

# ANTEA

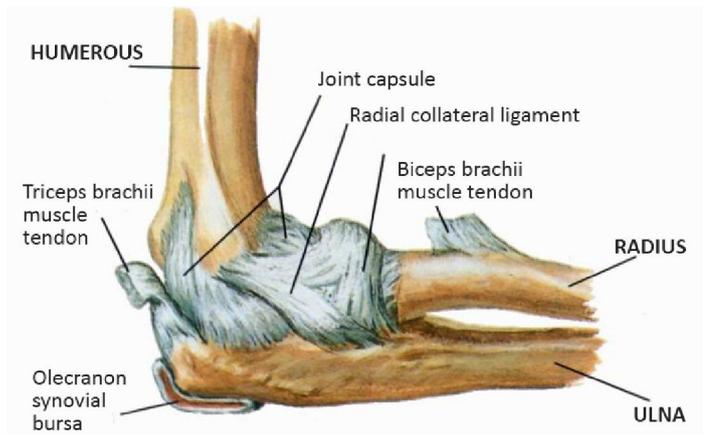
RADIAL HEAD PROSTHESIS

SURGICAL TECHNIQUE



 **A-EXTREMITY**

## Elbow anatomy

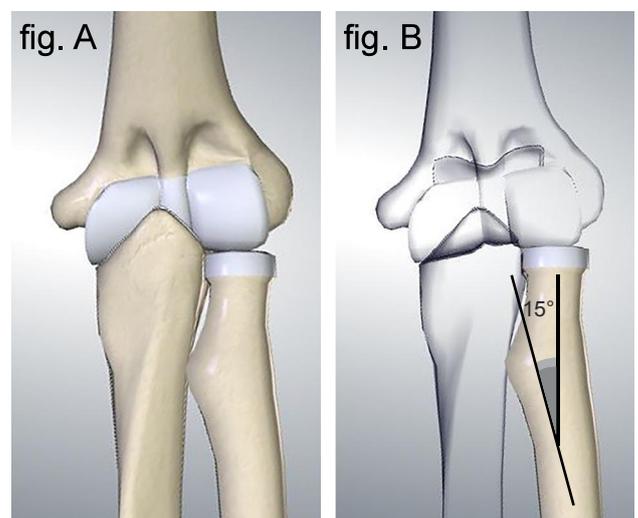


The elbow is the summation of three articulations: the humero-radial, the humero-ulnar and radioulnar joints, but it has only one articular cavity, one synovial membrane and one ligamentous system

The radial head is jointed with the humeral condyle and with the radial notch (major notch) of the ulna (fig. A)

It is positioned at an angle of 15° in relation to the radius shaft (diaphysis) moving away from the tuberosity. (fig. B)

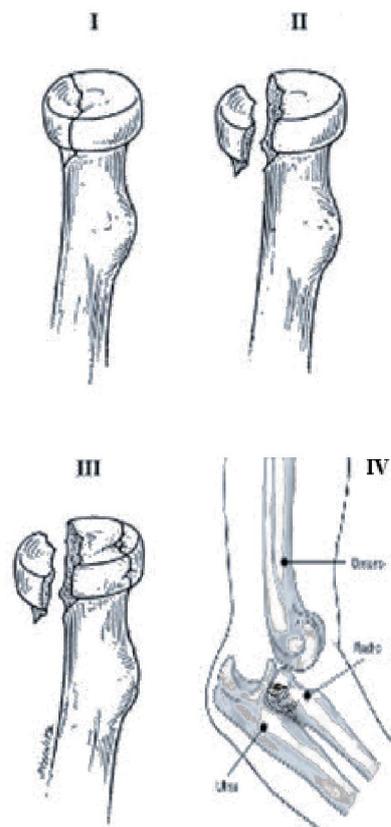
The loss of the medial collateral ligament and/or the radial head leads to primary or secondary instability of the elbow. Replacement of the radial head helps to recover articular stability.



