

## Study of fifty human tali for calcaneal articular facets

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### Abstract

Fifty adult dry human tali from the **Department of anatomy, Nepalgunj Medical College Chisapani**, were studied. Observations were made on different types of articular facets of calcaneus for the tali. They were classified into four groups and their percentages of incidences were calculated. These findings were well correlated and compared with the literatures available

**Key Words:-** Talus-Sustenticulum tali-calcaneal facets-articulating facets- plantar arch.

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Talus is the key bone of the longitudinal arch It is responsible for receiving the body weight and transmitting it to the plantar arch below<sup>1</sup>. Talus is the only bone which has no muscular attachment<sup>2</sup> and no tendinous attachment<sup>3</sup> Talus has three articulating surfaces They are 1) Large oval surface on its most posterior aspect, articulating with sustenticulum tali of calcaneum, 2) a flat surface on its anterolateral surface articulating with upper surface of calcaneum on its anteromedial surface, 3) medial to the above two facets is the third facet articulating with spring ligament which is covered by articular cartilage<sup>2</sup>.

Jones (1949)<sup>5</sup>, Arora (1979)<sup>4</sup> have studied on different patterns articular facets of calcaneum in human tali. The present study has dealt with different patterns of calcaneal facets on 50 unknown dry human tali

### Materials and methods

Fifty dry human tali of unknown sex from the department of anatomy, Nepalgunj Medical College, Chisapani, Nepal, constituted the materials for the present study. Each talus was carefully examined for the pattern of calcaneal articulating facets. They were classified into four groups. From each group, a talus was selected to mark the outline of the articulating surface carefully with the pencil. All the four tali were numbered and photographed

### Results

The present study showed four types of calcaneal articular facets on the plantar surfaces of head of talus.

In the Type-1, Single facets were present on the plantar aspect of the head of the tali. Some were small while some were large. They were seen in 10% (5) tali.

Type-2 Single articular facet was present on plantar surface of head of talus. It was divided into two parts by a prominent ridge on the middle calcaneal facet and anterior calcaneal facets, in 14% of tali (seven tali). In three ridges were distinct, while in four ridges were indistinct i.e., 6% and 8% respectively.

Type-3 – Ten tali showed articular facet of calcaneum on the plantar surface of talus. This surface was partially divided by a non articulating groove and partly by a ridge in two parts. They were seen in 20% of tali.

Type-4-Tali showed continuity of the facet situated on the plantar aspect of head with the facet on the plantar surface of the body of talus. This type were seen in 56% of tali (twenty eight tali) of incidences of articular facets calcaneum on tali.

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Type 1



Type 2



Type 3



Type 4



**Discussion**

Calcaneal articular facets on tali have been described by various authors in standard text books of anatomy. The present study on calcaneal articular facets has been classified into four types in contrast to the Arora

et al (1979)<sup>4</sup> found five types of articular facets. Table-1 showing the comparative study of incidences of articular facets of calcaneum on tali

| S.No | Types of articular facets of calcaneum on tali | Arora et al(1979) studies | Present Studies |
|------|------------------------------------------------|---------------------------|-----------------|
| 1    | Type-1                                         | 16%                       | 10%             |
| 2    | Type-2                                         | 78%                       | 14%             |
| 3    | Type-3                                         | 01%                       | 20%             |
| 4    | Type-4                                         | 03%                       | 00              |
| 5    | Type -5                                        | 02%                       | 56%             |

**From the above table it is observed that**

1. Arora et al studies showed 5 types of articular facets of calcaneum in Indian human tali where

as present showed only 4 types of articular facets in 50 human tali.

2. Percentages of incidences articular facets of calcaneum on tali of Type –2 was highest (78%) in Arora et al<sup>4</sup> studies, while it is only 14% in the present studies
3. In the present study, there was high incidence of type 5 (56%) in contrast to Arora et al<sup>4</sup> studies where least incidence (2%) of type 5 was seen. This may be due to population or material or numerical difference.
4. Arora et al studies showed 3% in type 4 articular facets of calcaneum, while in the present study showed no such type of articular facets.
5. In the present study least incidence of articular facets was seen in type1 (10%) in contrast to studies by Arora et al<sup>4</sup> studies (16%).
6. Jones (1949)<sup>5</sup> has illustrated tali of types 2, 3, and 4 but not type 1 and 5 as found in the studies of Arora et al and present studies.
7. Breathnach (1965)<sup>6</sup> also observed discontinuous facets in tali of 3% of tali (type 4) but the present study did not show any incidence of tali having discontinuous facets.  
These may be due to population, racial or both differences.

### Conclusion

The present study showed four types of articular facets of calcanei on human tali. They were type-1 seen in 10% of cases, type-2 in 14%, type-3 in 20% and other variety was seen in 56% of cases. The type

4 having discontinuous facets was not seen in our study as seen in Arora et al studies. This difference may be due to difference in structure of the population.

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