

INTISARI

Latar Belakang: Desain implan tulang klavikula yang ada saat ini umumnya berbasis data anatomi populasi Barat, sehingga kurang sesuai dengan karakteristik morfologi populasi Indonesia. Variasi morfometrik klavikula berdasarkan jenis kelamin dan etnis penting untuk dipahami guna meningkatkan presisi desain implan.

Tujuan Penelitian: Penelitian ini bertujuan untuk mendeskripsikan karakteristik morfometri 3-dimensi tulang klavikula dan menganalisis perbedaan berdasarkan jenis kelamin pada sampel kadaver populasi Indonesia.

Metode: Studi deskriptif-analitik ini menggunakan desain potong lintang pada 44 tulang klavikula kiri dari cadaver di Laboratorium Anatomi FK-KMK UGM yang telah dipindai dengan CT-Scan. Pengukuran morfometrik dilakukan menggunakan perangkat lunak 3-dimensi terhadap sepuluh parameter: panjang tulang, diameter ekstremitas sternal dan akromial, diameter tengah, kedalaman lengkung lateral dan superior, jari-jari lengkung medial dan lateral, serta dua sudut intersegmental. Analisis statistik dilakukan menggunakan uji t-independen dan *Mann-Whitney*.

Hasil penelitian: Rerata morfometri klavikula pada populasi Indonesia menunjukkan panjang 131,17 mm, diameter sternal 18,70 mm, akromial 18,64 mm, dan tengah 10,12 mm. Kedalaman lengkung medial 14,94 mm, lateral 10,23 mm; jari-jari lengkung medial 67,40 mm, lateral 30,38 mm; sudut medial–tengah 151,00° dan tengah–lateral 146,01°. Klavikula populasi Indonesia cenderung lebih kecil dan melengkung dibanding populasi global. Perbedaan signifikan ditemukan pada panjang tulang dan diameter tengah antara laki-laki dan perempuan.

Kesimpulan: Studi morfometrik 3-dimensi tulang klavikula pada kadaver di Laboratorium Anatomi FK-KMK UGM menunjukkan bahwa klavikula populasi Indonesia cenderung lebih kecil dan melengkung dibanding populasi global. Ditemukan perbedaan signifikan antara laki-laki dan perempuan pada panjang tulang dan diameter tengah. Temuan ini memberikan dasar penting bagi perancangan implan klavikula yang lebih presisi dan sesuai dengan anatomi populasi Indonesia.

Kata Kunci: Klavikula, morfometri 3D, populasi Indonesia, implan tulang.

ABSTRACT

Background: Current clavicle implant designs are generally based on Western anatomical data, which may not align with the morphological characteristics of the Indonesian population. Understanding clavicular morphometric variations by sex and ethnicity is crucial to improve implant design accuracy.

Objectives: This study aims to describe the 3-dimensional morphometric characteristics of the clavicle and analyze sex-based differences using cadaveric samples from the Indonesian population.

Methods: This descriptive-analytic cross-sectional study was conducted on 44 left clavicles from cadavers at the Anatomy Laboratory of FK-KMK UGM, scanned using CT. Morphometric measurements were performed using 3D software on ten parameters: bone length, sternal and acromial diameters, midshaft diameter, depths of lateral and superior curvatures, medial and lateral curvature radii, and two intersegmental angles. Statistical analysis was conducted using independent t-test and Mann-Whitney test.

Results: The mean clavicle morphometry in the Indonesian population was: length 131.17 mm, sternal diameter 18.70 mm, acromial diameter 18.64 mm, and midshaft diameter 10.12 mm. Medial curvature depth was 14.94 mm, lateral 10.23 mm; medial curvature radius 67.40 mm, lateral 30.38 mm; medial–middle angle 151.00°, and middle–lateral angle 146.01°. Indonesian clavicles tend to be smaller and more curved than those of global populations. Significant differences were found in clavicle length and midshaft diameter between males and females.

Conclusion: The 3D morphometric study of clavicles from cadavers at the Anatomy Laboratory of FK-KMK UGM indicates that the Indonesian population's clavicles are generally smaller and more curved than global averages. Significant sex-based differences were observed in bone length and midshaft diameter. These findings provide an important foundation for designing anatomically accurate clavicle implants tailored to the Indonesian population.

Keywords: Clavicle, 3D morphometry, Indonesian population, bone implant.