State of the Art in Thumb Ulnar Collateral Ligament Injuries

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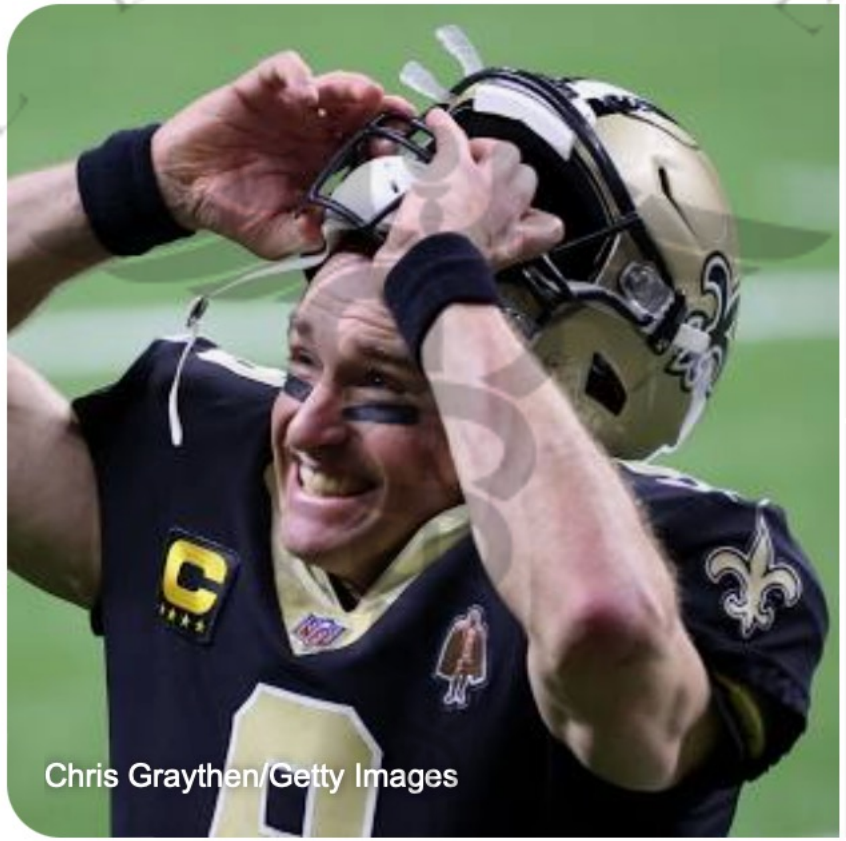
Outline

- Patient Identification
- Define the problem
- Discuss the research
- PHWE Case example
- Future considerations

