

3-25-2015

## Rotational Alignment in Medial Unicompartmental Knee Arthroplasty: Comparison of Anatomic Landmarks

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### Recommended Citation

Kerr, MD, Glenn J.; O'Toole, MD, Patrick; Wu, DO, Eddie; and Lonner, MD, Jess H., "Rotational Alignment in Medial Unicompartmental Knee Arthroplasty: Comparison of Anatomic Landmarks" (2015). *Rothman Institute Conference Posters*. Paper 14.

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# Rotational Alignment in Medial Unicompartmental Knee Arthroplasty: Comparison of Anatomic Landmarks



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## Introduction

The landmarks used for tibial component rotation in total knee arthroplasty (TKA) and medial unicompartmental knee arthroplasty (UKA) may differ, utilizing the medial edge of the tibial tubercle and the medial edge of the tibial spine, respectively. However, some surgeons reference from the medial edge of the tibial tubercle in UKA. Use of the tibial tubercle to determine orientation of the sagittal cut in medial UKA can result in external rotation of the tibial component, leading to rotational mismatch between the femoral and tibial components, potential disruption of the ACL and tibial component undersizing. The purpose of this study was to define the angular differences that would result when using the tibial spine versus the medial edge of the tibial tubercle for determining tibial component rotation in medial UKA.

## Methods

A consecutive cohort of 62 knees undergoing medial UKA by a single surgeon was examined. Using digital measurements from preoperative computed tomography (CT) scans, the angular relationship between a line along the long axis of the medial tibial spine and a line drawn from the medial edge of the tibial tubercle to the posterior aspect of the medial tibial spine was determined (Figure 1).

