

Avenir Complete™ Hip System

Surgical Technique



Table of Contents

Pre-operative Planning	4
Digital Pre-operative Planning	4
Patient Positioning/Surgical Exposure	5
Femoral Neck Resection	5
Femoral Canal Opening	6
Femoral Canal Preparation	7
Calcar Preparation	7
Trial Reduction	8
Femoral Implant Insertion	9
Head Impaction	10
Intraoperative Stem Repositioning or Removal	11

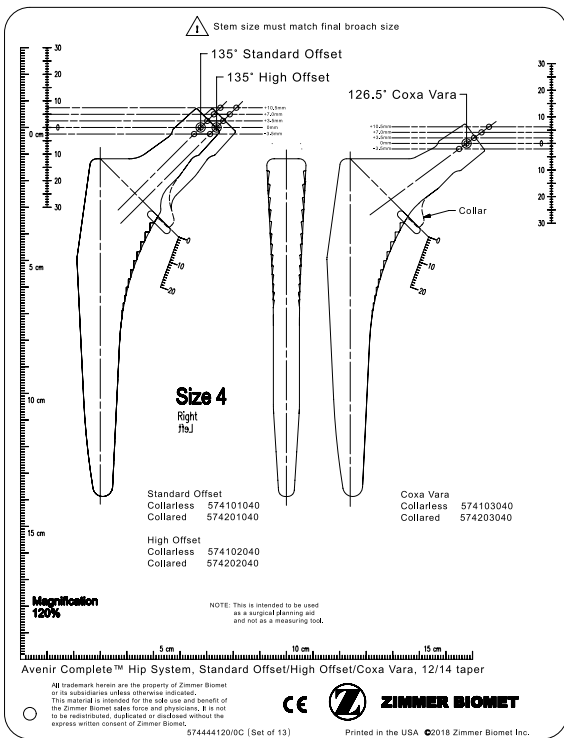


Figure 1



Figure 2

Pre-operative Planning

The objectives of pre-operative planning are to define:

- Pre-operative leg length
- Acetabular component size and position
- Femoral component size
- Femoral offset and center of rotation

The Avenir Complete Hip System provides X-ray templates with 100%, 110%, 115%, and 120% magnification (Figure 1).

It is recommended to use a radiographic marker to assess the X-ray magnification and select the appropriate template.

It is also recommended that templates are positioned over the AP X-rays to best decide the correct implant size and center of rotation.

Digital Pre-operative Planning

Avenir Complete Femoral System digital templates are available through various digital template providers. When using digital templating for a primary Total or Hemi Hip Replacement, it is necessary to use a magnification marker with a known dimension. This is required to calculate the correct magnification. As soon as the correct magnification has been determined, the system can be used with aiming at best deciding the correct implant size and center of rotation (Figure 2).