Patient Identification



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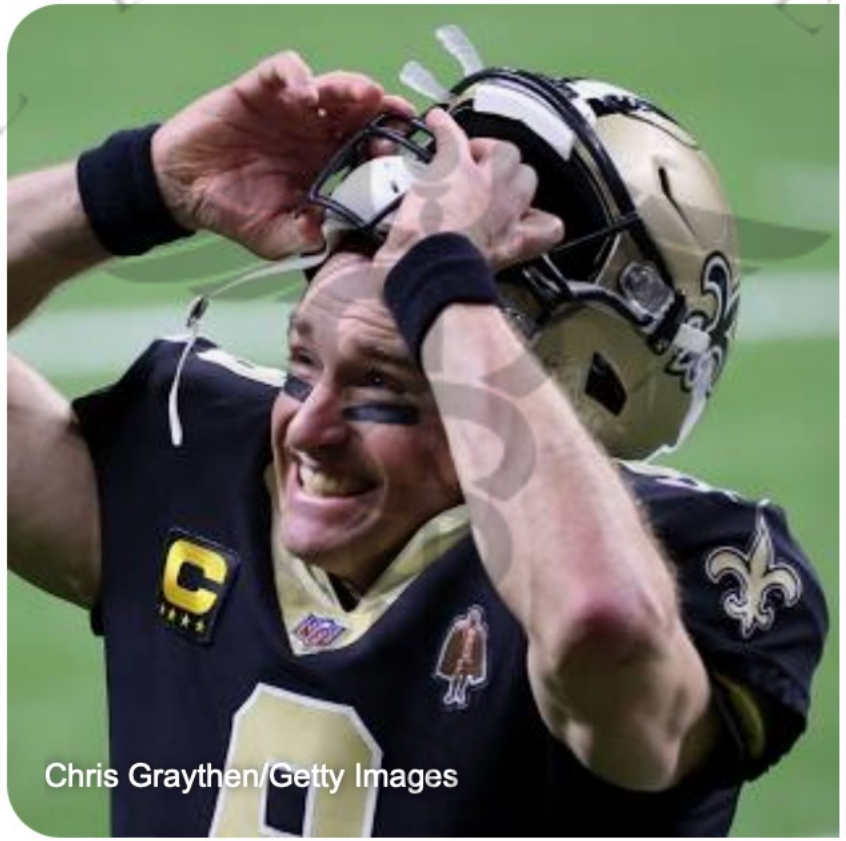
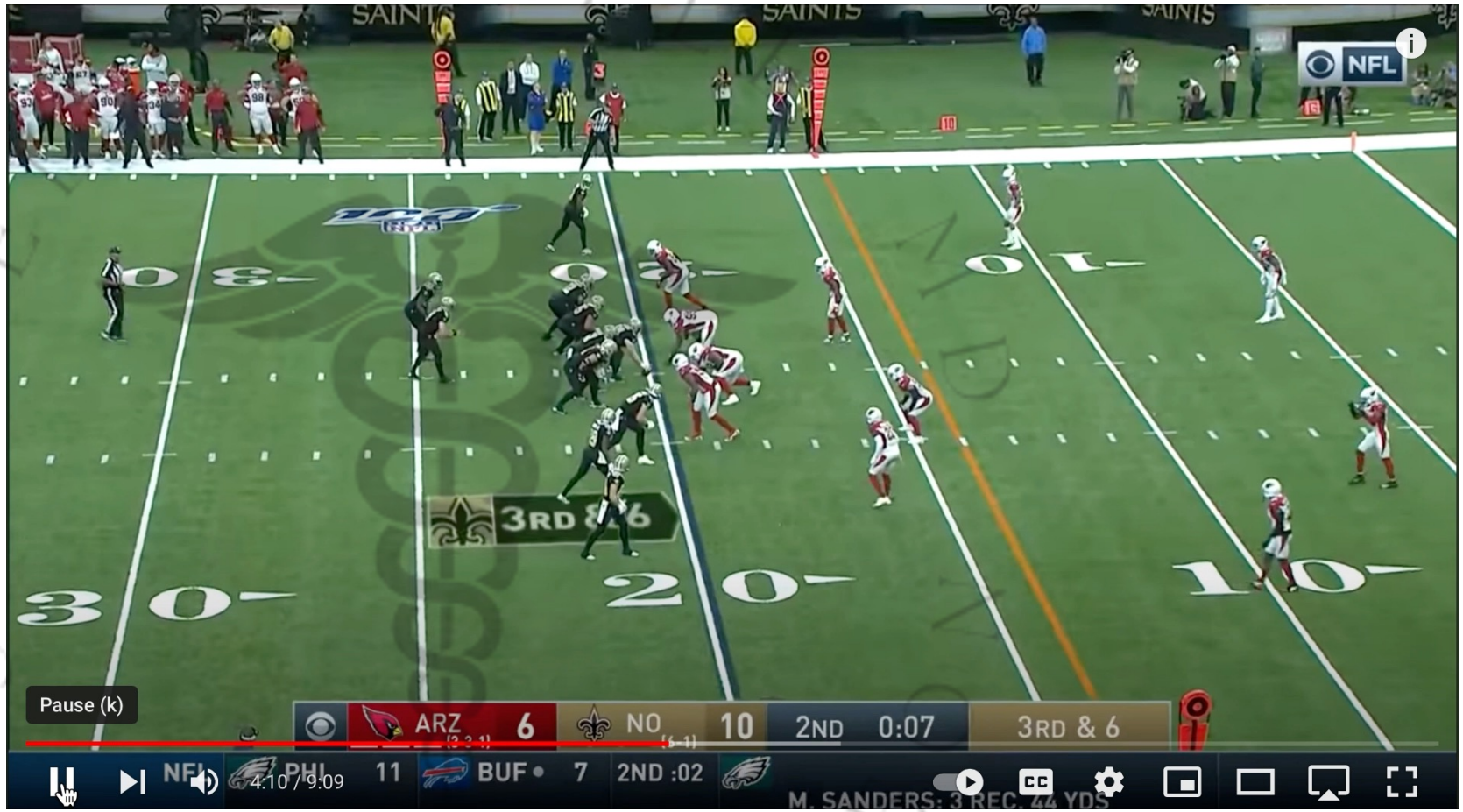
Patient Identification



