Letter to the Editor

Surgical and Histologic Confirmation of Psoas Regeneration After Arthroscopic Tenotomy

To the Editor:

In 2013 we had the high honor of publishing an article in Arthroscopy, entitled “Regrowth of the psoas tendon after arthroscopic tenotomy: A magnetic resonance imaging study.” One of the limitations, pointed out by the reviewers, was the lack of histologic confirmation of tendinous tissue regeneration. Confirming this histologic regrowth in a research protocol would involve a new procedure, which would be an obvious unethical scenario.

However, 15 months after we finished the original project, one of the patients required revision surgery due to recurrence of impingement symptoms and capsular adhesions that failed to respond to conservative treatment during a period of 4 months. To confirm the histologic regrowth of the psoas tendon after tenotomy, and with previous institutional review board approval and the patient’s informed consent, the psoas tendon was explored during the revision hip arthroscopy and the presence of regenerated tissue was surgically confirmed, whence a histologic sample of the tendon at the level of the labrum was collected. With no previous information about the origin of the tissue, a senior pathologist assessed the sample using H&E stain and reported “tendinous tissue, with hypocellular collagen bundles, and occasional lymphocytes and macrophages with hemosiderin” (Fig 1).

Although our previous MRI study in 19 patients reported psoas regrowth after tenotomy,1 and other authors have reported a clinically exaggerated re-formation of the tendon in athletes,2 there have been no previous surgical or histologic reports of psoas tendon regeneration in the literature. Histologic corroboration of tendon regrowth has been reported previously in animals and humans. Turhan et al.3 performed an anatomic and histologic study in sheep and found a regeneration potential of the musculus extensor digitalis lateralis tendon 6 months after tenotomy.

In humans, the studies have been directed mainly to hamstring tendon regrowth after use as an autograft for anterior cruciate ligament (ACL) reconstruction. Ahlen et al.4 reported histologic re-formation of the semitendinosus (ST) tendon at a minimum 6-year follow-up in 18 patients who underwent ACL reconstruction using ipsilateral ST tendon autograft. Interestingly, they found no significant differences between the regenerated and non-harvested tendon in terms of fiber structure, cellularity, vascularity, and level of glycosaminoglycans. By contrast, in this case, the architecture of the tissue was different when compared with a normal psoas tendon. The regenerated tendon had disorganized fibers and more cellularity.

This case study finally proved that the psoas tendon regenerates after tenotomy and supports the clinical and imaging observation of a regrowth phenomenon.

Fig 1. (A) Histologic sample of regenerated psoas tendon (H&E stain, original magnification ×200). Bundles of hypocellular collagen with occasional lymphocytes were observed. The more cellular area in the upper left portion of the image corresponds to a zone adjacent to muscle. (B) Normal psoas tendon from a 30-year-old male cadaver (H&E stain, original magnification ×200). Organized collagen architecture and cellularity can be observed.

reported in our previous study. The re-formation phenomenon is important to understand the natural history of psoas tenotomy by disturbing and apparently recovering the function of the psoas tendon without recurrence of the impingement or snapping phenomenon.

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References