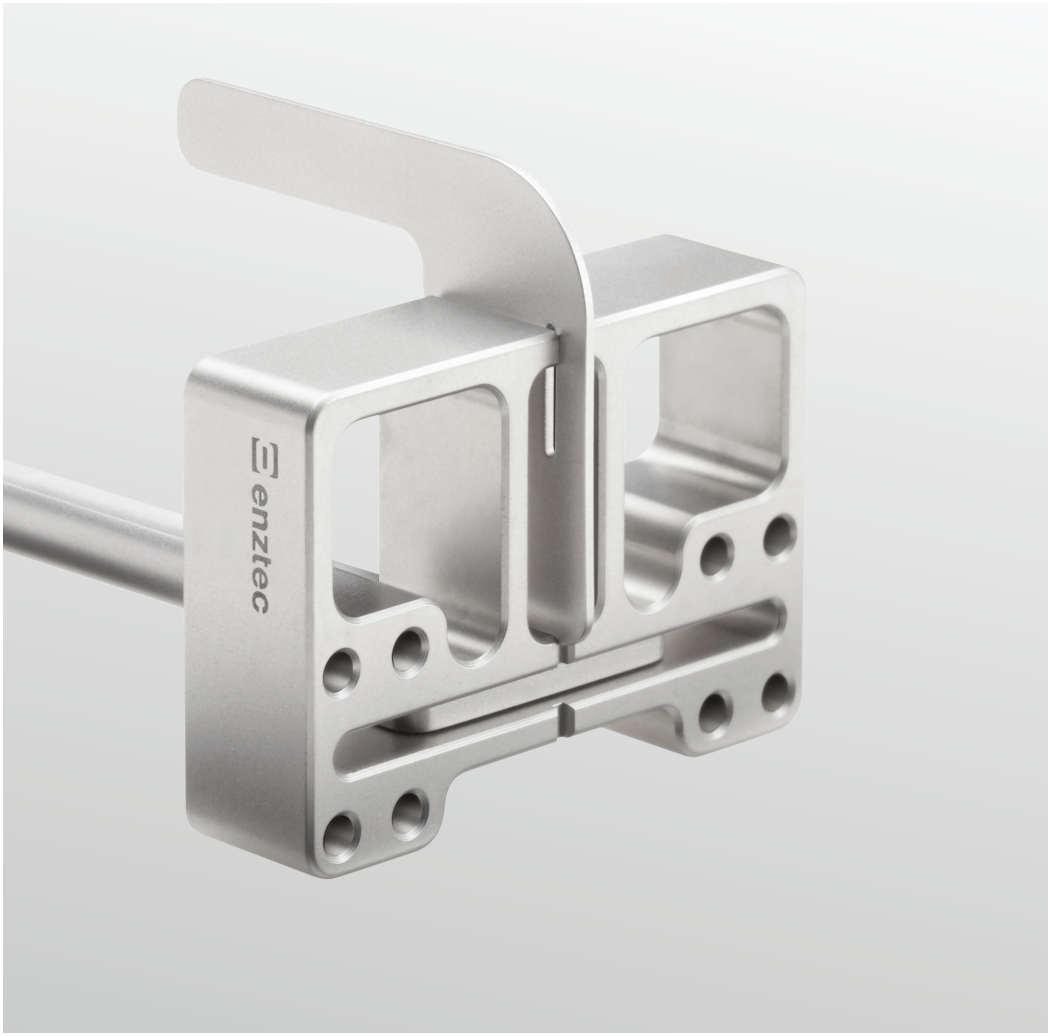

Sulcus Line Trochlear Alignment Guide (STAG) Surgical Protocol

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Contents

Overview

The STAG helps reduce femoral malrotation, by improving the accuracy of Whiteside's Line

It references a three-dimensional version of Whiteside's Line known as the sulcus line of the trochlear groove. This device makes it much easier to accurately combine landmarks such as the posterior condylar axis with the sulcus line.

Features:

- Simple, easy to use
- Compatible with all knee systems
- Reduces parallax errors
- Patented design.