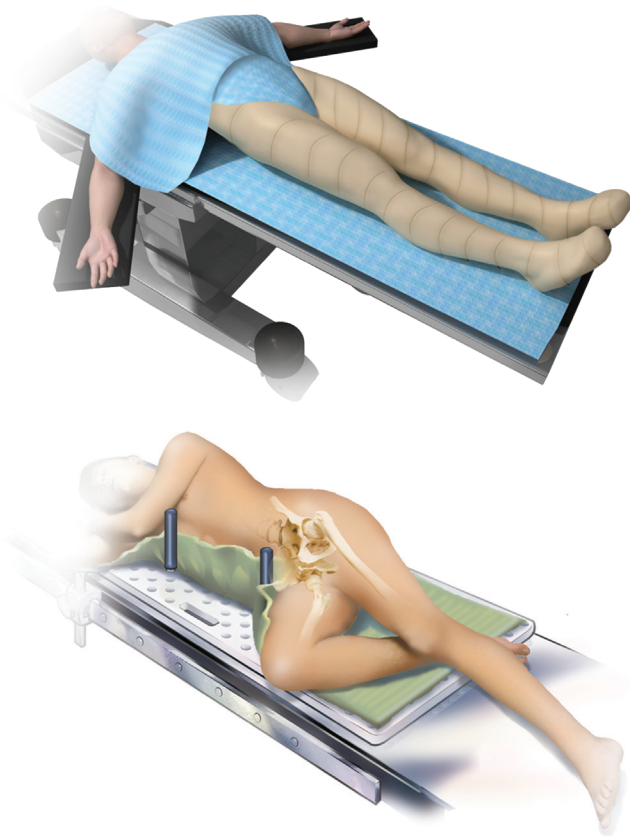


Figure 3

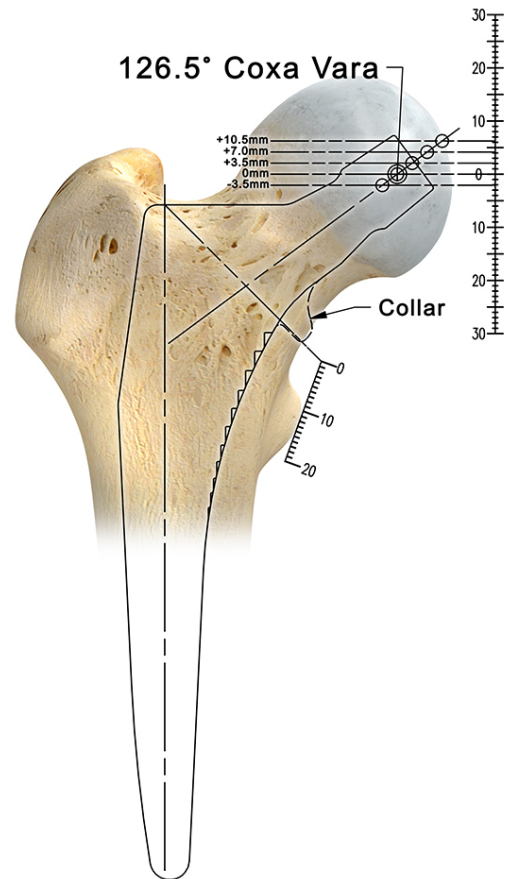


Figure 4

Patient Positioning/ Surgical Exposure

The Avenir Complete femoral component can be implanted using any of the standard approaches for total or hemi hip replacement (Figure 3).

Femoral Neck Resection

Once the femoral head is dislocated, cut the femoral neck according to the pre-operative plan (Figure 4).