## Figure 1

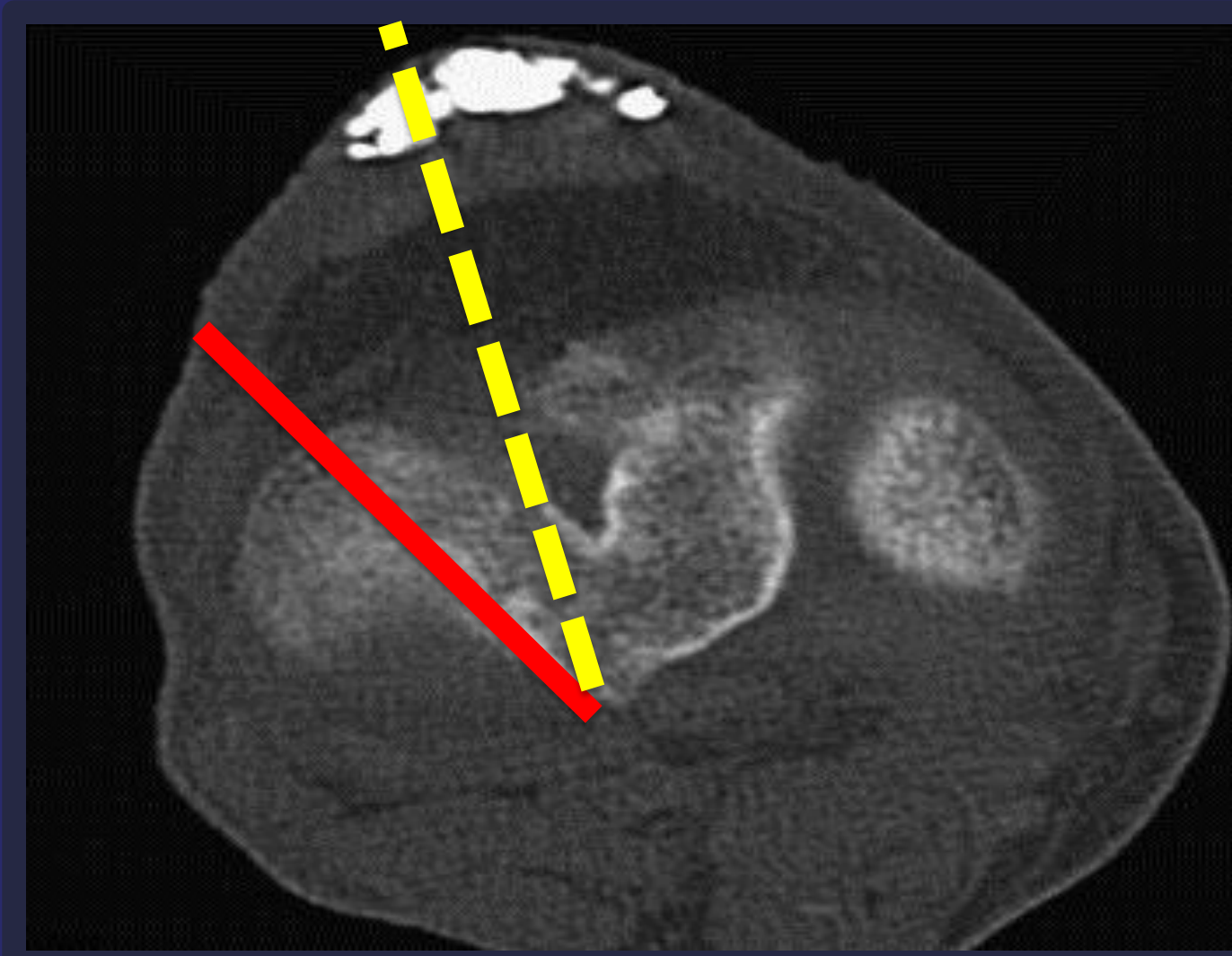
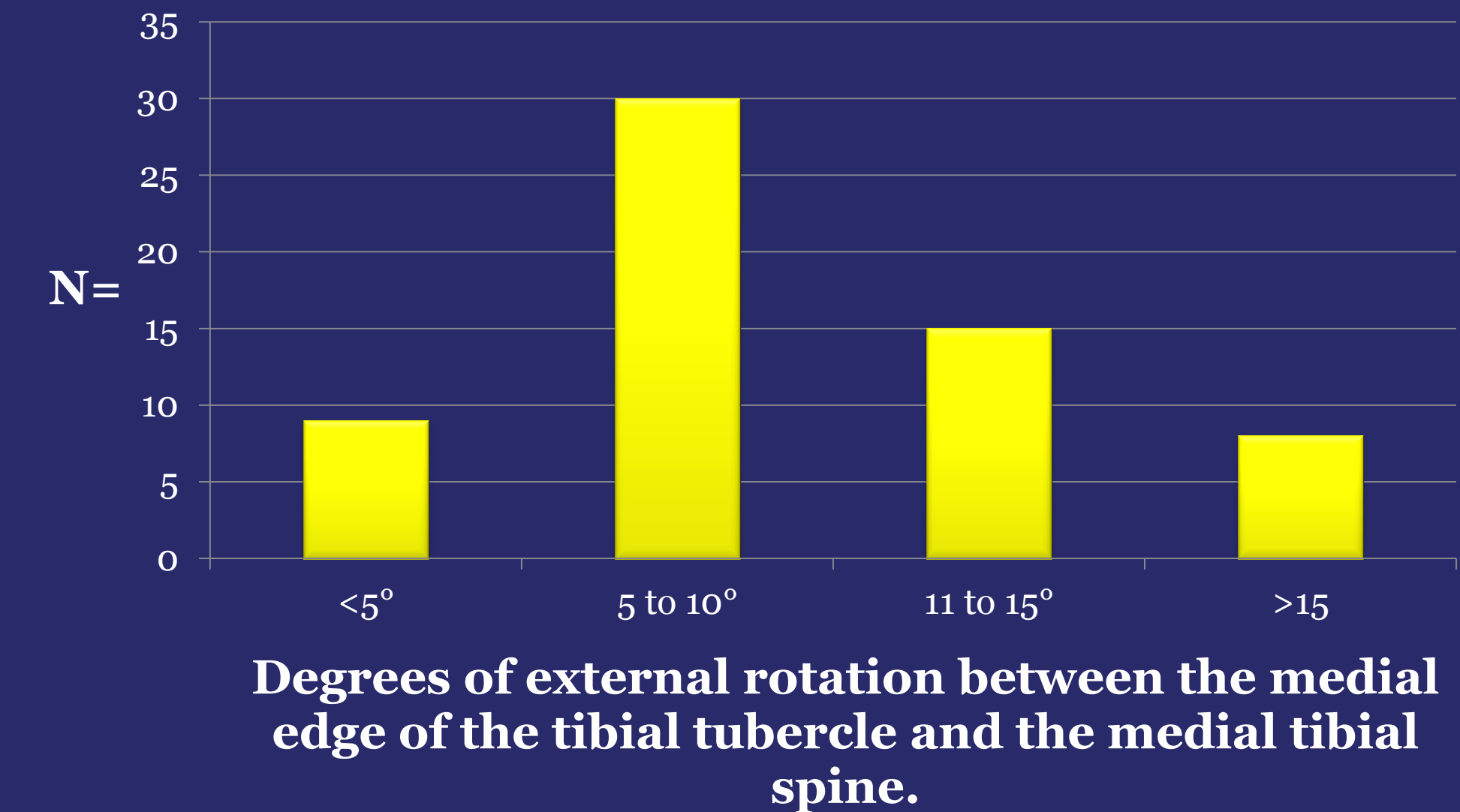


Figure 1 : Axial cut through knee at level of the tibial spines. The red line represents the axis of the medial tibial spine. The yellow line is the resection axis if using the medial edge of the tibial tubercle as the anterior reference point.

## Results

There were 25 male and 37 female patients with an average age of 63 years. The average coronal deformity was varus of 5°. An average angular difference of 9.6° of external rotation (range, 0.7° to 21°) was noted between the medial edge of the tibial tubercle and the long axis of the medial tibial spine (Table 1). 52% percent had a rotational difference greater than 9°.

## Table 1



## Conclusion

Excessive external rotation of the tibial component by a mean of 9.6° may occur if the medial edge of the tibial tubercle is used as the rotational landmark to perform the sagittal tibial cut in medial UKA. The medial tibial spine axis is a reliable bony landmark for medial UKA that will ensure accurate tibial component rotation.

## Clinical Relevance

Excessive external rotation of the tibial component may occur if the medial edge of the tibial tubercle is used as a guide for the tibial sagittal cut.