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LETTER TO THE EDITOR

Reinforcement with fascia lata as an alternative in the repair of chronic quadriceps tendon injuries

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Dear Editor,

Quadriceps tendon rupture is an uncommon injury in orthopedic traumatology and is usually associated with chronic diseases, or the use of systemic or local corticosteroids (1,2). Simultaneous bilateral lesions are even more uncommon, with few cases described in the literature since 1949, when the first description was made by Steiner and Palmer (3). Although bilateral lesions have been described in patients without predisposing factors, the most common scenario is patients with pathologies such as diabetes, renal failure, and autoimmune diseases. One of the problems of bilateral lesions is their delayed diagnosis. Neubauer et al. showed that diagnoses are performed on average more than two months after the injury, which hinders patient recovery, as functional recovery is correlated with the time elapsed between the injury and the surgical procedure (4).

Due to the high rate of functional losses after isolated repairs of quadriceps tendon lesions, particularly in chronic lesions, some alternatives have been created with the intention of obtaining a functional improvement in these patients. Alternatives include the Codivilla technique, reinforcement using steel wires and allografts, and even the use of platelet-rich plasma with the goal of achieving better healing of the tendon (4-6). The use of fascia lata allografts is becoming increasingly common in reconstructions around the shoulder and knee due to their material, structural, and biomechanical properties that resemble the original tendon tissue (7).

In this letter we present a report on a patient with chronic bilateral quadriceps tendon tear treated surgically with repair of the tendon using transosseous sutures associated with reinforcement using two flexor tendons and coverage of the repair using fascia lata graft, simulating the retinaculum in the anterior region of the knee.

A 56-year-old male patient who smoked, suffered from hypertension, diabetes, and had been undergoing dialysis treatment for chronic kidney failure for 9 years, felt both knees snap when descending a ladder. He denied a history of falls or trauma in the knee during the episode. After the incident he presented functional impotence of the lower limbs and was unable to walk. He sought medical attention at a secondary hospital where he was examined, had frontal and lateral radiographs taken of both knees and was released with referral to a basic health care unit for physiotherapy with a diagnosis of arthralgia of the knees. The patient maintained functional impotence, pain, and edema in the anterior region of the knee even after physiotherapy treatment. The patient was unable to work after the episode and was restricted to a wheelchair.

Eight months after the onset of the condition, he once again visited the medical service at our hospital where he presented with a gap in the suprapatellar region and functional impotence of the extensor mechanism of both knees. The patient had an ultrasound scan which showed complete rupture of the

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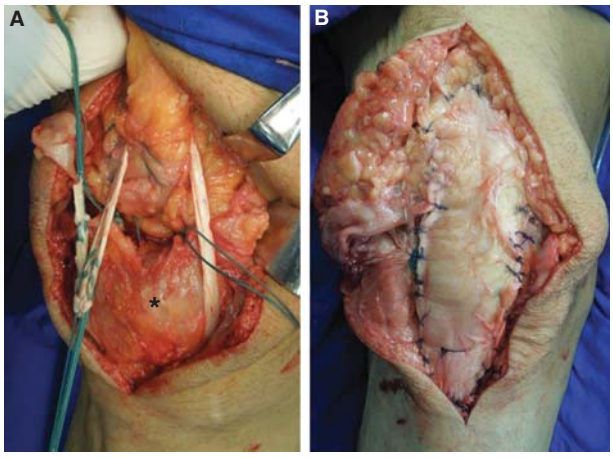

Figure 1. A) Clinical photo showing circumferential reinforcement of the left quadriceps tendon repair with allograft tendons. The asterisk shows the patella. B) Clinical photo showing the final aspect of the coverage of the repair with fascia lata graft from a tissue bank.

bilateral quadriceps tendon with retraction of 7.3 cm between the stumps on the right side and 7.4 cm on the left side. The patient also had an MRI scan after diagnostic confirmation. At the time of diagnosis, the patient exhibited decompensated diabetes and poor clinical control of his other systemic pathologies which ruled out an immediate surgical procedure. Perfect control of the co-morbidities, necessary for a safe surgical procedure with a lower risk of healing complications, only occurred after three months, totaling 11 months after the initial injury. Immediately before the surgery the patient presented a score of 32 on the KSS scale.

The chosen surgical treatment was the simultaneous repair of the bilateral quadriceps tendon with extensive anterior approach, transosseous sutures through the patella, and reinforcement with flexor tendons from a tissue bank associated with coverage of the repair using a fascia lata graft with the intention of imitating the anterior retinaculum of the knee. The reinforcement with flexor tendons was performed in a circumferential shape, or 'O' shape, splicing the tendons in the remaining portion of the quadriceps tendon and passing it under the patella, without making tunnels in the patella so as to preserve it (Figure 1A). The graft was tensioned with the knee in full extension. The fascia lata graft then had its ends sutured on the anterior tuberosity of the tibia and on the quadriceps tendon (Figure 1B).

The patient used a long orthosis in extension for 6 weeks. During the first six weeks activity was limited to isometric exercise for the quadriceps, glutei, adducers, and abductors. Gain in passive range of motion (ROM) started at three weeks from 0–45°, developing to 60° in the fourth week, and then in the sixth week the active gain of ROM was released, reaching 0–130° in the tenth week. Sutures were removed three weeks after surgery, and the patient did not have any healing problems. Prophylactic anticoagulant medication was maintained until the knee orthosis was removed.

In week eight the patient started orthostatism exercises and gait training with the assistance of parallel bars, subsequently a walking frame, a cane, and later on without support. As the patient was having dialysis on alternate days, he found it hard to cope with the physiotherapy follow-up treatment, only managing to perform exercises no more than twice a week. Six months after surgery the patient is very satisfied with his level of activity and function, presenting a KSS of 80.

Fascia lata grafts have recently been used to reconstruct the anterior cruciate ligament, the patellar tendon, and for other procedures with good results (7). Aurora et al. (8) showed that the material, biomechanical, and structural properties of fascia lata grafts are similar to tendon tissue, which acts as an incentive for their use on a larger scale in these types of reconstruction.

Even in the absence of any healing complication, which would be quite possible on account of the patient's clinical co-morbidities, we decided to exercise great caution when starting rehabilitation, avoiding forcing the repair at first. Even if it takes 6 months to restore pre-injury function, we believe that recovery of the total range of motion, without extension lag and with normal strength of the quadriceps, was an excellent result due to the patient's age and co-morbidities and the time elapsed between the injury and the surgical treatment, which prevented the patient from walking for 11 months. Neubauer et al. showed total recovery in just 3 of 14 patients operated more than 14 days after lesion (4).

In short, we believe that surgical treatment of chronic lesions can present good results provided that the rehabilitation is performed carefully and additional methods of reinforcement are used besides simple surgical repair. To our knowledge, the fascia lata graft has not yet been used for that purpose and may be yet another option for health care services that have a tissue bank available.

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