

ABSTRACT

Background: Numerous orthopaedic procedures are carried out on the proximal femur. For optimal hip function, these procedures must restore the anatomy of the proximal femur to as near normal as possible. There are currently no local studies that have described in detail the normal anatomy of the proximal femur and its implications in operations on the proximal femur.

Objective: The aim of this study was to determine the neck-shaft angle, femoral neck anteversion angle, femoral neck width and femoral head diameter in adult femora, compare the results with other studied populations and examine the implications of the same in operations on the proximal femur.

Methods: Femoral neck anteversion angle and the neck-shaft angle were determined from digital photographs of 70 cadaveric femora using an open-source image analysis software, ImageJ®(National Institutes of Health, Bethesda, Maryland). Femoral neck width and femoral head diameter were determined by measurement using a digital vernier caliper. The dimensions of available implants were searched from local suppliers of the implants.

Results: Mean femoral neck-shaft angle was found to be 129.21°, while the mean femoral neck anteversion angle was found to be 23.06°. Mean neck-shaft angle was found to be 128.67° on the left while on the right side, it was 129.03°. This difference was not statistically significant. Mean femoral neck anteversion angle was found to be 23.97° on the left side, and 23.03° on the right side, but this difference was not statistically significant. Mean femoral neck width was found to be 29.36mm, with mean width of the left side being 28.67mm and that of the right being 29.36mm. The difference was not statistically significant. Mean femoral head diameter was 42.6mm, with mean diameter of the left side being 41.2mm and that of the right side being 42.6mm. The difference was not statistically significant.

Conclusion: The current study has shown that the femoral neck-shaft and anteversion angles in the Kenyan femora vary from those of other populations. The available implants have angles which may not be suitable for a significant proportion of the local population. It would be prudent to avail a range of implants with different angles to improve the choices available to the surgeon when faced with a patient who requires an operation on the proximal femur. oncytotoxic against Vero cells.