Presentation, Management, and Outcomes of Ballistic Tendon Injuries

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INTRODUCTION: Existing literature on upper extremity ballistic tendon injuries is limited. This study explores management of ballistic tendon injury patients.

METHODS: A retrospective chart review and prospective outcome surveys were performed for patients presenting to our Level 1 trauma center between January 2018-2023 with direct tendon damage secondary to a ballistic injury to the hand, distal forearm, or wrist requiring surgical treatment.

RESULTS:

41 patients were identified: mean age 33.95 (SD = 11.51), 34 male, 34 African-American (82.9%). There were 12 distal forearm injuries, 7 wrist, and 35 hand. 13 patients (31.7%) had injury to flexors only, 24 (58.53%) extensors only, 4 (9.8%) both flexors and extensors, 51 tendons total. 34 tendons (82.9%) underwent primary tendon repair, 10 tendons (24.4%), and 2 (4.4%) no initial treatment. There was no significant association between primary tendon repair or tendon transfer and need for subsequent tenolysis (p=0.39). Tendon transfer patients had significantly longer average hospital stay (10.7 days vs 3.8 days, p=0.025), but significantly higher composite fist at their last clinic appointment (96.67% vs 52.14% p=0.022).

40 patients (97.56%) sustained concomitant fractures. For the initial management of concomitant bony injuries, 4 fractures (8.33%) were treated non-operatively, 18 (37.5%) were fixed with k-wires, 16 (33.33%) with plating, 2 (4.17%) with screws, 6 (12.5%) with external fixation, 1 (2.08%) with arthroplasty, and 1 (2.08%) with plate and k-wires. Patients treated with plate fixation were more likely to attend at least one therapy session than patients with concomitant bony injuries fixed by other methods (76.9% vs 30.7%, p=0.015), and were also significantly more likely to attend a greater percentage of scheduled therapy appointments (54.45% vs. 22.95%, p=0.012).

DISCUSSION AND CONCLUSION: Primary tendon repair or transfer likely do not increase likelihood of future complications; tendon transfer may significantly improve patient outcomes.