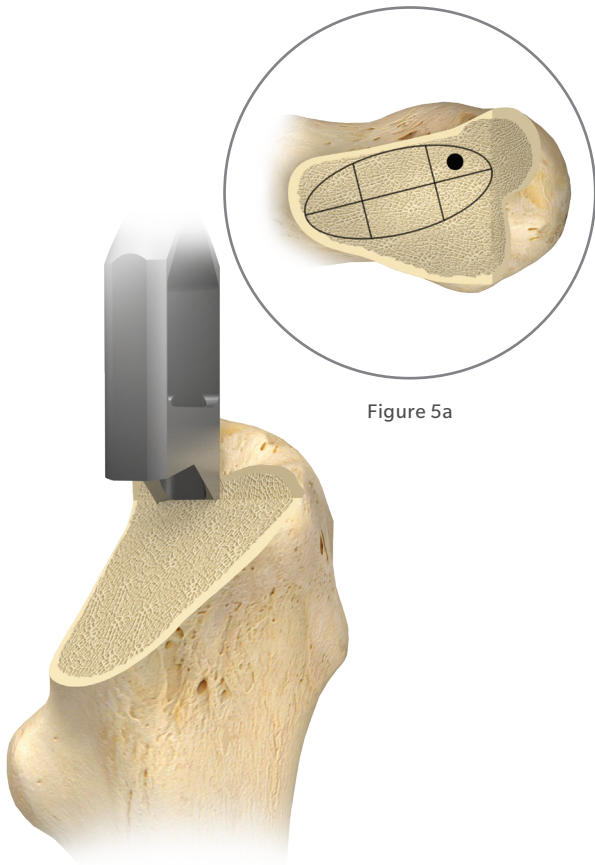


Figure 5a

Figure 5

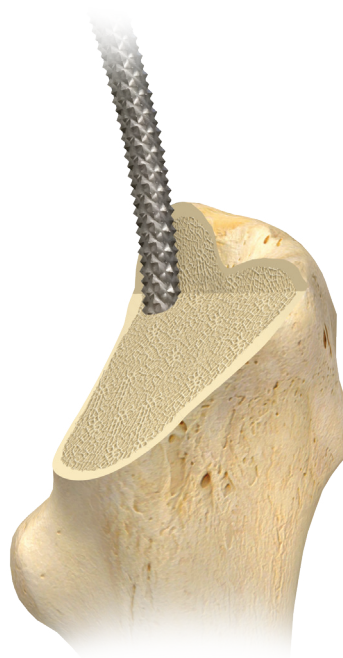


Figure 6



Figure 7

Femoral Canal Opening

Identify the entry point (Figure 5a) of the femur and carefully prepare the lateral neck with the boxed osteotome (Figure 5).

Note: Make sure to lateralize the femoral canal preparation.

For anterior approaches the curved canal finder is available (Figure 6).

For lateral and posterior approaches open the medullary cavity using the straight canal finder. Position the awl in the axis of the femoral shaft in order to avoid varus positioning (Figure 7).



Figure 8

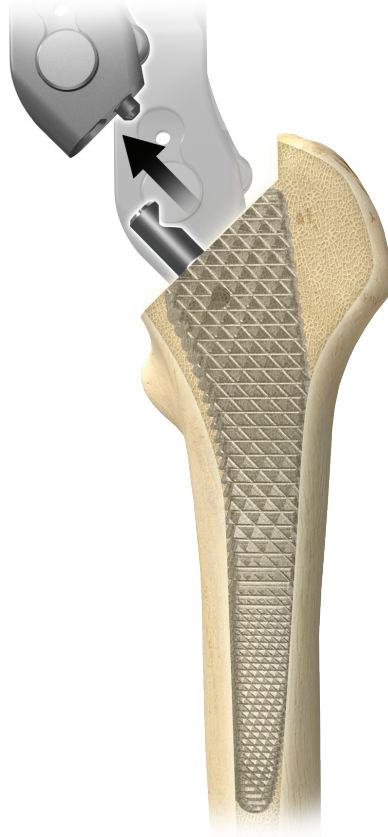


Figure 9



Figure 10

Femoral Canal Preparation

If good bone stock is present, use the Avenir Complete starter rasp to prepare the femur.

Then, start femoral preparation with the smallest rasp giving special attention to the native anteversion (Figure 8). Rasp in sequential fashion and once complete stability is achieved with the final rasp, disengage the handle from the rasp (Figure 9).

Note: Zimmer Biomet offers different rasp handle designs for different surgical approaches.

Calcar Preparation

A calcar planer is available for use with the collared implant. Once the final rasp is fully seated, place the calcar planer over the rasp post and level the calcar until reaching the rasp face (Figure 10).

Note: Planing must be done with the planer in line with the rasp post and without torquing the rasp.

Note: Put calcar planer in motion before applying cutting force to the calcar.

