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A study of incidence of squatting facets in South Indian West coast population

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Abstract

Squatting facets have been observed in some specific sets of population. Indians are known to have squatting facets as habitual squatting is followed from ancient times. In squatting there is hyperextension of the ankle and hyperflexion of the knee joint. So this study puts in an effort to find the incidence of squatting facets in South West Coast Population.

Keywords: morphometry, squatting facets, Indian population

Introduction

The distal end of the tibia is expanded slightly and has anterior, medial, posterior, lateral and distal surfaces^[1, 2,3]. It also has inferomedial projection called as the medial malleolus. The smooth anterior surface bulges beyond the distal surface and is separated by a narrow groove. The capsule of the ankle joint is attached to an anterior groove near the articular surface^[4, 5]. Remodelling of bone occurs in response to physical stress. Habitual squatting is associated with modifications of the neck of the talus (squatting facets) and its trochlear/malleolar surfaces (trochlear extensions), and individual populations exhibit different incidences of these modifications that reflect their lifestyle^[6-10]. The occurrence of talar modifications was therefore investigated in a population of late Byzantine (13th century AD) adult male skeletons. Lateral squatting facets occurred most frequently (37.7%), but medial (0.6%), combined (0.6%) and continuous (gutter-like) facets (0.6%) were also observed. Lateral (8.0%), medial (10.9%) and continuous (lateral/central/medial) extensions (4.6%) of the trochlear surface were all present in the late Byzantine population¹¹. There was no evidence of side dimorphism. The occurrence of lateral squatting facets in the late Byzantine population was greater than that reported for modern Europeans, but similar to that reported for some populations of modern Indians. The frequency of occurrence of trochlear extensions in the late Byzantine population was substantially less than in modern Indian populations, but similar to modern Europeans. Therefore, it is unlikely that precisely the same factors determine the expression of squatting facets and trochlear extensions. This study puts in an effort to find the morphometry of squatting facets.

Aims and Objectives

To study the incidence of squatting facets in Indian Population.

Materials and Methods

Thirty lower end of femur and upper end of tibia were observed. Also thirty upper articulating surfaces of talus and lower articulating surface which forms the mortise were observed. specimen were dissected in the Department of Anatomy Kanachur institute of medical sciences, Mangalore.

Right and left were equally distributed.

The incidence of squatting facets were noted and reported based on sides.

The study was done from Nov 2016 to Nov 2017

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Results

Squatting Facets on The Superior Articular Surface of Talus

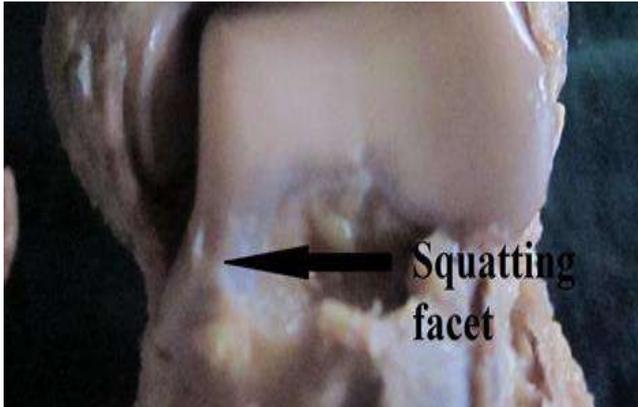


Image 1: Squatting facet in wet talus.

The incidence was found to be 19 on the right side and 11 on the left side.

