specifically directed toward piriformis syndrome.

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"BUNGEE CORD" EFFECT IN HAMSTRING TENDON ACL RECONSTRUCTION

To the Editor:

I applaud Dr Carson’s editorial on anterior cruciate ligament (ACL) reconstruction graft selection that appeared in the June 1999 issue of Orthopedics (22[6]:567-568). The one area of criticism Dr Carson did not address was the increased laxity that one would see with a hamstring reconstruction. This harkens to those days when the hamstring reconstruction was fixed on each end of the tunnel with a staple. Instead of reconstructing what was anatomically a 3-cm ligament, the surgeon ended up with a 9-cm graft, creating a “bungee cord” effect.

Our technique uses a bone plug harvested at the time of drilling the tibial tunnel. This plug is split in half and allows us to fix the graft both at the entrance into the femoral condyle and at its exit from the tibial tunnel, thus anatomically reconstructing the ACL. I would agree with Dr Carson that the hamstring is a superior graft.

Peter E. Rork, MD
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 Reply:

I thank Dr Rork for both his compliments of my editorial and his very thoughtful comments regarding hamstring tendon ACL reconstruction and increased laxity. This is a fairly controversial topic among sports medicine physicians.

The concept of “bungee cord” effect associated with hamstring tendon ACL was first introduced by Dr Freddie Fu. As you have alluded to in your letter, fixation distant from the articular surface lengthens a 30-mm graft to a 90- to 100-mm graft. Techniques such as the placement of bone plugs adjacent to the graft or interference screws, whether bioabsorbable or metal, close to the articular surface have been used to create a more anatomic ACL reconstruction. However, other factors may be responsible for hamstring graft laxity.

Recently, there has been interest in improving tibial fixation with such techniques as creating a “tight fitting” tunnel for the graft, using half-sized reamers, and dilation of the drilled tunnels. Such techniques have enhanced bone quality and improved fixation.

With “poor fitting” oversized tunnels, there is potential for graft motion or a bungee cord effect along with the seepage of synovial fluid into the tunnel. This may explain the sclerosis and tunnel enlargement. In the literature, the number of articles addressing the basic science of graft incorporation continues to increase. Better understanding of graft incorporation will ensure a predictable stable ACL reconstruction.

The next important factor with regard to laxity and hamstring ACL reconstructions is the concept of “cycling” presented by Charles Brown of Harvard University at the annual meeting of the American Orthopedic Society of Sports Medicine in Traverse City, Mich. This concept of “cycling” refers to the cycling of the reconstructed ACL graft with constant tension to bring the graft to its appropriate length prior to fixation on the tibial side. Brown et al proved this technique to be crucial with hamstring tendon ACL reconstruction in the avoidance of graft laxity. Cycling appeared to have less of an effect with patellar tendon reconstruction. The difference is related to the rigidity of fixation of patellar tendon compared to soft-tissue fixation associated with hamstring tendon.

In conclusion, I believe the clinical laxity of hamstring tendon ACL in the literature is multifactorial. With recent improved surgical techniques and a better understanding of the basic science of the healing and incorporation of grafts with tunnels, hamstring graft laxity hopefully will become a problem of the past.

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CORRECTION

In the article, “Transarticular Spread of Ewing’s Sarcoma Across the Sacroiliac Joint: CT and MRI Correlation,” by Drnovsek et al, which appeared in the October 1999 issue of Orthopedics (22[10]:977-979), one of the author’s names appeared incorrectly. The third author was listed as I.G. Byron. The correct name is Byron G. Brogdon.