Drew Brees

Google.com

Patient Identification



Drew Brees

Youtube.com

Patient Identification

Google.com

Patient Identification

Mike Trout

Google.com

Patient Identification

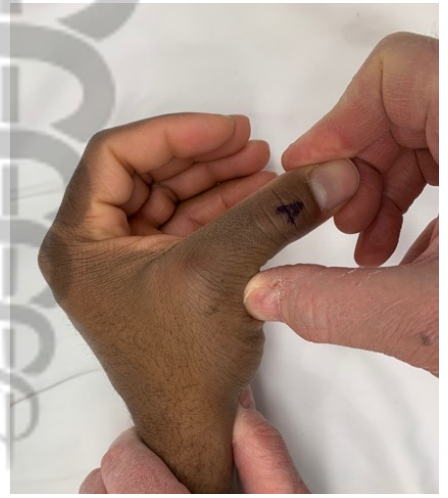
Mike Trout

Youtube.com

Define the problem

State of the Art in Thumb Collateral Ligament Injuries

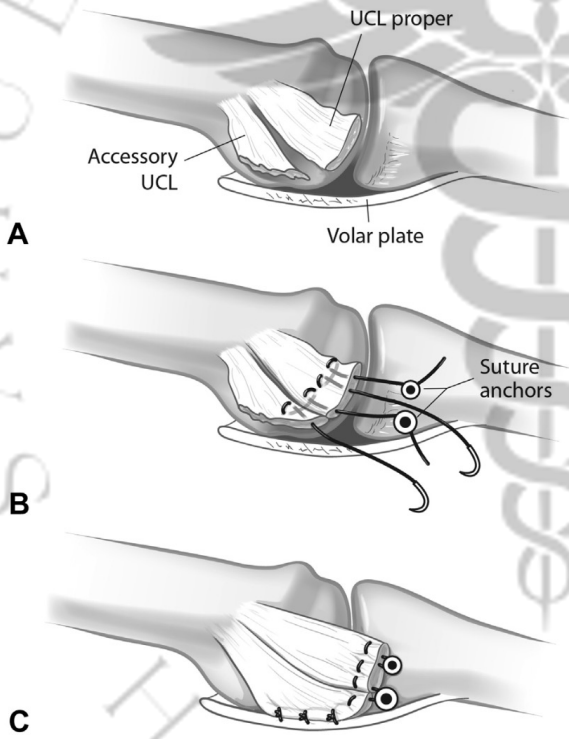
- Thumb metacarpalphalangeal joint ulnar collateral ligament
  - Origin at the center of the metacarpal head
  - Insertion at the base of the proximal phalanx
  - Prevents deviation to a valgus stress of the metacarpalphalangeal joint



Treatment options

State of the Art in Thumb Collateral Ligament Injuries

- Thumb metacarpalphalangeal ulnar collateral ligament
  - Complete injuries are an indication for surgical repair



