

Anthropometric Intraoperative Measurement Of The Patella Dimensions In Total Knee Arthroplasty Of Female Patients

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INTRODUCTION:

Loss of patella articular cartilage that occurs in patellofemoral arthritis may require patella arthroplasty in TKA. Proper patella implant sizing is important to prevent implant failure. However, implants used for TKA in Asian patients are produced based on anthropometry of Western population.

METHODS:

This is a cross sectional study involving female only patients who underwent total knee arthroplasty at HUSM. Intra-operative anatomic measurements of 78 patellae including the patella height, width, thickness, medial and lateral articular facets width and thickness and patella circumference. Smallest implant size from 3 manufacturers were measured.

RESULTS:

The articular surface of the patella was found to have an oval shape with a mean width-height ratio of 1.31. The mean patella thickness, width and height were 20.7 mm, 40.7 mm and 31.3 mm respectively. Only 17.9% fit for smallest implant size from all 3 manufacturers while 57.6% did not fit for all implants. Oval-shape implant was suitable in 53.8% patients while another 46.2% were suitable for round-shape implant based on their width-height ratio.

DISCUSSIONS:

A success in functionality of knee arthroplasty is highly depends on appropriate size and thickness of the chosen patella implant. Poor design characteristics of the implants and technical errors were related to early patellar failures in tricompartmental TKA¹. Our results showed our populations have smaller patella dimensions as compared to an American study by Baldwin¹ and African study by Olateju². More than half of our measured patella (57.6%)

did not fit for smallest implant from 3 manufacturers thus justifying why many surgeons in Asia do not replace the patella.



Figure1: Measurement of patella dimensions.

CONCLUSION:

International implant manufacturers have to consider optimizing the thicknesses and the shape of patellar prostheses so that it is ideal for Asian patients especially female.

REFERENCES:

1. Baldwin JL et al. Anatomic Dimensions of the Patella Measured During Total Knee Arthroplasty. *The Journal of Arthroplasty*. 2005;20(2), 250-257.
2. Olateju OI et al. Morphometric analysis of the patella and patellar ligament of South Africans of European ancestry. *South African Journal of Science*. 2013;109(9/10).