Squatting Facet Superior Articular Surface of Tibia

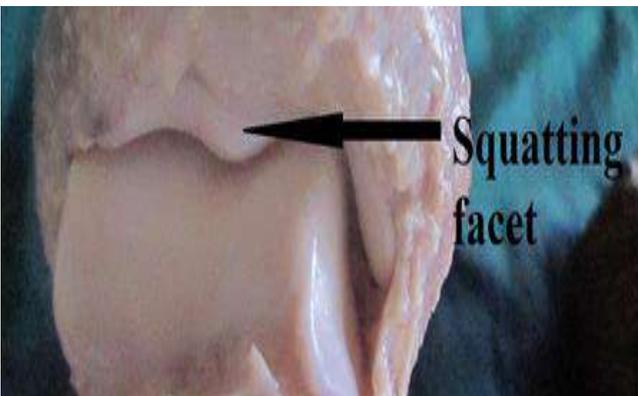
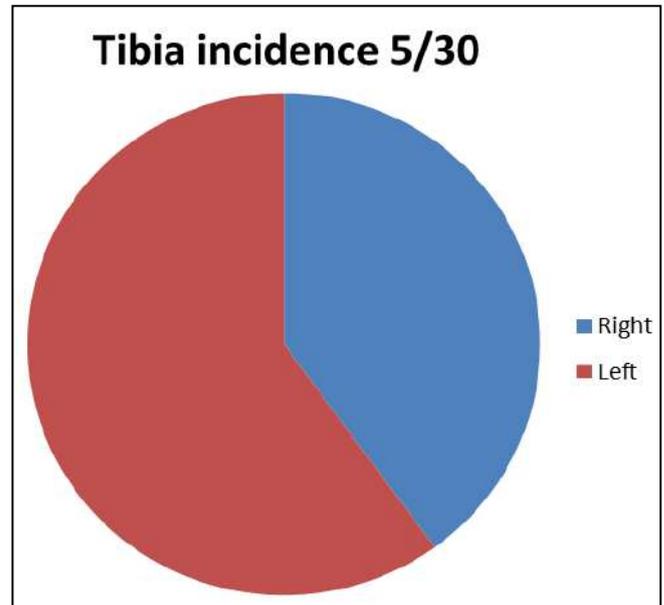


Image 2: Squatting facet in wet tibia.

The incidence was found to be 17 on the right side and 15 on the left side.



Graph 2: Squatting facets on upper end of tibia:

Discussion

Distinctive morphological changes attributed to a habitual squatting posture were observed on the distal femur, distal tibia and on the talar neck. It was easy to be identified in the dissection specimen in the lower end of tibia which forms the squatting facets but and the neck of the talus. But at the same time it was difficult to identify the facets in the lower end of femur and the upper end of tibia. The squatting facet in the lower end of the femur was minute and was very difficult to identify. A pair of simple microscopes came very handy as the lines were very hard to distinguish.

Inderbir Singh [9] in 1959 conducted a study of Squatting facets on the talus and tibia in Indians. Using 200 tibia and 200 tali (dry bones), 92 tibia and 100 talus (wet cartilage covered bones). The author mentioned that, out of 292 tibia which were studied, 231 tibia had squatting facets indicating an incidence of 79.1%. Of the 300 talus which were studied, 86 talus had squatting indicating an incidence of 28.6%.

In this study we identified 19 on the right side and 11 on the left side in talus. The incidence was found to be 17 on the right side and 15 on the left side.

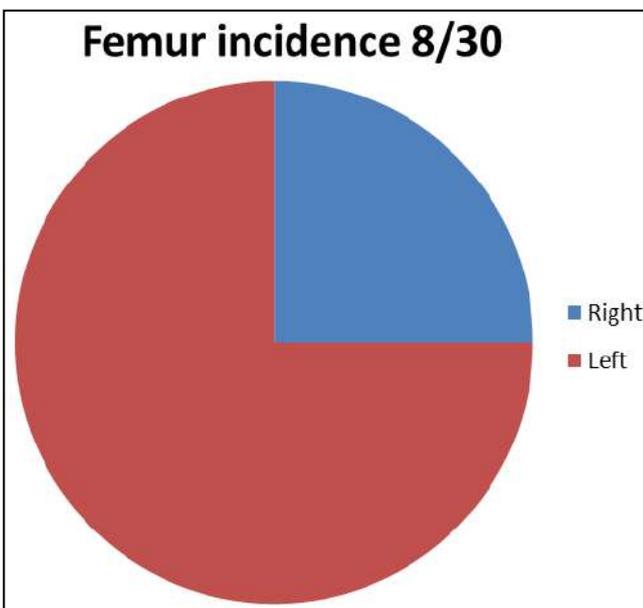
But the incidence was found to be eight out of thirty specimen in lower end of femur and six out of thirty in upper end of tibia. Probably the amount of force that is required for the formation of these facets are enormous and the lower end of femur and the upper end of tibia are designed to sustain these pressure.

According to Charles RH [11] on the study of influence of function as exemplified on the morphology of the lower extremity of Punjabi, 34 out of 53 talus was found to have squatting facets showing an incidence of 63 percent.

The observation in my studies is not in agreement with the other studies. It may be because of the difference in population chosen for the study. The study was conducted on south west coast Indians and the other study was based on north Indians.

Conclusion

It was easy to be identified in the dissection specimen in the lower end of tibia which forms the squatting facets but and the neck of the talus. But at the same time it was difficult to identify the facets in the lower end of femur and the upper



Graph 1: Squatting facets on the lower end of femur

end of tibia. The squatting facet in the lower end of the femur was minute and was very difficult to identify. A pair of simple microscopes came very handy as the lines were very hard to distinguish.

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