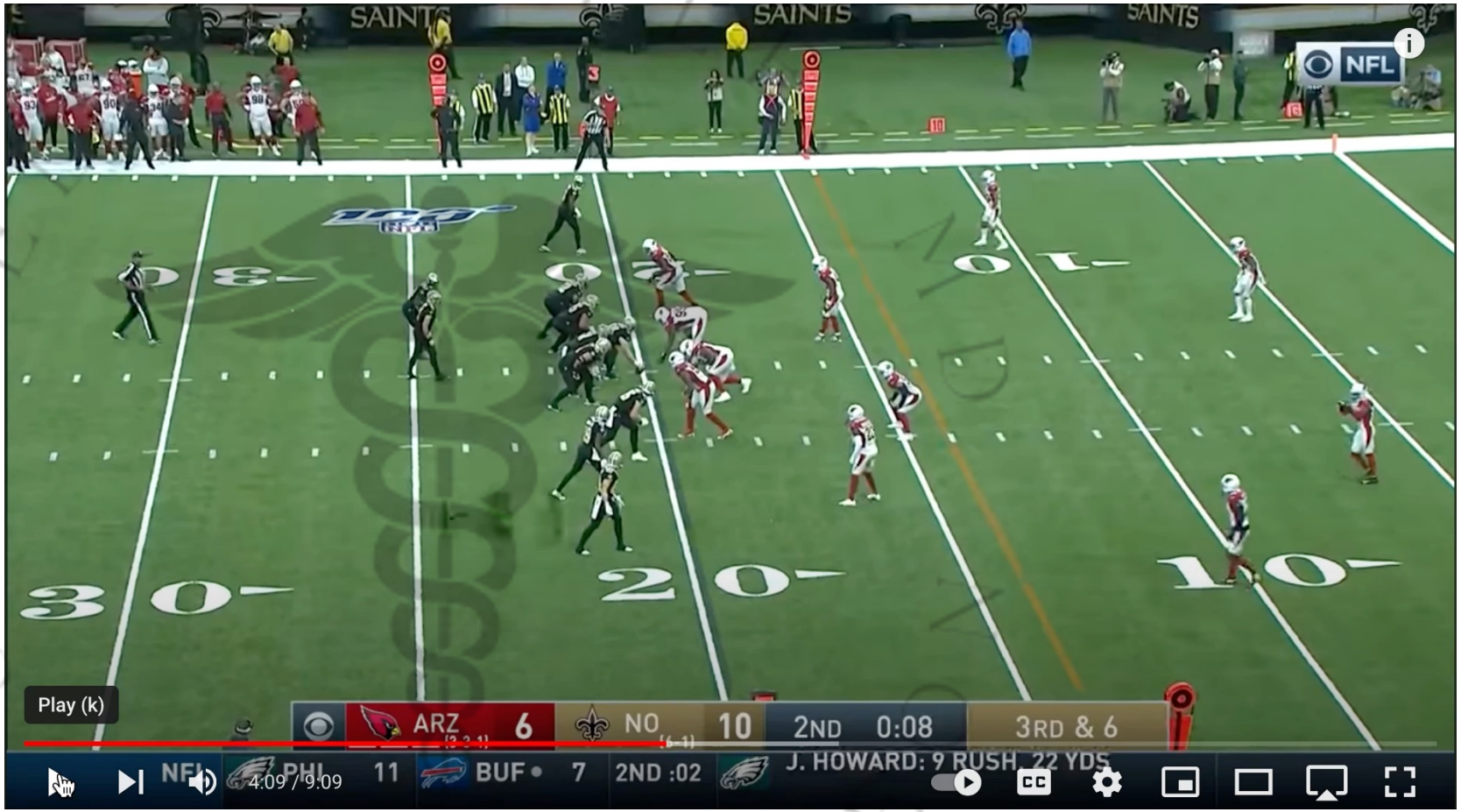
Werner et al. Return to Football and Long-Term Clinical Outcomes After Thumb Ulnar Collateral Ligament Suture Anchor Repair in Collegiate Athletes. J Hand Surg Am. 2014;39(10)

Green's Treatment

Green's Operative Hand Surgery

- Thumb splint or cast for 4 weeks,
- Thermoplastic splint additional 2-4 weeks
- Activities that stress the UCL are avoided, and unrestricted use is not recommended for 3 to 4 months after surgery.
- In the majority of cases, full athletic participation, including contact sports, can be resumed by approximately 4 months postoperatively