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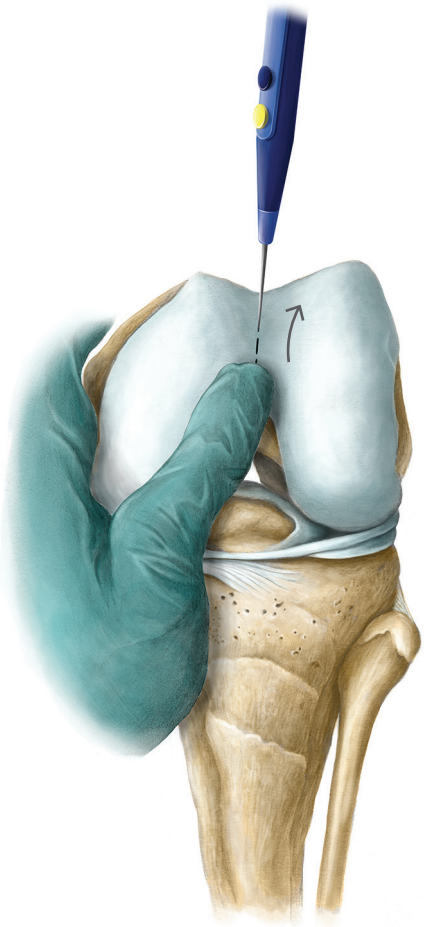
Step One



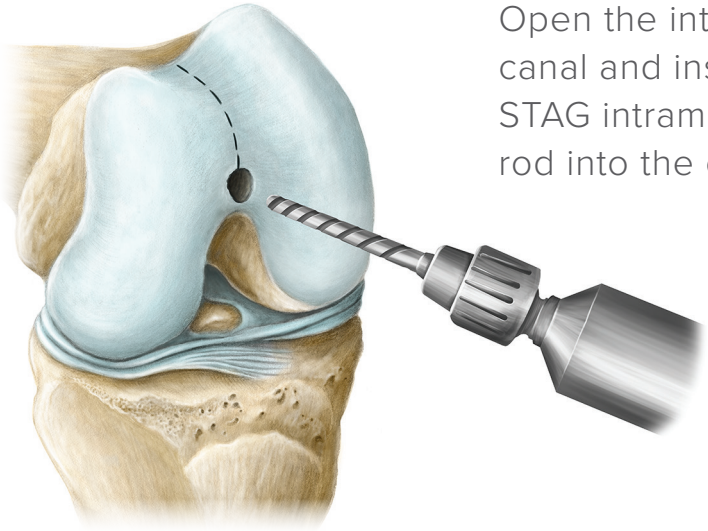
Mark the sulcus line of the trochlear groove using a diathermy

This is a line formed by connecting points along the depth of the trochlear groove starting distally at the intercondylar notch and extending proximally.

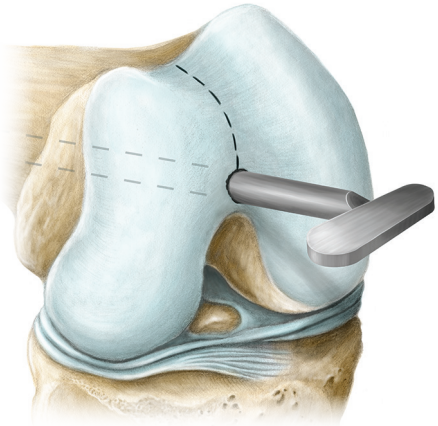
The groove should be palpated with a thumb to feel the deepest part of the groove. The deepest part of the groove is often lateral to the centre of the intercondylar notch.

The line is extended vertically into the anterior portion of the groove. The most proximal portion of the trochlear groove is often disregarded as it has increased variability and is often affected by osteoarthritis.

Step Two



Open the intramedullary canal and insert the STAG intramedullary rod into the canal



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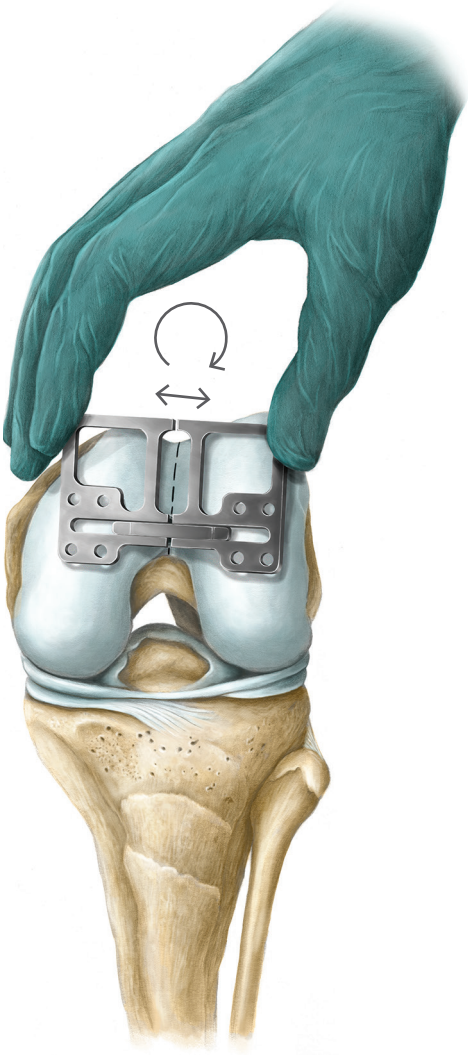
Step Three