### Radial head fracture classification

The most common classification used is the Mason-Johnston definition that distinguishes four different types of fracture:

- **Type I:** *Non displaced*
- **Type II:** *Fracture with displacement of over 2 mm*
- **Type III:** *Comminuted fracture*
- **Type IV:** *Fracture with dislocation of the radial head*
- 



### Radial Head Prosthetization: Indications

- Irreducible or multifragmentary fracture
- Arthrosis
- Mason type fracture III or IV.
- Elbow dislocation fracture
- Degenerative arthropathy
- Post-traumatic osteonecrosis

# Surgical technique

## 1. Patient position

The operation can be performed in peripheral general anaesthesia, with the patient in supine position and the arm placed on the thorax or on an operating arm rest. The use of a surgical tourniquet is optional. Preparation for surgery according to conventional methods.

## 2. Surgical incision

Perform the incision from the lateral side of the distal third of the humeral shaft and extend down to the epicondyle eminence, then the lateral epicondyle, to the radial head, and continue along the posterior-lateral side of the forearm between the anconaeus, and the extensor carpi ulnaris. (A)

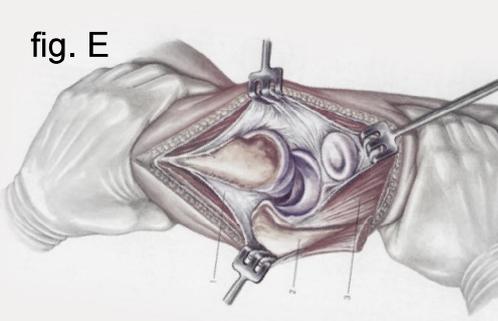
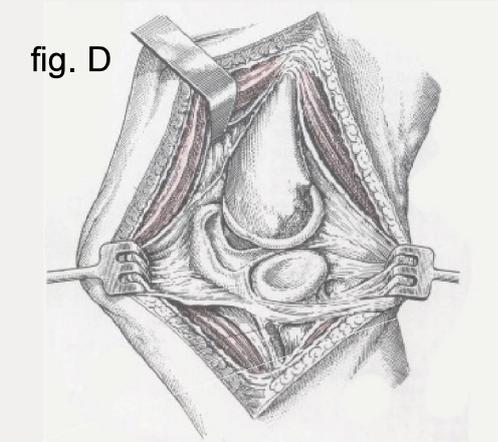
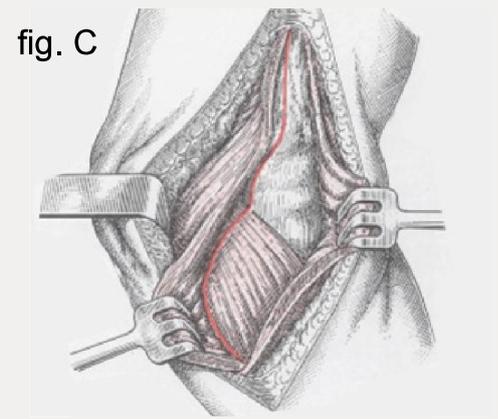
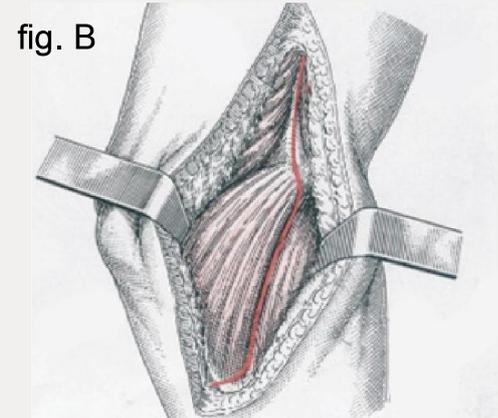
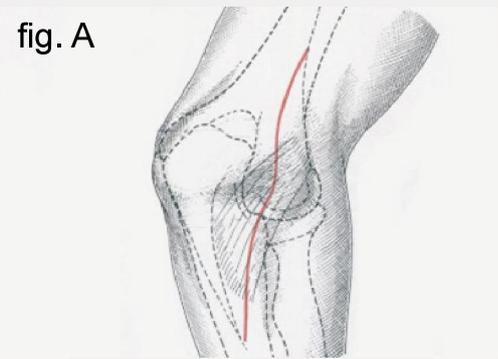
## 3. Exposure

