

Study of calcaneal articular facets in human tali

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Abstract

Aim: Aim of the present study is to know the presence and their percentages of incidences of various patterns of calcaneal articular facets in human tali

Place of study: Department of Anatomy of Sree Dev Raj Urs Medical College, Tamaka, Kolar, Karnataka, India

Period of Study: It is a study of two years of 1996-97 and 1997-98 Batches of students.

Methods and Materials: Two hundred and forty unknown, dry human tali possessed from the bone sets of students of above batches constituted the materials for the study during the above period. They were carefully examined for articular facets and classified into five groups.

Observations: The present study on human tali revealed five types articular facets. They are Type-1 were observed in 10% (in 24 tali), similarly type 2 in 50% (120 tali), type-3 in 16.66% (40 tali), Type-4 in 5.00% (12 tali), Type-5 in 18.41% (44 tali). Later they were well compared and correlated with available literatures.

Conclusion: This study on human tali has revealed the type of gait, and walking habits and weight bearing bone that has given rise to various articular facets. Hence it has been studied and reported.

Key Words: Talus, calcaneus, articular facets, weight bearing, sustentacular tali

Talus is a main tarsal bone that connects bones of leg with that of bones of foot. It has neither muscular attachment nor the tendinous attachment¹. But it takes in the formation of talocrural, subtalar and talocalcaneonavicular joints². It helps in receiving the body weight and transmitting it to the plantar below³. Talus also bears whole body weight⁴. Terry Trotter (1953)⁵, Warwick and Williams (1973), have described the different types of calcaneal articular facets, While Arora et al (1979)⁶, Breathnach (1965)⁷, Jones (1949)⁸, have described the variations of calcaneal articular facets.

Materials and methods

Two hundred forty unknown sex, dry human tali possessed by the first year students of MBBS of

1996-96 and 1997-98 batches of Sree Devraj Urs Medical College, Tamaka, Kolar, Karnataka, India constituted the material for this study. Each talus was examined for the presence of various patterns of articular facets. Later they were classified into five groups. From each group single talus was selected outlined the articulating facets with the help of pencil. Later they were numbered and photographed.

Results

The present study showed five types of calcaneal articular facets on the plantar surfaces of heads of two hundred forty unknown human tali. Later they were classified and tabulated in the given table below.

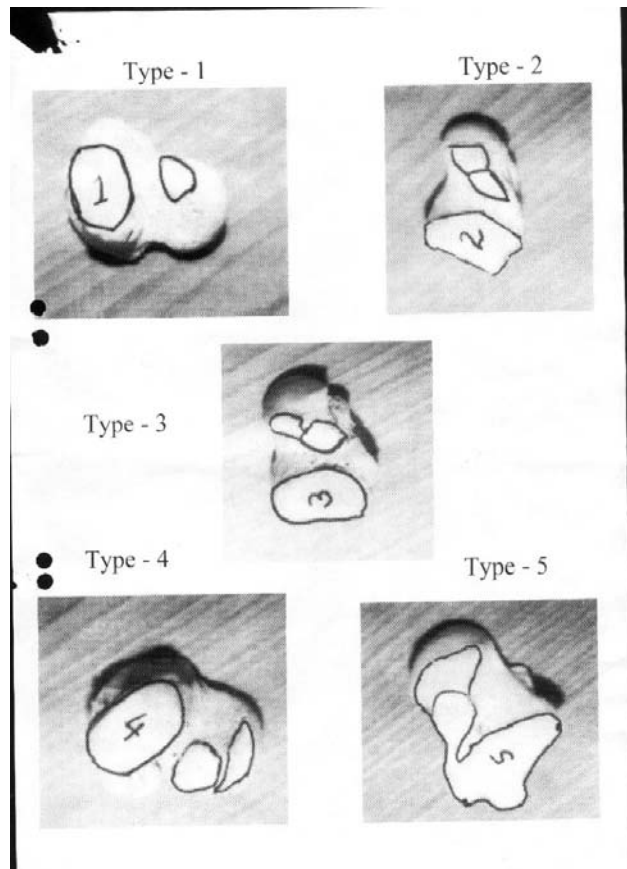
Table 1: Incidences and types of articulating facets

S/No	Types of Articulating Facets	Number of Facets	Percentages of Incidences
1	Type-1	24	10.00%
2	Type-2	120	50.00%
3	Type-3	40	16.66%
4	Type-4	12	5.00%
5	Type-5	44	18.41%

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Fig 1: Types of articulating facets



From the above Table 1, it is observed that

1. Five types of calcaneal articular facets on the plantar surfaces in 240 human tali.
2. 10% tali showed single articular facets on their plantar surfaces (24 tali).
3. In 50% of tali showed a ridged dividing articulating facet into two parts (120 tali).
4. In 16.66% of tali showed facets partly separated by non articular groove and ridge (40 tali).
5. In 5% of tali showed two articular facets were separated by non articular groove (12 tali).

6. In 18.41% of tali showed facets on the plantar surface being continuous with facet on the body of talus. (44tali)

Later they well compared and correlated with available literatures.

Discussion

The present study is well correlated with earlier workers and compared with their available data Arora et al studied on 500 Indian human tali and observed following percentages .Then present study was compared with the study of Arora et al.

Table 2: Showing comparative percentages of incidences of calcaneal articular facets

S/No	Types of articular facets of calcaneum	Arora et al Studies	Present Study
1	Type-1	16.00%(79tali)	10.00%(24 Tali)
2	Type-2	78.00%(39Tali)	50.00%(120 Tali)
3	Type-3	1.00%(04 Tali)	16.66%(40 Tali)
4	Type-4	3.00%(16 Tali)	5.00%(12 Tali)
5	Type-5	2.00%(10 Tali)	18.44%(44 Tali)

From the above table it is found

1. Both studies showed five articulating surfaces of calcaneus on tali
2. In Arora et al studies Type-2 showed the highest percentages of incidences (78.00%), similarly Type-2 of the present studies also showed the highest percentages of incidences (50.00%).
3. The least percentages of incidences in Arora et al studies was seen in type -3, where as the corresponding type in the present study showed higher incidences of 16.66%.
4. The least percentages of incidences in present study were seen in type four (5.00%). While in Arora et al studies of type 4 showed an incidence of 3.00%.
5. Incidence of Type -1 was lower in the present study (10.00%) when compared to Arora et al studies (16.00%).

The variations in both studies may be due to either material differences or population difference or racial differences. Breathnach (1965) has reported in his studies of type-4 in only 3.00%, while in the present study it was observed in 5% of tali (12 tali)

In the studies of Jones (1949) there were no incidences of type -1 and type-5, but in the present study they were seen in 10.00% and 18.41% respectively.

The present study showed five types of calcaneal articular facets. Highest incidences were seen in type -2 (50.00%) which is similar to studies of Arora et al (78.00%). Least incidences were seen in 5.00% of tali (12 tali) of Type-4., while in Arora et al studies ,least incidences were seen in type -3 (1.00%) This differences may be due to either population or racial differences .Also may be due to difference in gait

,built of an individual, heredity or the place whether it is hilly area or plain area Also this study reveal the type of work, whether he or she is manual labour or not .This made me interesting, hence it has been studied and reported.

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