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Surgical techniques

Short medial approach harvesting of hamstring tendons



H. Lanternier*, J.B. de Cussac, T. Collet

Polyclinique de l'Europe, 33, boulevard de l'Université, 44600 Saint-Nazaire, France

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ABSTRACT

Harvesting the hamstring tendons for anterior cruciate ligament reconstruction is not straightforward to perform or to teach: the incision is small, the work-space is narrow and the surgeon's tactile feedback using the stripper is difficult to explain to juniors. The purpose of this short note is to describe a reliable means of harvesting the semitendinosus, gracilis or both. Patient and tourniquet positioning, instrumentation and landmarks are detailed; then the 6 steps (speed-bump 1, speed-bump 2, bubble, hook, expansions, stripper) are explained.

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1. Patient positioning, material and operative technique

The knee is positioned in 90° flexion. The tourniquet is positioned very high on the thigh in contact with the perineum: if too, low, it would hinder the descent of the muscle body trapped above it during manual traction applied to the tendon, and then block the progression of the stripper by its pressure [1] (Fig. 1).

Fairly wide Mayo scissors are needed; Metzenbaum scissors would be too fine. A hook, or else a right-angled vessel dissector, is also required (Fig. 2).

1.1. Step 1: closed palpation of the “speed-bump”

A gloved finger dipped in povidone iodine (Bétadine®) efficiently palpates the relief of the pes anserinus adjacent to the medial tibial metaphysis. A 3 cm incision is made centered on the superior edge of the “speed-bump” (Fig. 3).

1.2. Step 2: open palpation of the “speed-bump”

After incising the skin, the fatty layer is pulled away and crossed to reach the aponeurosis. A bright white plane should be obtained on a good work surface before going further. Sliding the blunt tip of the closed scissors down the aponeurosis, the superior edge of the “speed-bump” can be distinctly felt: this is the superior edge of the sartorius muscle, covering the gracilis and semitendinosus. Palpation needs repeating several times; the feeling is of driving

over a speed-bump, whence the name given to it by the Americans (Fig. 4).

1.3. Step 3: the “bubble”

The upper edge of the speed-bump is firmly grasped by dissection forceps and delicately incised using a sharp lancet: the impression is of bursting a bubble (Fig. 5). Still grasping the bump with the forceps, the lancet is replaced by Mayo scissors, which slide proximally for 6 cm along the superior edge of the bump (sartorius muscle) and 1 or 2 cm distally. The bubble is open wide (Fig. 6).

1.4. Step 4: the hook (or vascular dissector)

The dissection forceps now pull the inferior lip of the bump downward. This is the sartorius muscle, on the deep side of which two tendons are visible: the finer gracilis above, and the thicker semitendinosus below. The chosen tendon can now be caught, using a hook or dissector (Fig. 7).

1.5. Step 5: expansions

Yasin et al. [2] published a good description of expansion anatomy for purposes of harvesting, particularly concerning the semitendinosus, with its 3 expansions, the most proximal at 8.1 cm, running back toward the gastrocnemius (Fig. 8). Pulling on the tendon reveals them one after the other, and they can be sectioned using Mayo scissors under visual control until perfect elastic freedom is obtained. Release by the finger is unnecessary and inefficient, and delicate Metzenbaum scissors are not very suitable

* Corresponding author.

E-mail address: hubertlanternier@wanadoo.fr (H. Lanternier).

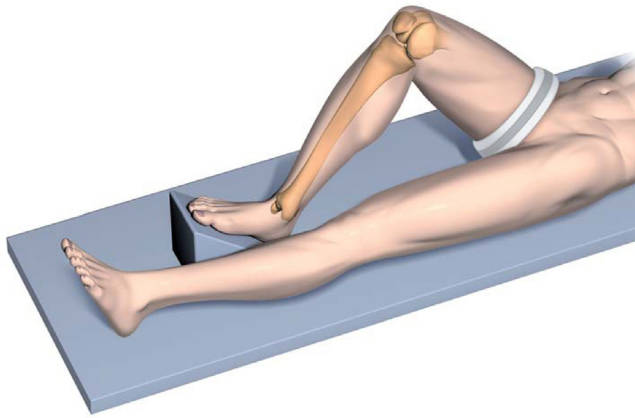


Fig. 1. Knee at 90°, tourniquet at the inguinal fold.