After sectioning the aponeurosis along the line of skin incision, at proximal level, the space between the triceps and the brachioradialis can be identified, permitting the exposure of the lateral margin of the humerus and the lateral epicondyle eminence. It continues with distal dissection between the anconaeus, and the extensor carpi ulnaris. (B)

Using the sub periosteal method, detach the origin of the common extensor and the external collateral ligament, performing an incision on the lateral epicondyle eminence. Mobilize the biceps tendon and then, using the sub periosteal method, free the arconaeus from the proximal part of the ulna, beginning from the anterior side in order to free its humeral insertion. Make an incision in the side of the capsule and expose the annular ligament then incise it to expose the radial neck and epiphysis. To detach the supinator from the proximal part of the ulna, incise the posterior fibres, maintaining the forearm in prone position, always keeping in mind the position of the posterior interosseous nerve (C)

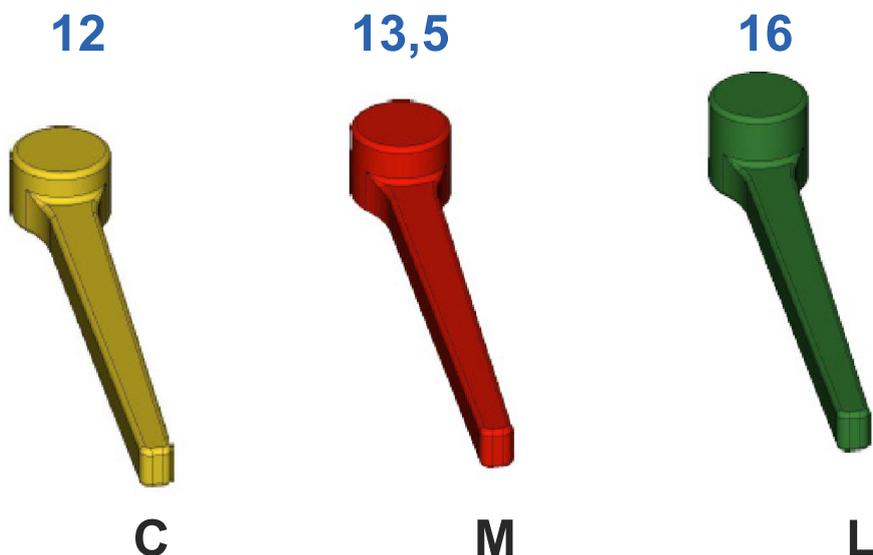
To expose the head and the anterior part of the articulation, open and free the articular capsule from the anterior side of the humerus to a wide extent (D)

Perform medial detachment and retraction of the triceps tendon insertion, in continuity with the anconaeus; in order to expose the articular surface of the ulna, radial head, and distal part of the humerus correctly, force the forearm in varus position in order to bring the proximal part of the ulna into the surgical site. It is strongly advised to pay extreme attention to avoid any possible excessive pressure on the ulnar nerve; therefore, it is important to prevent any varus manoeuver or traction, keeping in mind the extensive dissection performed on the soft tissues. (E)



#### 4A. Radial head regulating spacer

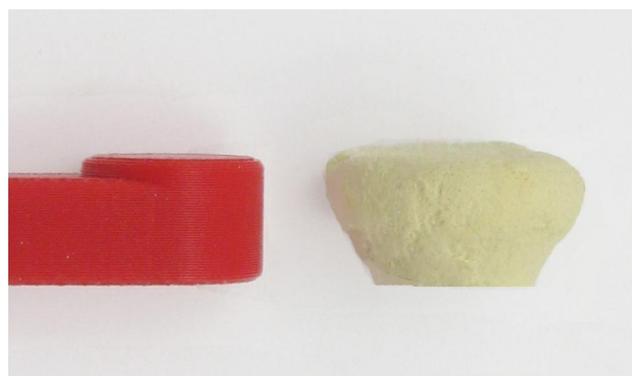
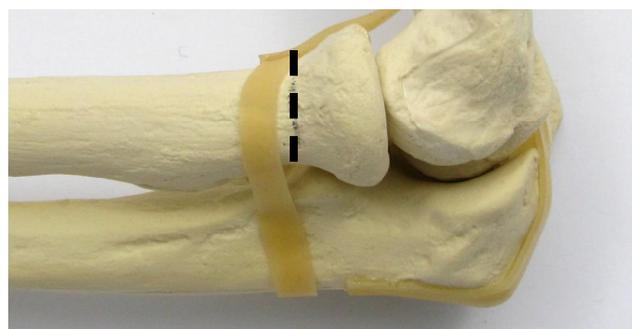
In the case of trauma with total epiphyseal detachment, regulation must be performed below the last fracture line, controlling the integrity of the cortical surface. The spacer is used to determine the measurement and to identify the offset (12mm – 13,5mm – 16mm). In the case of overstuffing (when the filling protrudes from the perimeter causing excessive compression of the epicondyle cartilage), proceed with osteotomy adjustment. Then insert the spacer to determine correct filling and humeral-radial stability.



