Research Article
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Gastrocnemius tubercle: attachment point of the gastrocnemius muscle tendon and posterior oblique ligament

Abstract

Introduction: The gastrocnemius tubercle is a third bony prominence found in the medial inferior part of the femur, gently distal and posterior to the adductor tubercle. It was named after its close location to the depression corresponding to the insertion of the medial gastrocnemius tendon. The gastrocnemius tubercle is likely to provide an extra surface for the insertion of the medial head of the gastrocnemius muscle. The aim of this study was to verify the incidence of the gastrocnemius tubercle in bones of dry femurs in northeastern Brazil.

Materials and methods: We evaluated 110 intact medial femoral condyles of human adults, found at the Human Anatomy Laboratories of the Federal University of Sergipe and the Tiradentes University, and 54 were right and 56 left, of unknown gender and age.

Results: Of the 110 medial femoral condyles evaluated, the gastrocnemius tubercle was found in 82.72% (91) of the cases. In the right dimidium this incidence was 41.8% (46) and in the left 40.9% (45).

Conclusion: The gastrocnemius tubercle has a high incidence in the medial femoral condyles of human adults, and its recognition is of great importance to clinicians and orthopaedic surgeons in the diagnosis and treatment of injuries on the knee medial face.

Keywords: gastrocnemius tubercle, femur, incidence, referential

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Abbreviations: MFC, medial femoral condyle; LFC, lateral femoral condyle; Red Circle, the gastrocnemius tubercle

Introduction

The gastrocnemius tubercle is a third prominence found in the medial inferior part of the femur, gently distal and posterior to the adductor tubercle. It was named after its close location to the depression corresponding to the insertion of the medial gastrocnemius tendon.[1] The gastrocnemius tubercle, the adductor tubercle and the femoral medial epicondyle form a triangular space that houses the origin of the medial patellofemoral ligament[2] and it is likely that the gastrocnemius tubercle provides an extra surface for the insertion of the medial head of the gastrocnemius muscle.[3] Thorough anatomical knowledge of the medial part of the knee is indispensable for the diagnosis and treatment of injuries,[4] as well as avoiding non-anatomical repairs to the medial part of the knee.[1] The aim of this study was to verify the incidence of the gastrocnemius tubercle in bones of dry femurs in north-eastern Brazil.

Materials and methods

We evaluated 110 intact medial femoral condyles of human adults, found at the Human Anatomy Laboratories of the Federal University of Sergipe and the Tiradentes University, and 54 were right and 56 left, of unknown gender and age.

Results

Of the 110 medial femoral condyles, the gastrocnemius tubercle was found in 82.7% (91) of the cases (Figure 1). In the right dimidium this incidence was 41.8% (46) and in the left 40.9% (45) (Table 1).

Figure 1 The gastrocnemius tubercle (red circle).

MFC, medial femoral condyle; LFC, lateral femoral condyle.

Table 1 Incidence of the gastrocnemius tubercle according to the dimidium

Tubercle	Dimidium					
	Right		Left		Total	
	Number	%	Number	%	Number	%
Present	46	41,8	45	40,9	91	82,7
Absent	8	7,3	11	10,0	19	7,3
Total	**54**	**49,1**	**56**	**50,9**	**110**	**100,0**

Discussion

Further studies on the gastrocnemius tubercle bring values between 52.27% and 100% of occurrence,[1,3] and in 80.7% of those which presented this prominence, it was smaller than the adductor tubercle.[3] The authors of the present study identified an occurrence of 82.7%, which corroborates the high percentages of occurrence found by LaPrade et al.[1] & Gosavi et al.[3] detailed anatomical knowledge of the medial part of the knee is indispensable for the diagnosis and treatment of injuries, such as the sensitivity perceived through palpation of the adductor tubercle as an indicator for injury at the origin of the medial collateral ligament.[4] While the adductor tubercle apex is readily identified on palpation and confirmed as a reference point for the medial collateral and the posterior oblique ligaments, the gastrocnemius tubercle apex is not so easily identified because of its variable and superficial shape.[5] Despite this difference, recognition of the gastrocnemius tubercle is important so that clinicians do not confuse it with the adductor tubercle during palpation, resulting in non-anatomical repairs to the medial part of the knee,[1] and to identify regions marked by chronic injuries or previous surgery.[6]

Conclusion

The gastrocnemius tubercle has a high incidence in the medial femoral condyles of human adults, being qualified as anatomical reference as well as the adductor tubercle and femoral medial epicondyle. Its recognition is of great importance to assist clinicians and orthopaedic surgeons in the diagnosis and surgical repair of the medial knee face.

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Conflicts of interest

Author declares there are no conflicts of interest.

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