THE PROXIMAL HAMSTRING FOOTPRINT: AN ANATOMIC MAPPING STUDY

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The purpose of this study is to define the topographic anatomy of the common hamstrings tendon origin on the ischium. Avulsion of the hamstrings tendon origin off the ischium is becoming a commonly recognized and treated athletic injury. Multiple case series detail excellent outcomes and near full recovery of strength after surgical repair. However, there is very little literature on the topographic anatomy of the region as it pertains to repair of the tendons, especially regarding the location on the ischium to which the avulsed hamstrings tendons are repaired. The most common post-operative complaint, pain with sitting, was reported as high as 61% in a recent series. This complaint could be due to non-anatomic repair of the avulsion to the ischial tuberosity rather than to the anatomic footprint; although no studies describe complications from a nonanatomic repair, several studies describe repairing the common hamstrings tendon to the ischial tuberosity. There is a simple technique for defining ligament and tendon insertions on bone using CT imaging and radio-opaque paint. This technique results in a 3D digital model where the tendon footprint topography can be described.

Materials and Methods

Dissection of the hamstrings origin in 6 cadaveric pelvises was performed (Fig 2). The hamstrings origin was isolated with sharp dissection, and it was noted whether the semimembranosus had a separate attachment, or whether there was one confluent tendon attached at the footprint (Fig 2). The common hamstrings tendon was then sharply dissected from the ischium and the footprint was outlined with surgical marker followed by radio-opaque paint(Fig 3). Paint was prepared by mixing 0.25g Daler-Rowney Acrylic Artists Ink Scarlet #567 (Bradwell, England) per gram of EZ-HD 98% v/w Barium Sulfate (Lake Success, NY). The paint was then applied to the area of the footprint and the specimen underwent a 0.5mm slice CT scan of the pelvis with 3D reconstructions(Fig 4). Vireos (Vital Images, Minnetonka, MN) software was used to determine the surface area of the ligament footprint as well as the distance from the ischial tuberosity to the center of the footprint. The thickness of the bone underlying the footprint was measured. Data are presented as means ± SE.

Discussion

This study provides a topographical description of the origin of the hamstrings footprint.

Our data will assist surgeons in performing anatomic repair of proximal hamstrings avulsions.

References