#### 4B. Radial head resection

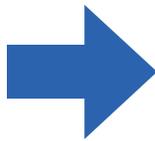
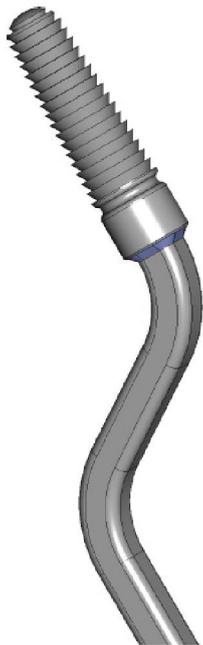
The surgical saw blade must sit on the distal surface of the resection flange. During resection, the forearm is placed in prone supine position while the resection flange is used to maintain the saw blade perpendicular to the rotation axis.

If the intramedullary canal is not obviously visible after resection trephination, a mini canal seeker can be used.

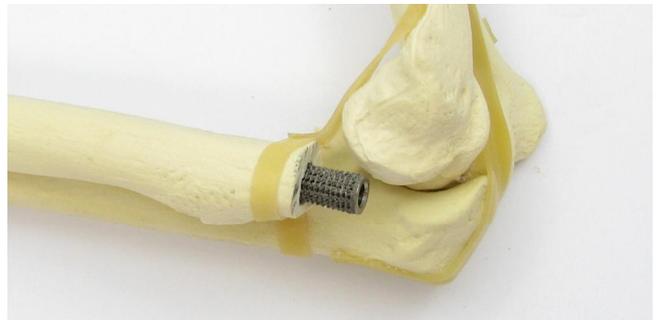
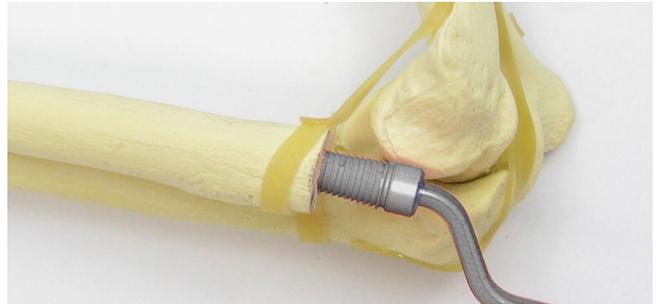
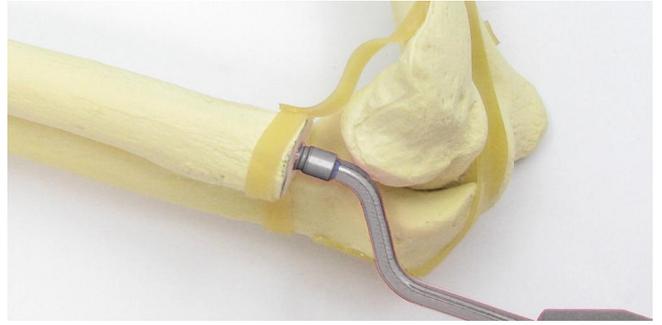


## 5. Canal preparation

After identifying the canal using a mini canal seeker, use increasingly larger anatomical rasps according to the proximal radial caliber until the correct cortical contact has been achieved. (6 rasps are available with 1-millimeter diameter increases from 7mm to 12mm).

