

# 21st Century Fracture Management



# ETS

Surgical Protocol

# ETS Operative Technique

## Step 1

Confirm that a cemented hemiarthroplasty is indicated.

An X-ray template of the ETS is provided. This should be used as a guide with the pre-operative X-ray, comparing both affected and contra lateral hips. Particular care should be made regarding the likely stem insertion depth in relation to the tip of the greater trochanter. (Figure 1).

Pre-op templating is strongly recommended to assess the correct level of insertion. The easiest and most reliable way to do this is to template against the opposite, unfractured hip on the AP pelvis X-ray. After placing the template over the upper femur, note the position of the shoulder of the prosthesis relative to the tip of the greater trochanter. On average this is about 12mm below the tip of the trochanter, but will be less in valgus hips, and more in varus.



**Figure 1** X-ray with overlying template.

The ETS is a relatively slim stem with a 40mm offset, suitable for the majority of cases. However, a small number of patients may have size or offset that is significantly different. If pre-op templating suggests that this is the case, any of the stems in the Exeter™ range (from 30mm to 50mm offset and from 0 to 5 stem size) can be combined with a UHR bipolar head to create a modular hemiarthroplasty. The similarities between the ETS and the Exeter™ stem make this a straight forward process for even the less experienced surgeon and theatre team. This is not an option with other commonly used hemiarthroplasties, such as the Thompsons or Austin-Moore.

## Step 2

The patient is positioned and prepared on the operating table in the usual manner. Expose the hip joint using your preferred surgical approach for hemiarthroplasty. (Figure 2).

**NOTE:** The authors recommend an anterolateral approach<sup>1</sup> in the majority of cases.



**Figure 2** Patient position.



**Figure 3** Cut neck at desired level.



**Figure 4** Measure head size.



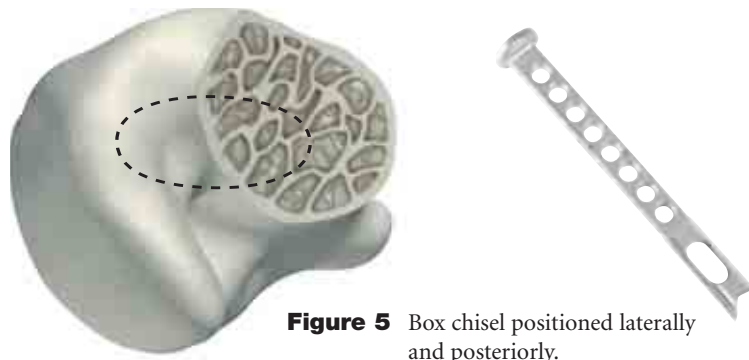
## Step 3

Following exposure of the hip, cut the femoral neck 1 to 1.5cm above the lesser trochanter. The exact level and orientation of neck cut is not critical as the ETS has no collar or other features which will affect the osteotomy line. (Figure 3).

Remove and measure the femoral head or alternatively use an appropriate instrument to estimate the size of the acetabulum. (Figure 4).

## Step 4

Ensuring that the gluteus medius tendon is retracted and protected, a box chisel is used to open the proximal femur. This should be positioned laterally and posteriorly to gain exposure in line with the femoral canal. (Figure 5).



**Figure 5** Box chisel positioned laterally and posteriorly.

## Step 5

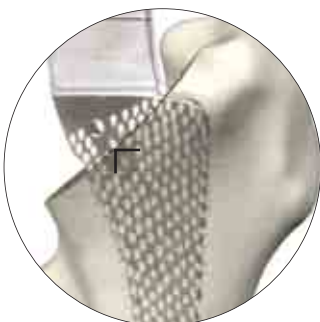
The taper pin reamer is used to open up the femoral canal. Ensure that it is directed in a neutral position down the axis of the femur. Aim at the centre of the patella if an anterior approach is being used or, alternatively the popliteal fossa if a posterior approach is used. (Figure 6).



**Figure 6** Taper pin reamer used to open femoral canal.

## Step 7

Using the rasp as a guide, mark the cut surface of the femoral neck at the desired stem insertion depth, using methylene blue or with diathermy forceps. Likewise the shoulder of the rasp can also be used as a reference. (Figure 8).



**Figure 8** Mark femoral neck.

## Step 6

Proximal femur preparation is made with a modular rasp.

The rasp should be inserted with the required amount of anteversion; typically this is between 0° and 20° depending on the preferred approach.

After rasping the femur, the Exeter™ V40 rasp handle is removed, leaving the rasp in the femur.

Option : if the rasp is unstable in the cavity, the trial locating pin may be used to help keep the rasp at the appropriate depth position

Select the appropriate trial head diameter and place the adaptor in it (figure 1a). Screw it together manually or with the ETS stem pusher (figure 1b-3b).

