100 3010

MAÏA™ dual mobility liner + offset neck

DESIGNATION	REF
MAIA DUAL MOBILITY LINER M	M100 3190
MAIA DUAL MOBILITY LINER L	M100 3191
MAIA DUAL MOBILITY LINER XL	M100 3192

MAÏA™ metacarpal stem

DESIGNATION	REF
MAIA STEM S77S	M100 0017
MAIA STEM S78S	M100 0018
MAIA STEM S79S	M100 0019
MAIA METACARPAL STEM S10	M100 0010

MAÏA™ DUAL MOBILITY OPTIONS

TRAPEZIOMETACARPAL COMPONENTS

MAÏA™ dual mobility trapeziometacarpal cup Ø8

DESIGNATION	REF
MAIA DUAL MOBILITY CUP Ø8	M100 3008

MAÏA™ dual mobility liner Ø8 + offset neck

DESIGNATION	REF
MAIA DUAL MOBILITY LINER Ø8 M	M100 3180
MAIA DUAL MOBILITY LINER Ø8 L	M100 3181
MAIA DUAL MOBILITY LINER Ø8 XL	M100 3182

MAÏA™ metacarpal long stem

DESIGNATION	REF
MAIA METACARPAL STEM S7	M100 0007
MAIA METACARPAL STEM S8	M100 0008
MAIA METACARPAL STEM S9	M100 0009

ASSOCIATED PRODUCT

The MAÏA™ splint is a thermoformable and removable stabilising orthosis.

It has been designed in compliance with the requirements for post-operative immobilization treatment following the implantation of MAÏA™ trapeziometacarpal prosthesis. The materials chosen ensure stabilization of the joint while allowing perfect adaptation to the anatomy of the hand and the evolution of any edema.

Its external structure, made of polyester resin, which is very malleable under heat, follows perfectly the relief of the hand while retaining all the rigidity necessary for post-operative immobilization. The thermoforming operation can be repeated, if necessary, if the molding is considered imperfect or when the edema is resorbed.

The inner side of the orthosis in contact with the hand is made of polyethylene copolymer foam chosen for its flexibility, lightness and low friction coefficient. The splint is micro-perforated to limit sweating problems.

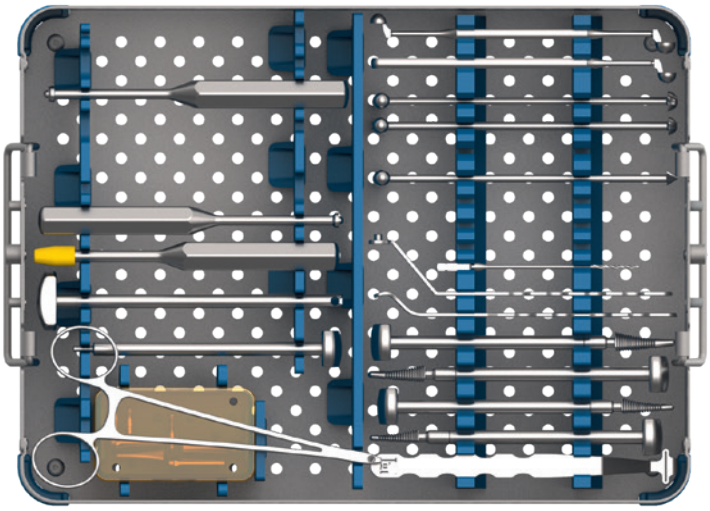
This bilateral orthosis, right and left, is delivered with an elastic support band.

