ISAKOS

International Society of Arthroscopy, Knee Surgery and Orthopaedic Sports Medicine

10th Biennial ISAKOS Congress • June 7-11, 2015 • Lyon, France

Paper #14

Surgical Treatment of Traumatic Avulsion of Distal Triceps Tendon in 150 Patients

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Summary:
This is the largest series of traumatic avulsion of triceps tendon in the literature. Demographic and surgical data will be presented.

Abstract:
INTRODUCTION
Distal triceps tendon ruptures are rare. The literature provides several small case series, the largest containing 23 cases. Little is known about the demographics of this injury or the outcomes of operative repairs. We present a series of 150 acute, traumatic triceps tendon avulsions which were surgically treated.

METHODS
150 acute, traumatic triceps tendon avulsions were repaired surgically from 2007 to 2013. Procedures were performed at a multi-surgeon (69 surgeons), multi-center (13 centers) community-based integrated health care system. Pre- and post-operative data were obtained by a retrospective chart and imaging review. Variables recorded were age, gender, race, hand dominance, occupation, smoking history, medical comorbidities, mechanism of injury, time from injury to surgery, site of tear (avulsion vs. mid-substance), presence of bony fleck, type of repair (bone tunnels vs. anchors), re-operation rate, infection rate, and time to full work release.

RESULTS
The average age was 51 (15 to 79). There were 141 males and 9 females. 50% were Caucasian, 35% African American, and 14% Hispanic. The dominant side was involved in 70% of cases. The most common mechanisms of injury were fall (58%) and weight lifting (20%). Average time from injury to surgery was 18 days (range 1day to 11 weeks), with surgery being performed in 90% in less than 3 weeks and 10% between 3 weeks and 12weeks. 12% were smokers. 76% had medical comorbidities. 6% had documented anabolic steroid use. 73% had a bony avulsion (fleck) on lateral radiograph. A pre-operative MRI was used in 60% of cases. An MRI was ordered in 58% of those with a bony fleck and 75% without a bony fleck. Operative findings revealed a complete tendon rupture in 88% cases and partial injury in 12%. The location of rupture was from the bony insertion (94%), intra-tendinous (4%), and musculotendinous junction (2%).

Repairs included sutures through bone tunnels (59%), anchors-single row (22%), combination of bone tunnels and anchors (10%), and double row anchors (9%). In all cases, high strength sutures were used (#2 suture - 65%; #5 suture- 30%). Average tourniquet time was 56 min for bone tunnel group versus 46 min for anchors ($P<0.05$). Of those with bony avulsions, the bony flecks were removed 80% of the time and incorporated in the repair 20% of the time. The average release without restrictions for the anchor group was 4 months and that of the bone tunnel group was 5 months ($P<0.05$).

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Nine (6%) of the repairs had a re-rupture. All were as a result of patient non-compliance and early return to lifting. All re-tears were in the bone tunnel group. Nine (6%) required re-operation to increase range of motion and/or bone excision. There was no difference in repair groups. The infection rate was 0.6 %.

CONCLUSIONS

This is largest series of acute traumatic triceps tendon ruptures. Important demographic data are presented here, as well as radiographic and surgical findings. Primary repair of the ruptured tendon was possible when performed within 11 weeks after the injury. An avulsed bony fleck on lateral x-ray was helpful in making the diagnosis. MRI was also useful in aiding in diagnosis. Early surgical repair for traumatic distal triceps tendon ruptures yielded good results. Patients treated with anchors had shorter tourniquet times, less likelihood for re-operation, and were released from care sooner than patients treated with bone tunnels.