Fig. 2. A hook is easier to use than a classical vascular dissector.

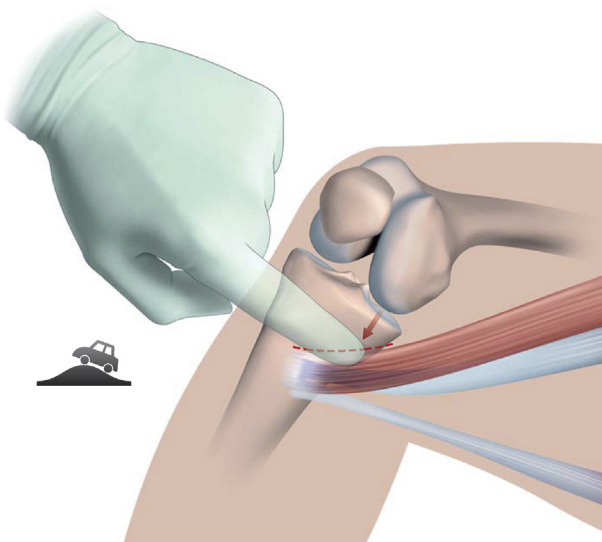


Fig. 3. A finger dipped in povidone iodine easily palpates the “speed-bump”.

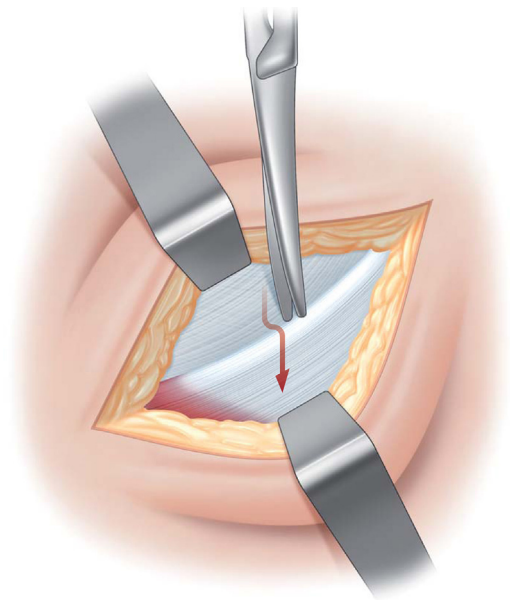


Fig. 4. The tip of the scissors slides over the bump.

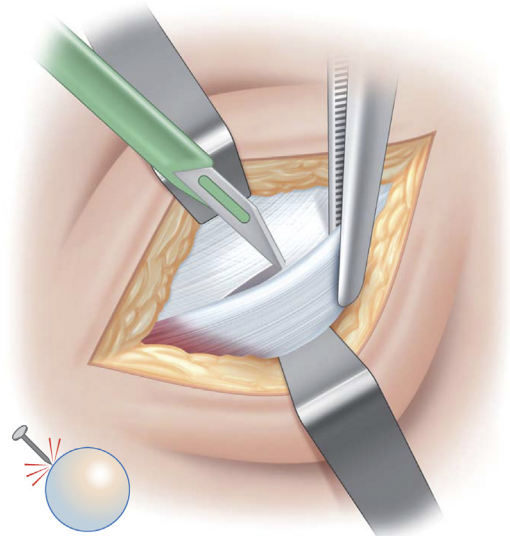


Fig. 5. The tip of the lancet bursts the “bubble”.

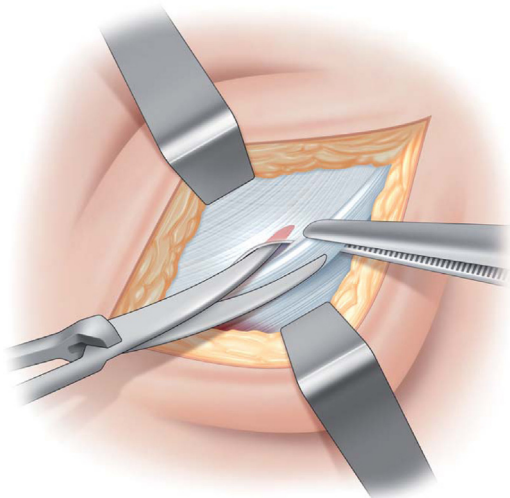


Fig. 6. The scissors enlarge the perforation.

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