MAÏA™ trapeziometacarpal orthosis to stabilize the articulation

DESIGNATION	REF
MAIA POST-OP SPLINT	M100 9002

INSTRUMENTATION

MAÏA™ standard tray		
DESIGNATION	**REF**	**QUANTITY**
MAIA METACARPAL CUTTING GUIDE	M100 6000	1
MAIA RASP T7S	M100 5117	1
MAIA RASP T8S	M100 5118	1
MAIA RASP T9S	M100 5119	1
MAIA RASP T10	M100 5110	1
MAIA TRIAL STEM T7S	M100 5017	1
MAIA TRIAL STEM T8S	M100 5018	1
MAIA TRIAL STEM T9S	M100 5019	1
MAIA TRIAL STEM T10	M100 5010	1
MAIA VIPERED RETRACTOR	M100 7100	1
MAIA TRAPEZAL CENTERING GUIDE	M100 7000	1
SCALED DRILL Ø1.9 AO	OVAMG119	1
KIRSCHNER 1TROCAR Ø1.5 L150	BS015T/150	1
CANNULATED CONICAL REAMER	M100 6807	1
MAIA SPHERICAL REAMER Ø9	M100 6109	1
MAIA SPHERICAL REAMER Ø10	M100 6110	1
MAIA TRIAL CUP Ø9	M100 6009	1
MAIA TRIAL CUP Ø8/Ø10	M100 6810	1
MAIA CUP HOLDER	M100 6010	1
MAIA CUP STRAIGHT IMPACTOR	M100 6011	1
MAIA STEM IMPACTOR-EXTRACTOR	M100 6200	1
MAIA NECK THIN HOLDER PLIER	M100 6211	1
MAIA OFFSET TRIAL NECK M	M100 5613	1
MAIA OFFSET TRIAL NECK L	M100 5614	1
MAIA OFFSET TRIAL NECK XL	M100 5615	1
HANDLE M6	M100 6002	1
MAIA NECK IMPACTOR	M100 6210	1
MAIA NECK EXTRACTOR	M100 6203	1



MAÏA™ dual mobility tray

DESIGNATION	REF	QUANTITY
MAIA METACARPAL CUTTING GUIDE	M100 6000	1
MAIA RASP T7S	M100 5117	1
MAIA RASP T8S	M100 5118	1
MAIA RASP T9S	M100 5119	1
MAIA RASP T10	M100 5110	1
MAIA TRIAL STEM T7S	M100 5017	1
MAIA TRIAL STEM T8S	M100 5018	1
MAIA TRIAL STEM T9S	M100 5019	1
MAIA TRIAL STEM T10	M100 5010	1
MAIA VIPERED RETRACTOR	M100 7100	1
MAIA TRAPEZAL CENTERING GUIDE	M100 7000	1
SCALED DRILL Ø1.9 AO	OVAMG119	1
KIRSCHNER 1TROCAR Ø1.5 L150	BS015T/150	1
CANNULATED CONICAL REAMER	M100 6807	1
MAIA SPHERICAL REAMER Ø9	M100 6109	1
MAIA SPHERICAL REAMER Ø10	M100 6110	1
MAIA TRIAL CUP Ø9	M100 6009	1
MAIA TRIAL CUP Ø8/Ø10	M100 6810	1
MAIA Ø9 DM OFFSET HOLDER	M100 8319	1
DUAL MOBILITY CUP IMPACTOR	M100 8011	1
MAIA STEM IMPACTOR-EXTRACTOR	M100 6200	1
MAIA NECK THIN HOLDER PLIER	M100 6211	1
DUAL MOBILITY TRIAL NECK M	M100 5690	1
DUAL MOBILITY TRIAL NECK L	M100 5691	1
DUAL MOBILITY TRIAL NECK XL	M100 5692	1
HANDLE M6	M100 6002	1
DUAL MOBILITY NECK IMPACTOR	M100 8210	1
MAIA HOLDER RING	M100 8109	1
HEXA. SCREWDRIVER 1,5	OVATR215	1

