

Two Similar Lines in the Sonographic Evaluation of the Hamstring Muscles: The T Junction is the Sonographic Landmark

Hamstring Kaslarının Sonografik Değerlendirmesinde İki Benzer Çizgi: T Kavşağı Sonografik Bir Landmarktır

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Dear Editor

The hamstring muscle complex consists of the biceps femoris, semimembranosus, and semitendinosus muscles originating from the ischial tuberosity, which cause hip extension and knee joint flexion.¹ The hamstring complex is a muscle group prone to injury, mostly in athletes. It has been reported that distal musculotendinous T junction injuries of the biceps femoris may show a different clinical course from other hamstring injuries due to dual innervation and complex anatomy.² The intramuscular ligament structures and the non-uniform structure of the muscles in this region cause anatomical complexity in this region. This makes sonographic evaluation of the hamstring complex difficult.³ However, knowing the sonographic land-

marks while evaluating the hamstring complex may facilitate the evaluation of the complex anatomy and may save time in terms of the diagnosis of pathologies.⁴ Therefore, learning these landmarks is very important especially for inexperienced clinicians who are new to musculoskeletal ultrasonography and may accelerate the learning curve.

In this article, we present that the T junction between the long and short heads of the biceps femoris can be used as a sonographic landmark. The biceps femoris is a two-headed muscle located most lateral to the hamstring complex. The long head starts from the ischial tuberosity, while the short head starts from the linea aspera, lateral intermuscular septum, and lateral supracondyle. The two heads are in contact with each other in the distal thigh.²

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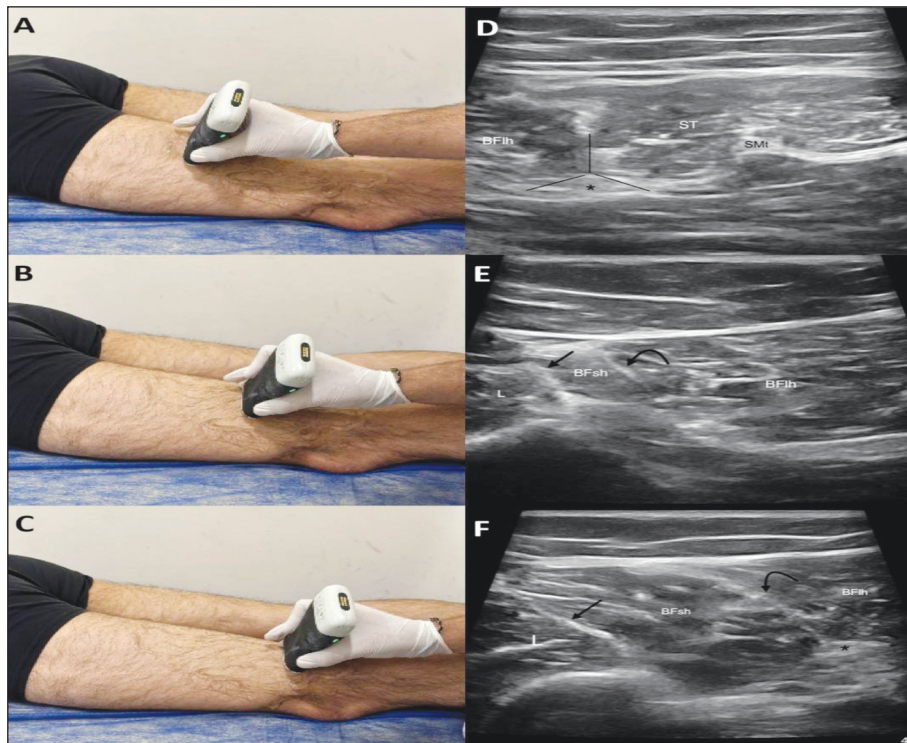


FIGURE 1: Sonographic evaluation of the hamstring complex. **A, D)** The common tendon of the Semitendinosus (ST) and the long head of the Biceps Femoris (BFh) in the axial plane in the proximal posterior region of the probe and the sciatic nerve at the center of the triad (*); **B, E)** When the probe is moved laterally and slightly distally, two parallel lines appear, the fascia between the short head of the biceps femoris (BFsh) and the lateral compartment (arrow) and the T junction between the short head of the biceps femoris and the long head of the biceps femoris (BFh) (curved arrow); **C, F)** When the probe is moved more distally, two parallel lines become clear, T junction between the long and short head of the biceps femoris (curved arrow) and the sciatic nerve (*).

When evaluating the hamstring complex with ultrasound, the conjoint tendon, which is the common tendon of the biceps femoris long head and semitendinosus, is visualized in the axial plane in the posterior region. The sciatic nerve is very closely associated with the conjoint tendon. After visualizing the long head of the biceps femoris located lateral to the conjoint tendon, when the probe is moved distally, the short head of the biceps femoris starts to be visualized between the line aspera and the long head of the biceps femoris.³ At the point where the short head of the biceps femoris becomes prominent, the T junction can be distinguished from the long head of the biceps femoris. At this point, the other sonographic line that can be considered parallel to the T junction is the fascia between the short head of the biceps femoris and the lateral compartment. These two lines are sonographically visualized parallel to each other. These two parallel lines can be consid-

ered landmarks and can be useful in identifying the biceps femoris muscles. Here, it can be seen that the fascia between the short head of the biceps femoris and the vastus lateralis muscle is associated with the line aspera of the femur and the T junction is associated with the sciatic nerve (Figure 1).

In conclusion, we believe that the short head of the biceps femoris is located between the structures visualized as two parallel lines and can be easily distinguished from the long head by the T junction. Clinicians can use these two parallel lines as landmarks when evaluating the hamstring complex with ultrasound.

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Conflict of Interest

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