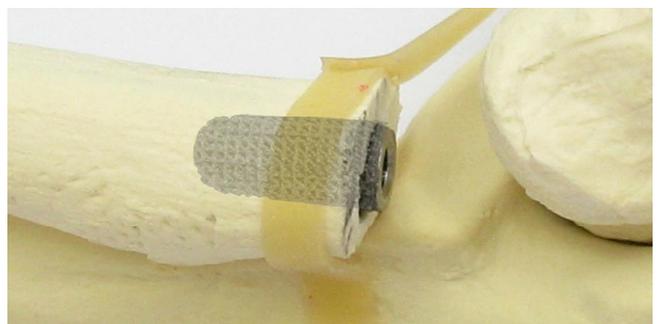
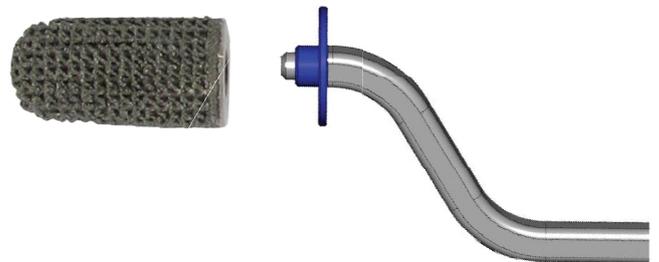


Rasp	ØA [mm]
1	7
2	8
3	9
4	10
5	11
6	12
7	13



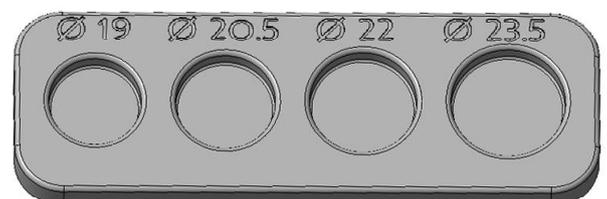
## 6. Final stem insertion

After inserting the rasps in increasing order and once the correct grip and adequate depth in the canal have been achieved, the final stem can be inserted. The ideal position provides for manual insertion until the prosthesis protrudes by 1-2mm. This is followed by final insertion using the impactor until the stem is flush with the osteotomy surface.



## 7A. Head diameter definition

If the head is still in correct condition, proceed with calibration using the measuring gauge.



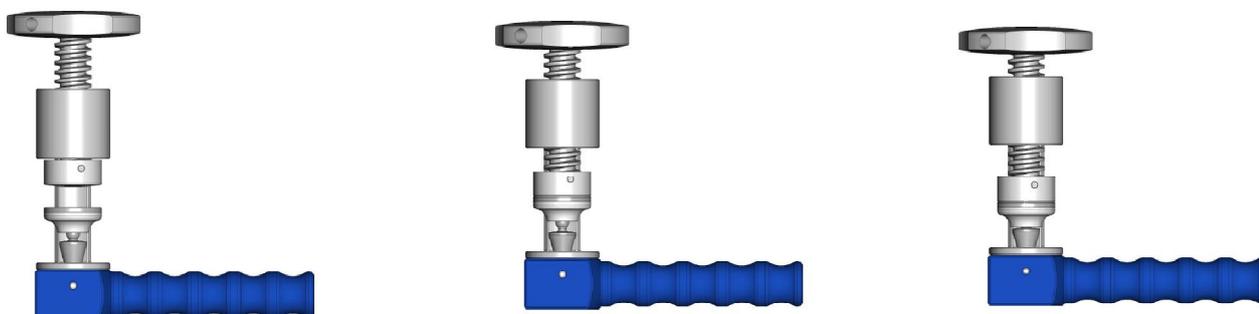
## 7B. Trial procedure

Once the final stem has been inserted, proceed by identifying which collar is to be applied to the head. Using the same spacer applied during the first stage, select a trial implant (collar + head) and insert into the stem seat. Since reduction has already been performed, the profile of the trial head should be in alignment with the proximal surface of the ulna. Proceed with flexion and extension movement and pronation-supination position tests to determine whether any eventual correction may be necessary.