* Instrumentation on special request

DESIGNATION	REF	QUANTITY
MAIA TRIAL STEM S7	M100 5007	1
MAIA TRIAL STEM S8	M100 5008	1
MAIA TRIAL STEM S9	M100 5009	1
SMALL COUNTERWEIGHT EXTRACTOR	M100 5100	1
MAIA RASP S7	M100 5107	1
MAIA RASP S8	M100 5108	1
MAIA RASP S9	M100 5109	1
MAIA STRAIGHT TRIAL NECK M	M100 5603	1
MAIA STRAIGHT TRIAL NECK L	M100 5604	1
MAIA STRAIGHT TRIAL NECK XL	M100 5605	1
DUAL MOBILITY TRIAL NECK Ø8M	M100 5680	1
DUAL MOBILITY TRIAL NECK Ø8L	M100 5681	1
DUAL MOBILITY TRIAL NECK Ø8XL	M100 5682	1
MAIA SPHERICAL REAMER Ø8	M100 6108	1
MAIA NECK HOLDER PLIERS	M100 6201	1
MAIA NECK IMPACTOR	M100 6202	1
CUP MAIA CENTERING GAUGE	M100 6205	1
MAIA CONICAL REAMER	M100 6300	1
POWERED SPHERICAL REAMER D8	M100 6408	1
POWERED SPHERICAL REAMER D9	M100 6409	1
POWERED SPHERICAL REAMER D10	M100 6410	1
POWERED CONICAL REAMER D7	M100 6507	1
MAIA CANNULATED REAMER Ø8	M100 6608	1
MAIA CANNULATED REAMER Ø9	M100 6609	1
MAIA CANNULATED REAMER Ø10	M100 6610	1
POWERED CANNULATED REAMER Ø4	M100 6704	1
POWERED CANNULATED REAMER Ø6	M100 6706	1
POWERED CANNULATED REAMER Ø8	M100 6708	1
DUAL MOBILITY HOLDER Ø8	M100 8008	1
DUAL MOBILITY HOLDER	M100 8019	1
MAIA HOLDER RING Ø8	M100 8108	1
MAIA Ø8 DM RIGHT HOLDER	M100 8308	1
MAIA Ø9 DM RIGHT HOLDER	M100 8309	1
MAIA Ø8 DM OFFSET HOLDER	M100 8318	1
SCALED DRILL VISIOFIX 02	OVAMG020	1

SCIENTIFIC REFERENCES*

Can surgical guidelines minimize complication after MAÏA™ trapeziometacarpal joint arthroplasty with unconstrained cups?
P. Caekebeke, J. Duerinckx
J Hand Surgery (Eur) 2018, 43(4)

50 MAÏA™ prostheses.
Survival rate: 96 at a mean of 65 months.
The study shows that correct positiong of the prosthesis leads to reliable mid-term results for CMC joint arthoplasty.

MAÏA™ Trapeziometacarpal Joint Arthroplasty: Clinical and Radiological Outcomes of 80 Patients With More than 6 Years of Follow-Up
Adriano Toffoli, MD, Jacques Teissier, MD
J Hand Surg Am. r Vol. 42, October 2017

Survival rate of the MAÏA™ prosthesis: 93% over 6 years.
TMC total joint arthroplasty with the MAÏA™ prosthesis can be a reliable option in the treatment of rhizarthrosis, with good results for pain relief, strength, mobility and correction of most thumb Z-deformity by restoring the length of the thumb column.

Résultats cliniques et radiologiques chez des patients de moins de 65 ans porteurs de prothèses totales trapézo-métacarpiennes type MAÏA™
P. Bordure, E. de Keating Hart
Hand Surgery and Rehabiltation, 2017 Dec ; 36(6)

Cohort of 28 patients, average age of 57,8 years old, 64% professionnaly active, 83% with regular manual activity.
Return to work for 85% of patients. 92% of patients very satisfied.
The clinical and radiological results of the MAÏA™ prosthesis in professionally active patients are very good and may encourage the implantation of this prosthesis in young active people.

Complications and failures of the trapeziometacarpal MAÏA™ prosthesis: A series of 156 cases.
M. Bricout, J. Rezzouk
Hand Surgery & Rehabilitation, 2016

Survival rate of the MAÏA™ prosthesis: 90.8% at 62 months.
The failure rate of the series is mostly due to a defect in the surgical technique rather than to a inherent defect in the prosthesis.

Analyse de la douleur postopératoire et des résultats fonctionnels précoces dans le traitement de la rhizarthrose. Etude prospective comparative de 74 patientes trapézectomie-interposition vs prothèse MAÏA™
T. Jager, S. Barbary, F. Dap, G. Dautel
Chirurgie de la Main, 2013 Apr ; 32(2)

Post-operative follow-up at 6 months.
The results of the prosthesis group are superior to the trapeziectomy group for the pain relief obtained, mobility, strength, satisfaction and functional scores.

* Non-exhaustive list.

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