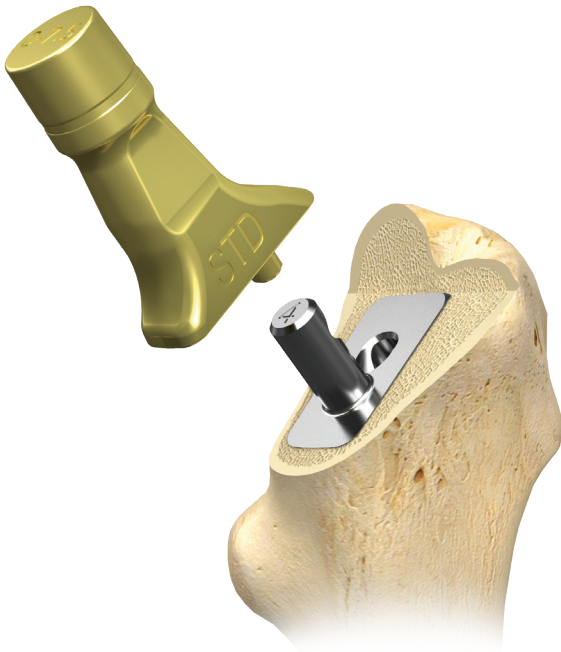


Figure 11



Figure 12

Trial Reduction

With the final rasp in place, select the appropriate provisional neck (Standard Offset, High Offset or Coxa Vara) and connect it onto the rasp (Figure 11).

Color Coding – Stem Variant

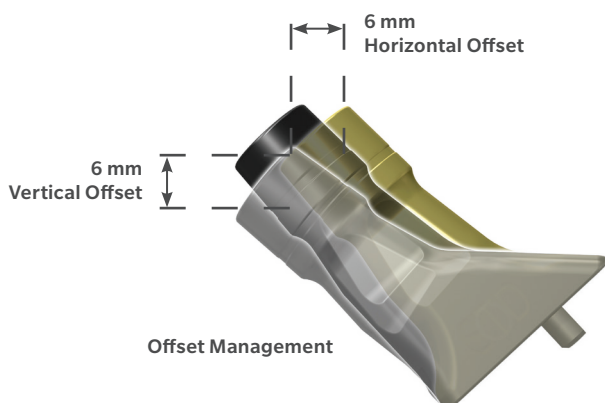
Gold	Standard Offset (STD)
Black	High Offset (HO)
Silver	Coxa Vara

Once the provisional neck is in place, select the correct provisional head size and position it onto the provisional neck (Figure 12). Perform the trial reduction and if necessary repeat the procedure with different head offsets.

Offset Shift (Offset Management Inset)

Note: There is a 3.5 mm shift in neck lengths between core sizes (0 to 7.5) and macro sizes (8 to 9).

- Horizontal offset: 6 mm shift between STD and HO or Coxa Vara.
- Vertical offset: 6 mm shift between STD or HO and Coxa Vara.



