

ANTHROPOMETRIC ANALYSIS OF DISTAL FEMUR BETWEEN BOTH KNEES IN SOUTH INDIAN POPULATION USING DIGITAL XRAYS

ABSTRACT

BACKGROUND:

Side to side comparison of the anatomical or functional parameters in the evaluation of unilateral pathologies of the human knee joint is common practice, although the amount of asymmetry is unknown. This comparison also holds true in choosing implants to the contralateral knee in case of bilateral Total knee arthroplasty (TKA) when it is performed simultaneously. An improper sizing of the femoral component can lead to a flexion-extension gap mismatch. Pre operative component sizing usually requires Computerised Tomogram(CT) for accurate measurement. In this study we have made a novel attempt to identify the anthropometric differences that exists between the two knees of an individual using digital X-rays in the South Indian population. Using Xrays the radiation exposure to the individual is greatly reduced and the cost is considerably lowered compared to CT. Moreover the X-rays are available even in tertiary care centres.

METHODS:

This study was an analytical study conducted in Coimbatore medical college in the Institute of Orthopaedics, between the period of July 2016 to September 2018. This study was conducted in adult persons without any pathology in both the knee joints. Detailed radiological examination of both the knee joints were carried out in all persons in Orthopaedic out patient department. The radiological assessment included routine anteroposterior and lateral views of the knee joint and a special view, the kneeling view of the knee joint.

RESULTS:

10% of our study subjects had significant variations in the distal femoral and proximal tibia morphology especially in the distal femoral torsion, blumensaat line angle, blumensaat line length, posterior tibial slope and tibial plateau angle.

CONCLUSION:

Anatomical variations in the size of the normal knee have been studied, however asymmetry between the two knees has not been studied extensively. Our study is the first to document in detail the asymmetry that exists between the two knees in the South Indian population using digital Xrays. We conclude that the incidence of asymmetry is around 10% and hence we recommend that each knee must be sized independently. Our study shows that digital Xrays can be used to measure the asymmetry that exists between the two knees and limit the use of CT scan for such patients alone.

KEY WORDS:

Computerised Tomogram(CT),bilateral Total knee arthroplasty (TKA) ,digital X-rays ,the kneeling view ,asymmetry.