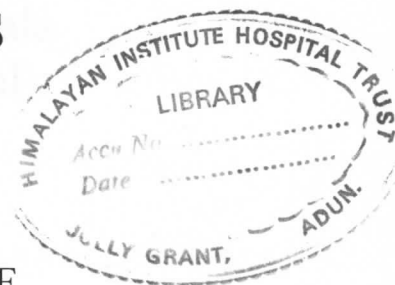


**A MORPHOLOGICAL STUDY OF  
HUMAN CALCANEI AND THEIR  
ARTICULAR FACETS**



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## SUMMARY AND CONCLUSION

The present study was conducted on 200 North Indian cadavers to assess the gross morphological features with special emphasis on the dimensions and configurations of the talar articular facets. The data obtained was compared with the results of the earlier studies to provide these bases for future comparative studies.

Dimensions

The mean length, breadth and depth of the talar articular facets were found to be 75.55 mm, 42.5 mm and 42.45 mm respectively. No significant statistical differences were found between right and left sides.

Superior Surface

The posterior part of the superior surface was concavo-convex in 81% cases. The middle part of the posterior articular facet was mostly oval and convex in 64% of the cadavers and had mean surface areas of 454.95 mm<sup>2</sup> on right side and 447.79 mm<sup>2</sup> on left side. Anterior part had sulcus talaris which was deep in 65.5% cases and superficial in 34.5% cases. Middle talar facet was a separate entity in 28.5% cases with most common shape being oval in 22% with a mean surface area

# SUMMARY & CONCLUSION

## **SUMMARY AND CONCLUSION**

The present study was conducted on 200 North Indian calcanei to assess the gross morphological features with special emphasis on the dimensions and configurations of the talar articular facets. The data obtained was compared with the results of the earlier studies to provide these values for future comparative studies.

### **Dimensions:**

The mean length, breadth and height of the calcanei were found to be 75.65 mm, 40.15 mm and 42.46 mm respectively. No significant statistical differences were found between right and left calcanei.

### **Superior Surface:**

The posterior part of the superior surface was concavo-convex in 81% cases. The middle part i.e. posterior talar facet was mostly oval and convex in 64% of the calcanei and had mean surface areas of 484.96 mm<sup>2</sup> on right side and 447.79 mm<sup>2</sup> on left side. Anterior part had sulcus calcanei, which was deep in 65.5% cases and superficial in 34.5% cases. Middle talar fact was a separate entity in 28.5% cases with most common shape being oval in 22% with a mean surface area

of 124.05 mm<sup>2</sup> on right side and 122.54 mm<sup>2</sup> on left side. The anterior talar facet was not fused i.e. a separate entity in 26.5% cases with the most common shape being oval in 22% with a mean surface area 77.27 mm<sup>2</sup> on right side and 65.23 mm<sup>2</sup> on left side. In 71% cases fused anterior and middle talar facets were present with the most common shape being elongated in 30.5% and mean surface areas of 242.63 mm<sup>2</sup> on right side and 232.13 mm<sup>2</sup> on the left side. Only one case was seen in which the anterior, middle and posterior talar facets were fused and had an irregular shape with a surface area of 569 mm<sup>2</sup>. Configurations of articular facets are functionally important because they influence sub-talar joint stability. Joints with two-facet configuration are comparatively more stable. Patients with severe symptomatic flat foot have significantly less contact between the talus and calcaneum than controls in the weight bearing position.

#### **Anterior Surface:**

The most common shape of the facet on the anterior surface for cuboid was triangular and convex in 52% cases and mean surface area was 358.85 mm<sup>2</sup> on right side and 366.11 mm<sup>2</sup> on left side.

### **Posterior Surface:**

The mean height of the posterior surface was found to be 41.55 mm being 10.59 mm, 9.68 mm and 21.28 mm of the superior, middle and inferior parts respectively.

Calcaneal spurs if present were studied on the posterior (dorsal) and inferior (plantar) surfaces. The incidence of dorsal spurs was 9.5%. Excessive weight gain, ageing and gender could be the factors leading to spur formation and plantar heel pain.

### **Inferior Surface:**

The most common shape of medial tubercle was broader and longer in 42% cases, narrow and equal in 31% followed by narrow and shorter in 26% cases. Calcaneal notch was present deep in 63% and superficial in 37% cases. The anterior tubercle was present in 98.5% cases and was absent in 1.5% cases.

The incidence of plantar spurs was 12.5% in this study.

### **Lateral Surface:**

The peroneal trochlea was distinct in 83.5% cases. The groove for the tendon of peroneus longus was present in 82% of the cases. The groove for the tendon of peroneus brevis

was present in 21% of the cases. This figure was in gross variation with Edwards who described this groove to be present only in 2.6% of the cases.

**Medial Surface:**

The mean angle formed by intersection of middle and anterior facets of sustentaculum tali of Type I calcaneus was  $149.87^{\circ}$ , in type II the angle was  $137.74^{\circ}$ , in type III the angle was  $144.74^{\circ}$  and in type IV the angle was  $160^{\circ}$ .

The groove for the tendon of Flexor Hallucis Longus (FHL) was present in 99.5% cases.

The talar articular facets were classified into four types. Maximum number of cases belonged to type I category. The results of present study underline the importance of introducing quantitative parameters in the description of the talar articular facets of the calcaneus to establish the basis of the future comparative studies.

To conclude, it can be stated that the talar articular facets of calcanei exhibit a wide variety of configurations which are functionally important as they predispose people to joint instability, ligamentous laxity and the development of arthritic changes in the subtalar joint.