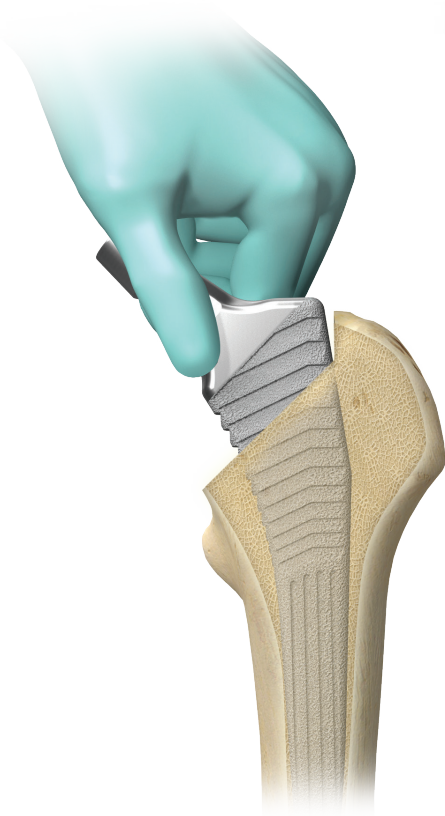


Figure 13a

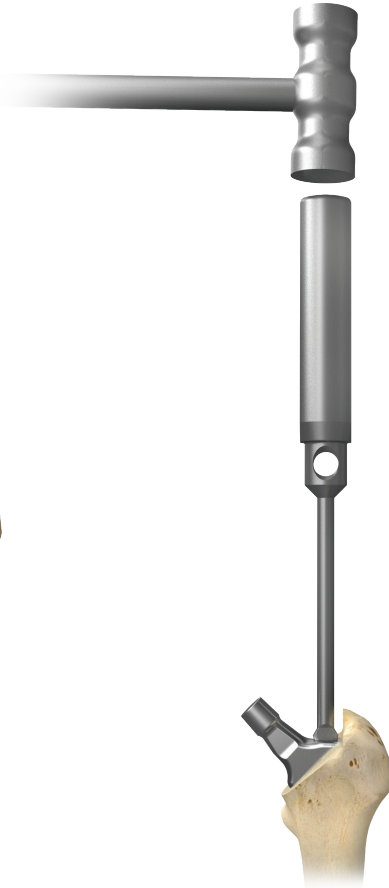


Figure 13b

Femoral Implant Insertion

The definitive implant must correspond to the last rasp used. Start inserting the femoral component into the femoral canal by hand and finish with the stem impactor (Figure 13a and 13b).

Make sure to drive the final implant into the femur following the path of the prepared canal, using the impactor until the stem is fully seated.

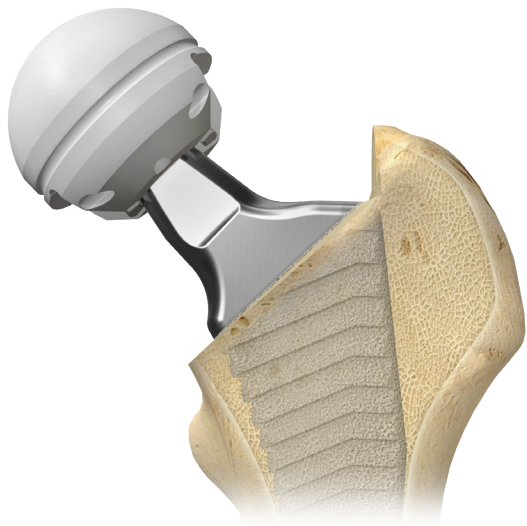


Figure 14



Figure 15

Head Impaction

If desired, a further trial reduction can be completed after implantation of the definitive femoral stem (Figure 14).

Before impacting the final femoral head, carefully clean and dry the taper of the stem.

Fully seat the modular head by means of firm axial impaction utilizing the femoral head impactor and mallet (Figure 15).

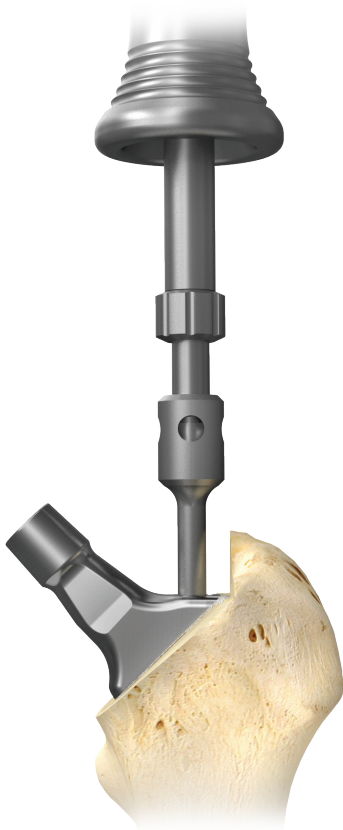


Figure 16

Intraoperative Stem Repositioning or Removal

Should an Avenir Complete stem require removal, only the specific extraction instrument should be used.

Assemble the extractor adapter with the extractor and thread it to the final implant. Pull the stem out in line with the femoral shaft, by using the slide hammer (Figure 16).

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Authorized Representative

Zimmer GmbH
Sulzerallee 8
8404 Winterthur
Switzerland

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Legal Manufacturer

Zimmer, Inc.
1800 W. Center Street
Warsaw Indiana 46580
USA
Telephone +1 (574) 267-6131

www.zimmerbiomet.com



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