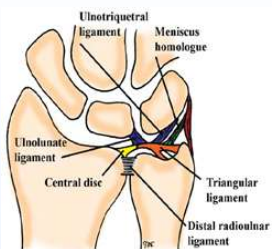


# Limitations of current diagnostic process of triangular fibrocartilage complex tears and protocols for conservative versus surgical care: a case report

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## Background



Normal anatomy of triangular fibrocartilage complex

The triangular fibrocartilage complex (TFCC) is an important structure in the distal radioulnar joint (DRUJ) for stability and axial load transmission.<sup>1</sup> Its role in wrist mechanics makes identification of TFCC pathology crucial. Unfortunately, there are **not thorough protocols** for clinical identification. Rather, the gold standard of detection is arthroscopy, as it allows for direct visualization of damaged tissue.<sup>2</sup> A non-invasive option for detection is Magnetic Resonance Imaging (MRI). However, both of these diagnostic tools are costly<sup>3,4</sup> and may not be readily available. The purpose of this case is to describe the challenge of diagnosis and management of a patient with TFCC pathology. Clinical protocols for conservative care and rehabilitation following surgical intervention will also be discussed to make recommendations for future diagnostic and practice standards.

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## Methods

A 41-year old female presented to clinic with painful pinching on the ulnar side of her right wrist. The patient had spoken to her primary care physician who suggested she rest her arm, she then visited an urgent care where she had **negative x-ray imaging** and was diagnosed with a wrist sprain. At this time, she was referred to physical therapy. She reported 5-9/10 pain<sup>5</sup> with intermittent mild to severe tingling radiating from her elbow through her medial forearm into her 5<sup>th</sup> digit. The patient had tenderness with **palpation over the TFCC distribution**. Active range of motion was limited in all directions except pronation and symptoms were provoked in most directions (Table 1). The evaluating physical therapist deemed that clinical examination was consistent with the diagnosis of an unspecified wrist sprain. Therapeutic intervention included active assisted range of motion for the wrist, tendon glides, stabilization training, strengthening for the upper extremity, and use of an upper body ergometer. Instrument-assisted soft tissue mobilization and various modalities were used to improve ROM and for pain relief.

Table #1

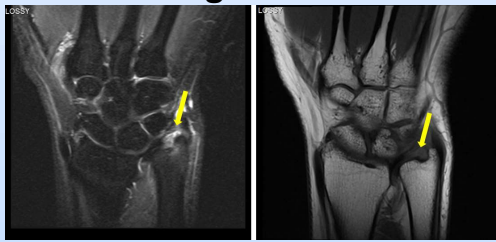
Outcomes				
	Initial Evaluation, Pre-Operative	Discharge, Pre-Operative	Post-Operative Evaluation	Post-Operative Discharge
Extension	0-48°	0-74	0-10	0-58
Flexion	0-80°	0-80	0-40	0-80
Pronation	0-88°	0-82	0-40	0-90
Supination	0-64	0-45	0-20	0-90
Radial Deviation	0-18°	0-20	0-6	0-26
Ulnar Deviation	0-23°	0-42	0-12	0-42
Pain	Resting: 5/10	Resting: 2/10	Resting: 2/10	Resting: 0/10
	Worst: 9/10	Worst: 5-6/10	Worst: 8/10	Worst: 2/10
QuickDASH	61.91%	47.73%	75%	6.82%
Grip Strength	40lbs	55lbs	**	70lbs

\*With pinching; / with popping; °pain at end range; / pulling and tingling; / pinching on ulnar side  
 \*\*Not measured due to surgical precautions or pain. QuickDASH= Quick Disabilities of the Arm, Shoulder, and Hand

## Results

After five weeks of physical therapy with little to no respite in symptoms, the **patient elected to have an MRI**. Significant findings were noted at the insertion of the TFCC to the ulnar styloid and foveal attachment to the ulna (Figure 1). Soft tissue edema was noted as well as dorsal subluxation of the ulnar head. Upon this discovery, she **decided to pursue surgery** rather than continue with conservative care. The patient returned to therapy 7 weeks following surgical debridement and repair. A variety of modalities, therapeutic exercises, stretches, mobilizations, and functional tasks were used with the patient to help work on returning to baseline from before her injury. Despite consistent attendance of therapy sessions, the patient had **difficulty regaining full range of motion (ROM)**, particularly in supination and wrist extension. Most protocols strive to achieve full ROM by 10 weeks post-operatively.<sup>6-10</sup> This slow gain of ROM may have been due to the **long period of pain and immobility prior to accurate diagnosis**. At discharge she showed a reduction in pain and improved function.

Figure #1



MRI revealed significant dorsal subluxation of the ulnar head; complete disruption of the TFCC to the ulnar styloid attachment (left) and complete disruption of the foveal attachment of the TFCC (right).

## Discussion & Conclusions

This case report exemplifies the challenges in diagnosis of TFCC pathology as well as the potential consequences a patient faces as a result. The delay in diagnosis, wait for surgery<sup>5,11,12</sup> and postponed initiation of ROM post-operatively may have contributed to the patient's difficulty restoring full ROM. These setbacks resulted in an **increased amount of time the patient had pain and limited function and increased medical expenses** via diagnostic imaging and costs for extended physical therapy services. There are a multiple special tests and procedures that can be used in identification of TFCC pathology. However, there are **no published clinical prediction rules** in physical therapy practice concerning the diagnosis of TFCC pathology. Based on review of the literature on provocative tests available for TFCC, **we propose a diagnosis test cluster** (Table 2). Early and accurate clinical diagnosis can help the therapist and the patient work together to develop a plan of care that best suits the patient and could lead to more timely intervention at a lower cost to the patient.

Table #2

### Proposed Test Cluster

Test	Sensitivity	Specificity
Piano Key Sign	59%	96%
Ulnocarpal Meniscoid Test	40%	92.7%
Press Test	100%	-
Ulna Fovea Sign	95.2%	86.5%

