To the Editor:

We would like to congratulate Piefer et al.¹ on their systematic review of contemporary literature determining the position of the center of the ACL femoral attachment. They correctly conclude that the anatomical center of the ACL is 43% of the distance from the proximal margin of the posterior condyle of the femur to the distal most aspect of the condyle as viewed on a lateral radiograph of the lateral wall of the intercondylar notch (Fig 1, reproduced from Piefer et al.¹). However, the authors then suggest that this finding may be translated clinically by using a point along the wall of the intercondylar notch, 43% of the distance from the proximal articular margin to the distal articular margin when visualized arthroscopically. We understand that this point has been recommended, and adopted by some, as a reference position for anatomical ACL reconstruction.

We believe that the methodology used leading to the figure of 43% is incorrect. The authors describe ACL centrum data from previous studies, quantified as percentage measurements using the Bernard and Hertel grid. This grid is typically applied to a lateral radiograph of the knee, with axes along the length of the Blumensaat line and the width of the femoral condyle. The problem is that the outline of the femoral condyle seen on the 2-dimensional (2D) radiograph and that used for the grid includes the convexity of the femoral condyle, which extends beyond the proximal and distal margins between the bone and hyaline cartilage, as seen when viewing the lateral intercondylar notch wall arthroscopically. This can be observed on the 3D reconstructed image of the lateral femoral condyle shown in Fig 2. The bone beyond the articular cartilage margin on the side wall can be seen to project more distally than proximally.

We therefore agree with the authors that the 43% point does describe the midbundle position along the lateral femoral condyle using radiographic methods. However, because of the reasons just described, this percentage cannot be applied to a direct arthroscopically visualized measurement along the lateral intercondylar notch wall. A previous study by Bird et al.² published in *Arthroscopy*, demonstrated that the 50% position on the lateral wall viewed arthroscopically corresponded to the midbundle position of the ACL. This was confirmed by analysis of 3D CT scans with anatomical centrum data acquired from previous publications. The center of the attachment site being measured is the same in the 2 articles when using radiologic methods; however, if a ruler is being used arthroscopically to measure the aforementioned intra-articular landmarks, we believe the appropriate center point is 50% and not 43%.

We are concerned that the clinical translation of a radiologically validated figure of 43%, as recommended by the authors, will lead to inappropriate positioning of the ACL graft if a surgeon is intending to position the ACL tunnel in the center of the attachment site.

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Authors’ Reply

We very much appreciate the work and interest in ACL femoral footprint anatomy of Bird et al., and the thought-provoking letter from Dr. Spalding et al. The authors suggest a valid point, and we regret that their important article was published after the time of our systematic search of the literature.

Before we comment further, we first wish to again acknowledge the seminal work of Kaseta et al. who, to our knowledge, first described the concept and method of defining the proximal-to-distal distance of the anatomic centrum of the ACL femoral footprint. This reference was not included in our results, using the study search methods tested, but is recommended as invaluable reading for students of ACL femoral anatomy.

Next, reviewing Fig 2 of Dr. Spalding’s letter, it does appear that the center is at 50% when measured on the lateral side wall of the notch of the computed tomographic (CT) image. Unfortunately, CT scans show only the bone, and the location of the articular cartilage margin can only be inferred. Review of the letter’s Fig 2 raises significant doubt in our minds as to whether the white arrowheads that the authors superimposed on the CT image correspond to the arthroscopic landmarks we describe, which are the “articular margins (arthroscopically visualized osteochondral junctions)” of the lateral wall of the femoral intercondylar notch.

As we wrote, “our translational research goal is to describe arthroscopically useful, surgically relevant landmarks for practicing ACL surgeons who operate without routine use of fluoroscopy or open surgical dissection.”