		OFFSET		
		1	2,5	3
DIAMETER	19			
	20,5			
	22			
	23,5			

## 8.8. Final Head + Collar assembly

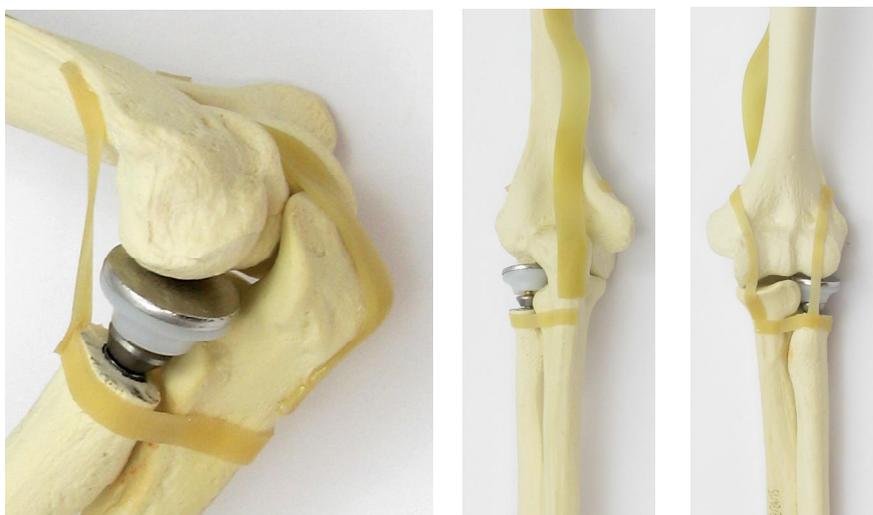
Once the final components have been determined, proceed with assembly using the appropriate instrument. The final head is positioned on the clamp that will grip the head rigidly once it is screwed tightly. Position the collar in the appropriate seat, then close the clamp to achieve the final gripping action.



## 9. Final component insertion

Lastly, the assembled Head + Collar are inserted on the final stem.

Position the offset Morse taper in the hollow of the stem and insert using the anatomic impactor.



CODE	ENG
3300002	ANTEA RADIAL HEAD DIAM 19
3300003	ANTEA RADIAL HEAD DIAM 20,5
3300004	ANTEA RADIAL HEAD DIAM 22
3300005	ANTEA RADIAL HEAD DIAM 23,5



3200101	ANTEA BIPOLAR COLLAR TiN COATED OFFSET 1mm
3200102	ANTEA BIPOLAR COLLAR TiN COATED OFFSET 2,5mm
3200103	ANTEA BIPOLAR COLLAR TiN COATED OFFSET 5mm



3100000	ANTEA RADIAL STEM SIZE 0
3100001	ANTEA RADIAL STEM SIZE 1 SHORT
3100002	ANTEA RADIAL STEM SIZE 2 SHORT
3100003	ANTEA RADIAL STEM SIZE 3 SHORT
3100004	ANTEA RADIAL STEM SIZE 4 SHORT
3100005	ANTEA RADIAL STEM SIZE 5 SHORT
3100006	ANTEA RADIAL STEM SIZE 6 SHORT
3100007	ANTEA RADIAL STEM SIZE 7 SHORT



#### RADIAL STEM AND BIPOLAR COLLAR

Material:	Ti6Al4V (ISO 5832/3) + TiNbN
Sterilization:	Gamma rays - Isotope Co60 - Dose 25KGy
Packaging:	Triple no air pack - PP external box

#### RADIAL HEAD

Material:	UHMWPE (ISO 5834/1-2) and Co-Cr-Mo (ISO 5832/4)
Sterilization:	Etylene oxyde
Packaging:	Tyvek - Pet Bag PP external box

Manufactured by  
ADLER<sup>®</sup>  
ORTHO

ADLER ORTHO srl  
Nucleo Produttivo -  
Uffici Direzionali  
Via dell'Innovazione 9  
20032 Cormano (Mi)  
Tel +39 02 6154371  
Fax +39 02 615437222



08-2016

T0021 - E