

# BQS Hip Stem System

## Surgical Technique



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# “Movement is Life”

## Preoperative Planning

The primary objectives of preoperative planning are to:

- Determine preoperative leg length discrepancy.
- Assess acetabular component size and placement.
- Determine femoral component size, position and fit.
- Assess the necessary femoral offset.

In addition, preoperative planning will assist in the identification of bone abnormalities and potential problems before surgery that might require special instrumentation.

For the A/P X-ray of the pelvis, the femurs should be internally rotated 15° to show an accurate view of the femoral neck length, metaphysis and diaphysis. A direct lateral X-ray may also be beneficial in determining implant sizing.

### Femur templating

To estimate the leg length discrepancy on the X-ray a line should be drawn through the bottom of the ischium (Fig. 1).



The distance should then be measured from the lesser trochanter to the drawn reference line. The measured difference between each measured side is the radiographic leg length discrepancy. As an alternate reference point, the tip of the greater trochanter to the drawn reference line may be measured. The tapered geometry of the BQS Stem should fill the canal from the medial to the lateral cortical wall.

Draw the neck resection line at the point where the selected stem provides the desired amount of leg length. The proximal tip of the prosthesis and the tip of the greater trochanter are suitable reference points for determining the height of the final implant.

### Femoral Preparation

#### Osteotomy of the Femoral Neck

The osteotomy of the femoral neck is 1-2 cm above the lesser trochanter at an angle of 40-45° to the neutral axis of the femur or parallel to the intertrochanteric line.

This may vary due to differences in the proximal femoral anatomy and should be based on preoperative planning (Fig. 2).



The femoral head is then removed (Fig. 3). The leg is then externally rotated to neutral in full extension to provide the best exposure for preparation of the acetabulum.



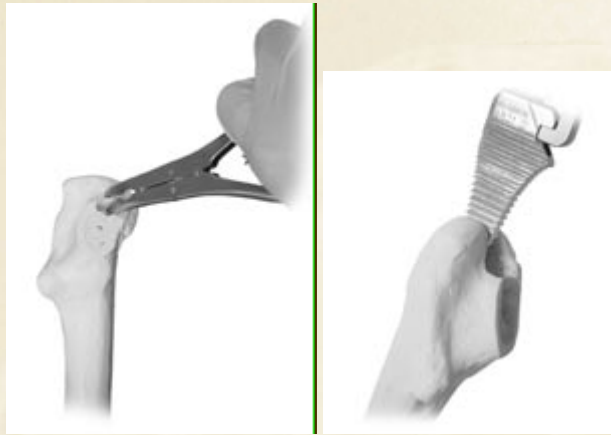
### **Preparation of the Femoral Canal**

After the acetabular component has been placed, the leg is then repositioned for optimal access to the femoral canal. With the knee bent at 90°, the leg is internally rotated. The cut surface of the femoral neck is now easily accessible for femoral preparation, for a posterior approach.

With the antero-lateral approach, the leg is adducted and externally rotated to allow for access to the cut surface of the femoral neck. A rectangular box chisel is used to cut a slot in the proximal neck and trochanteric region. The chisel should be as lateral as possible against the transition to the greater trochanter to create a slot to accommodate the prosthesis in a neutral position (Fig. 4).



The slot may be extended laterally by notching the cortex of the trochanter using a rongeur or small rasp (Fig. 5).



Next, the canal should be further opened. Care should be taken to ensure that a neutral opening to the canal is established and varus positioning is avoided (Fig. 6).



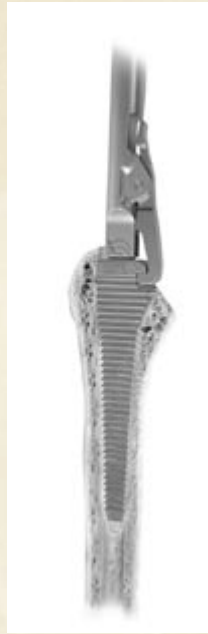
Prepare the femoral canal by first using the smallest rasp size and progress to the next larger size.

The proximal tip of the BQS Stem will rest just below the tip of the greater trochanter when the implant is finally seated. The shaft of the hammer is aligned along the femoral axis, while the impactor handle may be used to reference the anteversion of the rasp and final hip implant (Fig. 7).





The insertion of the first rasp will determine the anteversion of the subsequent rasps and the final implant, so precise orientation is necessary for exact stem positioning (Fig. 8).



The lateral trochanter area should be periodically rasped to avoid varus implantation. Each rasp should be impacted to the level of the osteotomy and the angled proximal surface of the rasp. The first contact with the cortex usually occurs at the distal end of the rasp. Progress will become more difficult with each progressive impaction and the pitch of the impactor will change from low to high once cortical bone is engaged. The next larger size rasp is usually the final size as preoperatively templated. The final rasp should be seated to the resection line and there should be no visible movement of the broach when the slaphammer is rotated. The final implant size will directly correspond to the final rasp size.

### **Trial Reduction**

Trial reduction of the BQS Stem may be accomplished with the rasp. Trialing directly of the rasp is first accomplished by removing the rasp handle and leaving the rasp in the femoral canal. A trial rasp head is then inserted onto the rasp (Fig. 9).



Once the appropriate trial head is selected, the hip is reduced. Leg length is checked. This procedure is repeated as necessary using different length trial heads until optimal leg length is established. A trial reduction should not allow significant push-pull or “shuck” of the joint in full extension. Range of motion is checked to avoid bony impingement and instability.

## Stem Implantation

The stem is inserted and impacted using the impactor in contact with the proximal tip of the prosthesis (Fig. 10).



A trial head may be applied at this time for a final trial head reduction. Once the final range of motion and shuck tests are complete, the taper is carefully cleaned. The selected cobalt chrome or ceramic 12/14 taper femoral head is mounted with a light rotational movement, and rotated further with axial force until it is firmly seated. The head is seated with several taps with the head impactor instrument (Fig. 11).



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