Apply the STAG block over the flattened end of the STAG intramedullary rod and rotate the block and rod to match the orientation of the sulcus line

Note that instead of using the STAG intramedullary rod, the STAG block can be used with computer navigation. The block is placed over a single pin which is navigated to be perpendicular to the planned distal femoral cut in the sagittal plane.

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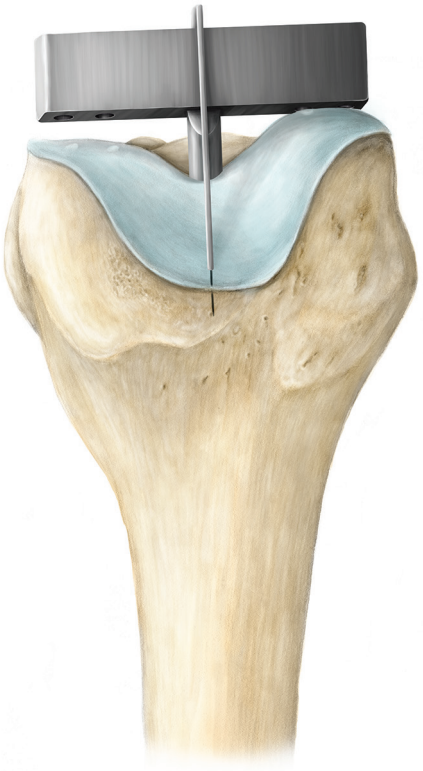
Step Four



Clip the STAG visualisation wing on to the vertical slot on the STAG block to confirm good alignment with the sulcus line in both the axial and coronal planes

Note that due to individual variations in the coronal alignment of the sulcus line, the STAG block will often sit off the bone on either the lateral or medial side.

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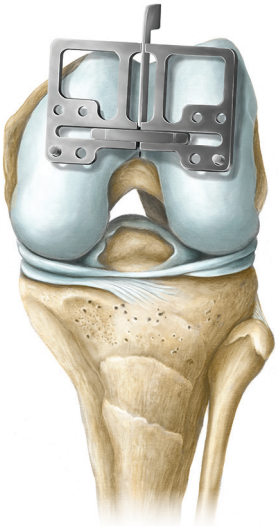
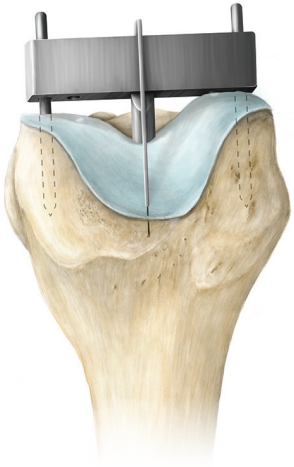
Step Five



Pin the STAG block to the femur with two ø3.2mm (1/8”) headless pins through any pair of matching parallel holes



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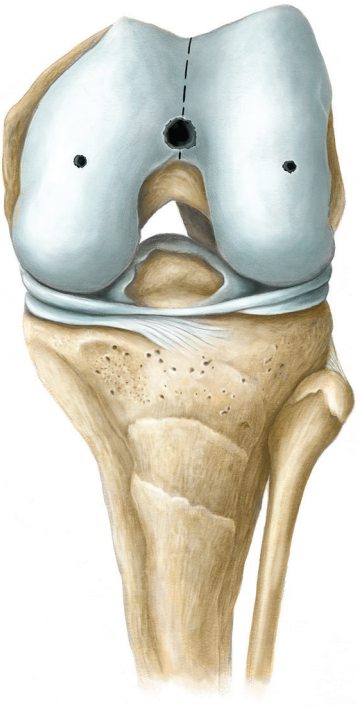
Step Six



Remove the pins, STAG visualisation wing, STAG block and STAG intramedullary rod before performing any femoral cuts

Note that the STAG device is only a guide to the axial rotational alignment of the femoral component. It should not be used to determine the coronal or sagittal alignment of the femoral component.