Place the trial head plus adaptor onto the rasp neck (figure 2a) and reduce the hip to allow assessment of leg length and stability.

When dislocating the hip, avoid applying undue rotational force to the femur. It is recommended to use a bone hook placed around the rasp neck to aid dislocation. If necessary, the trunnion of the rasp can be removed from the trial head adaptor (figure 3a) and the hip dislocated leaving the trial head in the acetabulum. The trial head is then removed separately. The stem pusher may be used to help this removal (figure 1b).



**Figure 1a**



**Figure 2a**



**Figure 3a**

To remove the adaptor from the trial head after the trial reduction:

- place the trial head and adaptor assembly onto the stem pusher (figure 1b).
- hold the stem pusher with one hand and unscrew the head with the other hand (figure 2b).



**Figure 1b**



**Figure 2b**



**Figure 3b**



**Figure 9** Stem with centraliser on.

### Step 8

Proceed with the preferred method of cementing technique. (Modern cementing techniques are recommended, including the use of a distal cement plug, thorough lavage and drying of the canal and retrograde filling with a cement gun).

Prior to insertion of the stem, the cement centraliser should be placed on the distal stem tip. (**Figure 9**).

Both a winged and wingless cement centraliser are included with the prosthesis. For a canal size of 10mm or less, the wingless centraliser should be used.



Stem Pusher.

### Step 9

The ETS is a slim component and is collarless. As a result there is greater freedom of position when it is being inserted. As the stem is collarless, stem position is not influenced by the neck cut, and it is a simple matter to adjust for leg length by either increasing or decreasing the distance of stem insertion. However, for just the same reasons, it is also possible if care is not taken to unduly lengthen or shorten the leg by over or under insertion of the stem.

Unlike a Thompsons or Austin-Moore, which is simply inserted until the collar hits the neck cut, with the ETS the surgeon needs to make a positive decision as to the correct distance of stem insertion.

The stem is inserted to the previously determined level in Step 7, using the stem insertion instrument. Place a thumb over the cement in the calcar, to maintain pressure during stem insertion.

The stem should be inserted with the chosen degree of anteversion as previously determined in Step 6.

As the ETS is slim distally, it is free to rotate in the proximal femur, and the surgeon must hold the stem in the required degree of anteversion until the cement sets. If the surgeon fails to do so, soft tissue impingement against the prosthetic head may push it into excessive anteversion, or the weight of the head can cause it to rotate into retroversion.

### Step 10

Reduce the hip, and after confirming stability and a concentric reduction, close the wound in a routine fashion.

### Revision

In the event of revision of the hemiarthroplasty to a total hip replacement, the ETS can be tapped back out of the cement mantle after clearing any cement or fibrous tissue from over the shoulder of the prosthesis.

After acetabular preparation a size 0 (44mm or 37.5mm offset) Exeter™ stem can easily be recemented into the original cement mantle.

# Modular Rasp Instrumentation

**Catalogue No.**

**Designation**

1150-2338  
to  
1150-2356

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Unipolar/bipolar trials.  
Diameter 38mm to diameter 56mm.



0590-3-211

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ETS Trial rasp adaptor



0590-3-210

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ETS Trial rasp



0570-9-000

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Trial location pin



0930-9-005

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Exeter™ V40 rasp handle



0590-3-230


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Stem pusher







# ETS Instruments & Implants

## Implants

Cat No.	Head Diameter mm
 0590 3 038	38
0590 3 040	40
0590 3 041	41
0590 3 042	42
0590 3 043	43
0590 3 044	44
0590 3 045	45
0590 3 046	46
0590 3 047	47
0590 3 048	48
0590 3 049	49
0590 3 050	50
0590 3 052	52
0590 3 054	54
0590 3 056	56

## Instruments

Cat No.	Description
 0590 3 240	Femoral Head Extractor
 0590 3 250	Skid
 0932 0 000	Exeter™ Taper Pin Reamer small
 0590 3 260	Instrument Tray



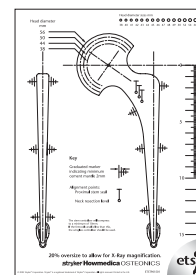
4842 3 012 Box Chisel 12mm



Head Gauges  
 0590 3 270 Small (38, 40, 41, 42, 43mm)  
 0590 3 280 Medium (44, 45, 46, 47, 48mm)  
 0590 3 290 Large (49, 50, 52, 54, 56mm)



0937 3 200 Stem Seal Backing Plate



ETSTP01E01 X-ray Template



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**References:**

1. Hardinge K. The direct lateral approach to the hip. J Bone Joint Surg, 1982, 64B:17-19

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