Patient Identification



Youtube.com

Drew Brees: Surgery Sept 18, 2019

- Saints v. Cardinals Week 8 Oct 27, 2019
- 5 weeks from surgery

Patient Identification

Youtube.com

Mike Trout: Surgery May 31, 2017

- Angels v Nationals July 18, 2017
- 6 weeks from surgery

Historical Perspective

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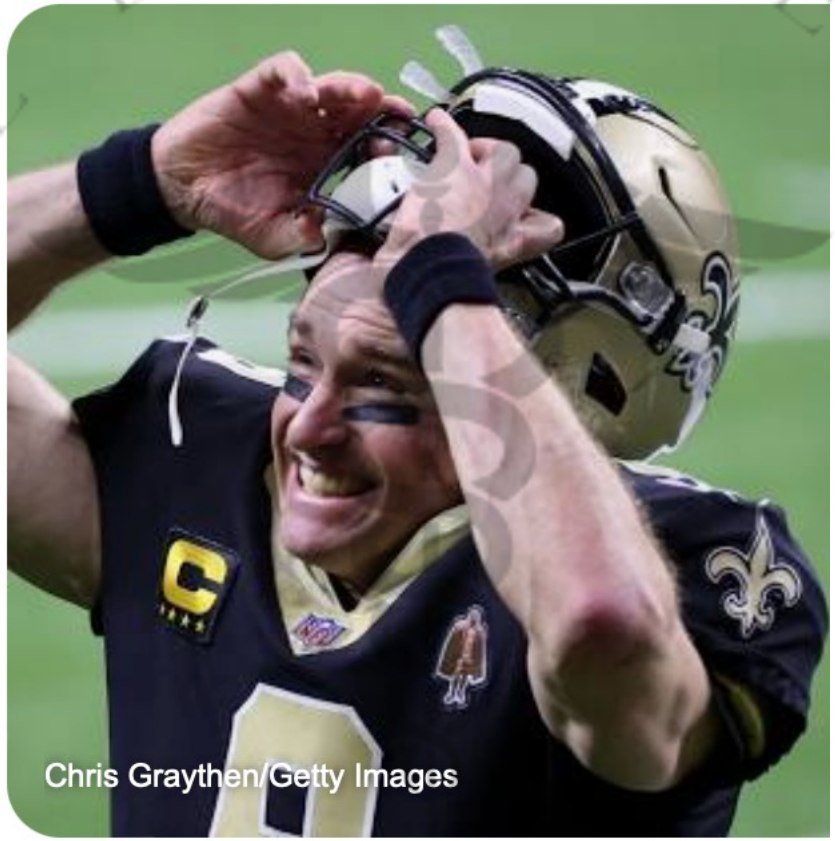
Performance and Return to Sport After Thumb Ulnar Collateral Ligament Surgery in National Football League Players

Kyle R. Sochacki[1], Robert A. Jack II[1], Richard Nauert[1], Shari R. Liberman[1], Patrick C. McCulloch[1], David M. Lintner[1], and Joshua D. Harris[1]

- 23 players from 1965 to 2016
- 95.7% return to sport (22 of 23)
- Average of 132.2 ± 126.1 days

Historical Perspective



Tore the ligament in week 2 (Sept 15) of the 2019 NFL season

Dr. Steve Shin from Kerlan-Jobe and Cedars Sinai performed surgery a few days later (Sept 18th)

Returns week 8 to throw 373 yards with three touchdowns to crush the Arizona cardinals 31-9. (39 days)