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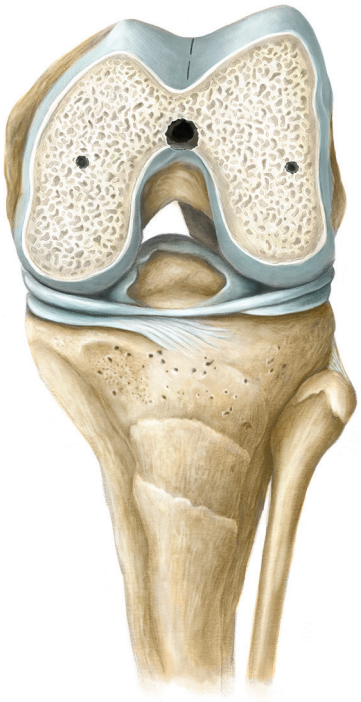
Step Seven



Once the femoral cuts have been made (per the surgeon's preferred technique), identify the pin holes on the distal cut surface of the bone

The STAG technique relies on matching the sagittal alignment of the STAG block to the sagittal alignment of the femoral component to remove parallax errors. If these sagittal alignments diverge due to surgical technique then errors can recur.

There are a small number of knee replacement systems which require a distal femoral cut which is considerably extended in the sagittal plane. When using components that have a deliberately distal femoral cut, caution should be exercised to also match the axial rotation of the distal femoral cut to the STAG pin holes to avoid additional parallax errors.

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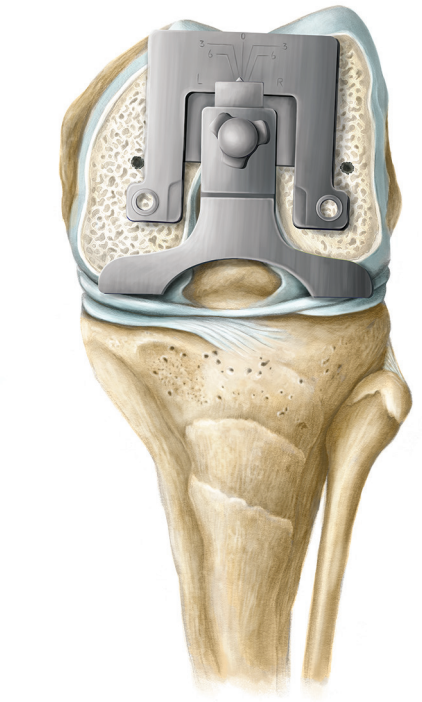
Step Eight



Reference the pin holes to assist in aligning the femoral sizer or 4-in-1 cutting block

By transferring a geometrically accurate version of the sulcus line onto the distal cut surface of the femur, a direct comparison is able to occur with the transepicondylar axis and/or posterior condyles.

To simplify the combination of landmarks, we recommend a rotationally adjustable sizing guide. These are available from all implant companies. When there is a difference between the posterior condylar axis (posterior condyles +3º of external rotation) and the STAG pin-holes, a position mid-way between the two landmarks can be selected by rotating the sizing guide relative to the posterior condyles. This technique has been shown to more accurately reproduce the surgical epicondylar axis.

References

1. Talbot S, Dimitriou P, Radic R, Zordan R, Bartlett J (2015) The sulcus line of the trochlear groove is more accurate than Whiteside's Line in determining femoral component rotation. Knee Surg Sports Traumatol Arthrosc 23 (11):3306-3316. doi:10.1007/s00167-014-3137-8
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3. Talbot S, Chao TW, Geraghty L (2016) Combining the Sulcus Line and Posterior Condylar Axis Reduces Femoral Malrotation in Total Knee Arthroplasty. Orthopaedic Journal of Sports Medicine 4 (1 suppl):2325967116S2325900015

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A surgeon must always rely on his or her own professional clinical judgement when deciding which products and/or techniques to use on individual patients. Enztec is not dispensing medical advice and recommends that surgeons be trained in orthopaedic surgeries before performing any surgeries.

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