

World Congress on  
**BREAST CANCER, GYNECOLOGY AND WOMEN HEALTH**  
&  
Annual Conference on  
**ORTHOPEDICS AND RHEUMATOLOGY**

September 06 - 07, 2018 | Bangkok, Thailand

Ervin Chino N Tayag et al., Arch Gen Intern Med 2018, Volume 2 | DOI: 10.4066/2591-7951-C3-009

## WHICH WHITESIDE'S LINE?

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**Background:** The anteroposterior axis (Whiteside's line) of the distal femur has been used to orient the femoral component in total knee arthroplasty. Although initially described as a line connecting the deepest point in the patellar groove and the center of the intercondylar notch, others have used a line connecting the deepest point in the patellar groove to the highest point of the intercondylar notch. Furthermore, depending on the system used, the axis could be determined on the distal femur before or after the distal femoral cut has been made.

**Objective:** The objective of this study is to determine the value of Whiteside's line varied depending on which landmarks were used and on whether it is taken before or after the distal femoral cut.

**Methods:** The following landmarks were identified from the distal femur of 40 knees: deepest point of the patellar groove, highest point of the intercondylar notch, center of the intercondylar notch, lateral epicondylar prominence, and medial epicondylar prominence. Three lines were drawn: one connecting the patellar groove to the highest point of the intercondylar notch (line A); one connecting the patellar groove to the center of the notch (line B); and one connecting the epicondyles (transepicondylar axis). The distal femur was cut using a total knee distal femoral cutting instrumentation. The same landmarks and lines were identified. The angles subtended by the various lines against a line perpendicular to the transepicondylar axis were recorded. Values in internal rotation were assigned negative numbers while values in external rotation were assigned positive numbers.

**Results:** The mean results of lines A and B in both the uncut and cut distal femurs were negative. Line A measurements tended to be more negative than line B measurements. However, there were no statistical differences among the various measurements taken.

**Conclusion:** Based on this report, measurements taken from the deepest point of the patellar groove to either the highest point of the notch or the center of the notch may be used to determine Whiteside's line. Furthermore, the results will not be statistically different if taken before or after cutting the distal femur. However, since it is beneficial to avoid internal rotation of the femoral component in total knee replacement, the use of the center of the notch may be a better option than the use of the apex of the notch.



Note:

## BIOGRAPHY

Ervin Chino N Tayag did his degree of BS Biology and Medicine from the University of Santo Tomas in Manila, Philippines. He is currently, the Chief Resident of the Department of Orthopedics of the University of Santo Tomas Hospital. His interests are in adult reconstruction and sports medicine.

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