Drew Brees

Historical Perspective

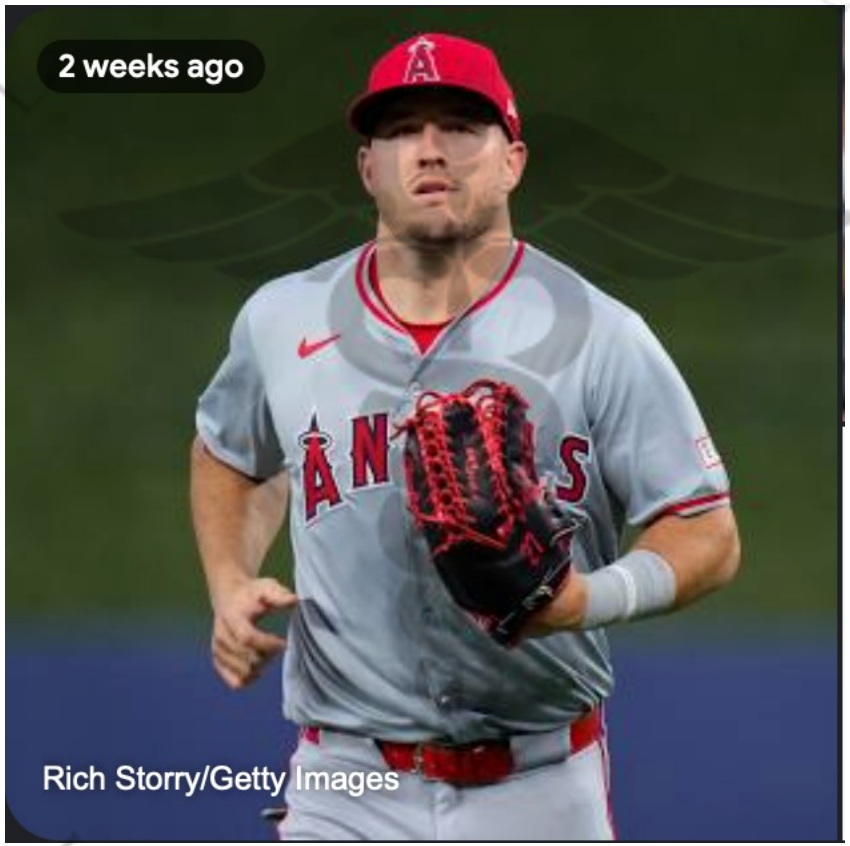
Performance and Return to Sport After Thumb Ulnar Collateral Ligament Repair in Major League Baseball Players

Robert A. Jack II,* MD, Kyle R. Sochacki,* MD, Bryce Gagliano,* BS, David M. Lintner,* MD, Joshua D. Harris,* MD, and Patrick C. McCulloch,*† MD

Investigation performed at Houston Methodist Orthopedics and Sports Medicine, Houston, Texas, USA

- 21 players from 1987 to 2016
- 100% return to sport
- Average of 120 ± 75.9 days

Historical Perspective



Mike Trout

Tore the ligament May 28th in the 2017 MLB season

Dr. Steve Shin from Kerlan-Jobe and Cedars Sinai performed surgery a few days later (May 31st)

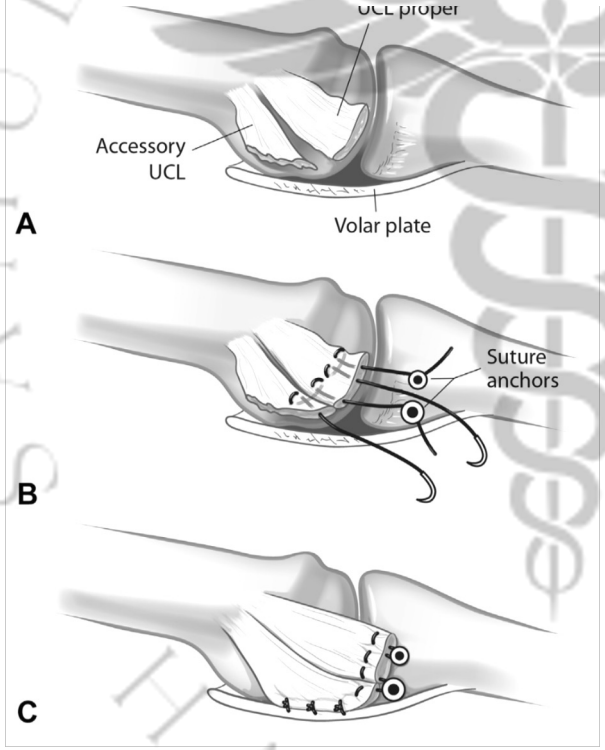
Returns to play 48 days later

Google.com

Modern perspective

Return to Football and Long-Term Clinical Outcomes After Thumb Ulnar Collateral Ligament Suture Anchor Repair in Collegiate Athletes

Brian C. Werner, MD, Michael M. Hadeed, BS, Matthew L. Lyons, MD, Joshua S. Gluck, MD, David R. Diduch, MD, A. Bobby Chhabra, MD

