

HUMAN CALCANIUM ; VARIATIONS IN THE ARTICULAR FACETS OF THE SUSTENTACULUM TALI

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ABSTRACT

Sustentaculum tali is a projection at the apex of the longitudinal arch and thus occupies a key position in the subtalar joint. The articular facets of the sustentaculum tali have a variety of configurations. **OBJECTIVES** To study the variations of articular facets of the sustentaculum tali of the calcanium. **MATERIAL & METHODS** Total two hundred human calcanei were studied with naked eye obtained from the Anatomy department of the Punjab Medical College, Faisalabad and K.E. Medical College, Lahore. **RESULTS** Type I – 78.5% calcanei with long continuous facets. Type II – 13.5% calcanei with two facets and Type III – 8% calcanei with medial facets only. **CONCLUSION** The variations in the facets are due to different regions and races and may predispose people to subtalar joint instability.

INTRODUCTION

The sustentaculum tali is a shelf like projection present at the apex of the longitudinal arch and thus occupies a key position in the subtalar joint. It supports functions as a bracket that supports the talar head and is responsible for the transmission of force towards the lateral arch¹. The articular facets of the sustentaculum tali have a variety of configurations that are generally viewed as nonmetric traits of little functional significance.

Bruckner², in contrast has hypothesis that facet variations are functionally important because they influence subtalar joint stability. People with long continuous facets or having only medial facets configuration of sustentaculum tali may be at a greater risk for the subtalar joint instability than the individuals with two facets configuration³. Rarely all the three facets on the upper surface of calcaneum fuse into one irregular area^{7,8}. Variations in the articular facets of the sustentaculum tali have been described by many workers in different

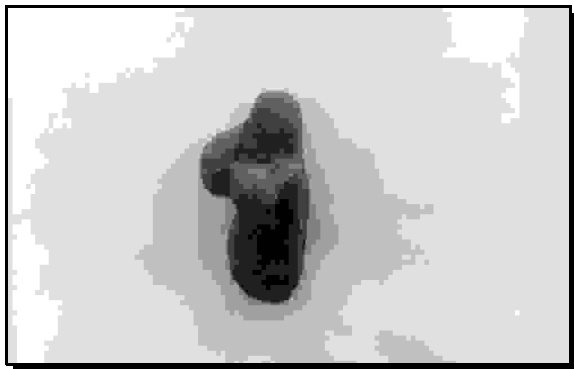
ways^{2,3,4,5}. The present study is designed to study the variations of articular facets of the sustentaculum tali in more acceptable way on a large scale Pakistani population.

MATERIALS & METHODS

Total 200 adult dry calcanei were used in the study irrespective of age and sex obtained from the Anatomy Departments of Punjab Medical College, Faisalabad, and K.E. Medical College, Lahore. For purpose of this study, sustentaculum tali were classified as follows³.

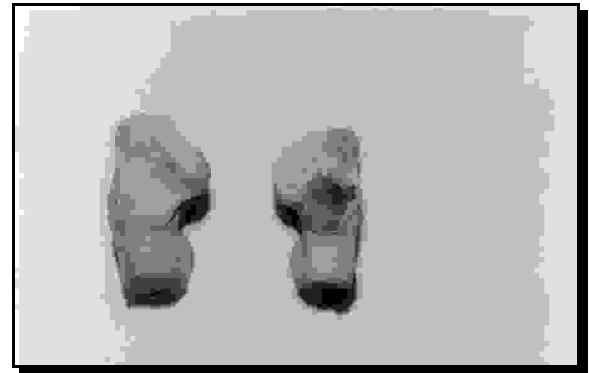
TYPE I:

Long continuous facets including all transitional 'Figure8' forms with fused anterior and medial facets. Fig. A.



TYPE II:

Sustentaculum tali with two facets in which a distinct groove separates the anterior and medial facets. Fig. B



TYPE III:

Sustentaculum tali with a medial facet only and no anterior facet. Fig. C.

The study was carried out with naked eye in the



day light.

RESULTS

Of 200 individual bones, 157 had the long continuous facets (Type I) see fig. A, 27 had two facet configuration (Type II), see fig B and 16 had medial facet only (Type III), see fig. C.

Table-1. (Present Study)

Facet type	Long facet	Two facet	Medial facet only
N=200	157(78.5%)	27 (13.5%)	16 (8.0%)

DISCUSSION

Sustentaculum tali facet morphology is an important factor in subtalar joint stability. The results of different workers are given in Table 2. The results of Spanish study⁵ and Pakistani study carried out by Ahmed⁴ show some variation in the results but are comparable.

Present study is comparable with the study carried by Verhagen³ and Indian studies⁶, see Table 2. Presence of more longitudinal facets in the calcanei in present study are comparable with previous studies^{3,4,5,6}. Brucker² in her study included 'Medial facet only' calcanei with long continuous facet type, but we have treated this configuration separately^{3,6} and found more accurate. The data presented here also shows that certain variations of facets in the sustentaculum tali may predispose people to subtalar joint instability belonging to different regions and races³. It needs further studies to confirm it.

Table-2 (Comparison)

Facet Type		Present Study	Verhagen	Indian	Ahmed	Spanish
Type I.	Long facets	78.5%	54.5%	69.0%	72.04%	54.0%
Type II.	Two facets	13.5%	26.7%	26.0%	27.95%	46.0%
Type III.	Medial facet only	08.0%	18.8%	05.0%	None	None

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