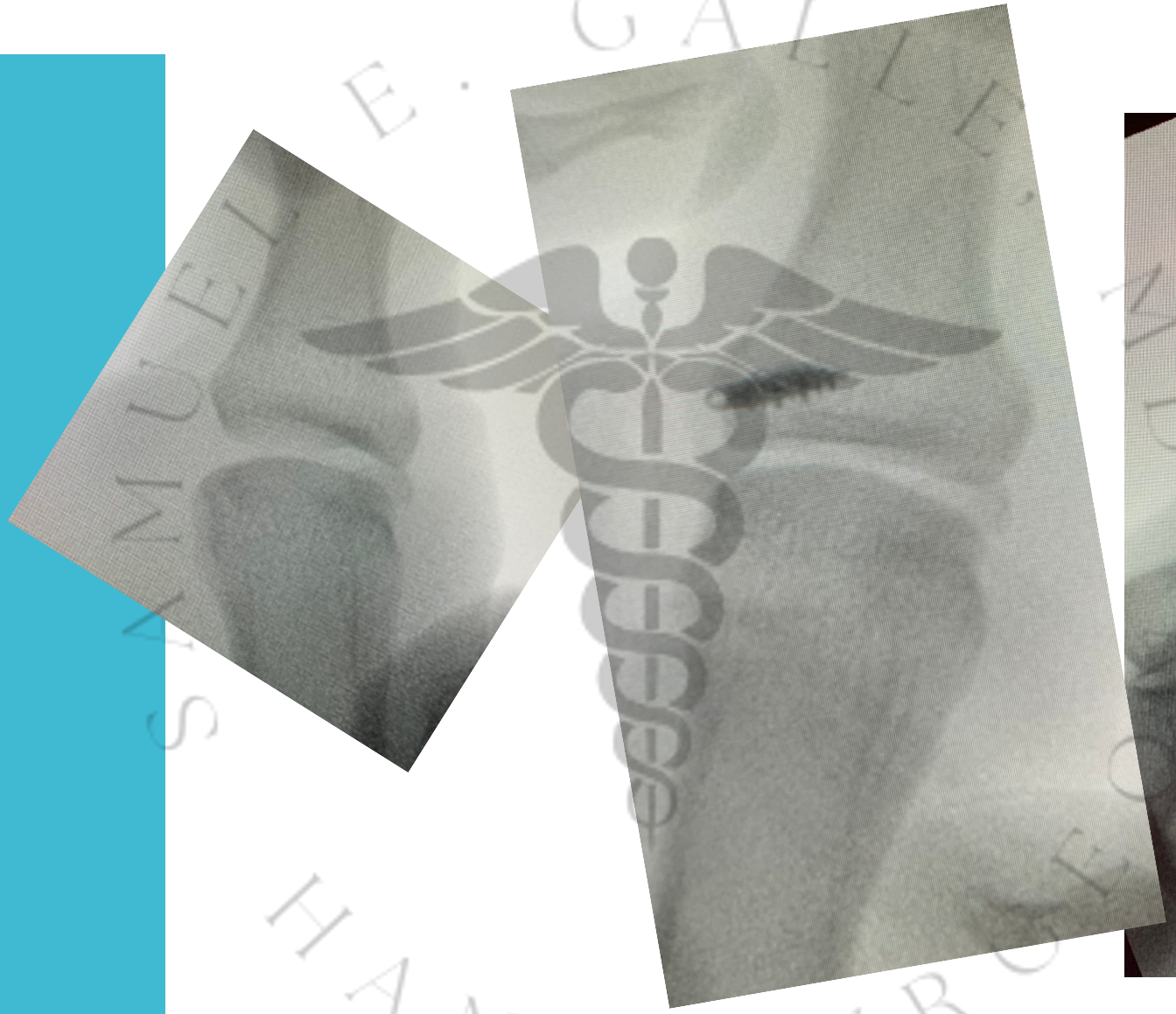


A total of 18 collegiate football athletes

- 9 skill/position players
- Thumb spica cast 4 weeks, followed by thumb spica brace 4 weeks for range of motion, then taping protocol for 4 weeks during sports
- Average return to play for skill position players was 7 weeks postoperatively

Werner et al. Return to Football and Long-Term Clinical Outcomes After Thumb Ulnar Collateral Ligament Suture Anchor Repair in Collegiate Athletes. J Hand Surg Am. 2014;39(10)

Intraoperative



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Repair of the Thumb Ulnar Collateral Ligament With Suture Tape Augmentation

Anthony F. De Giacomo, MD and Steven S. Shin, MD

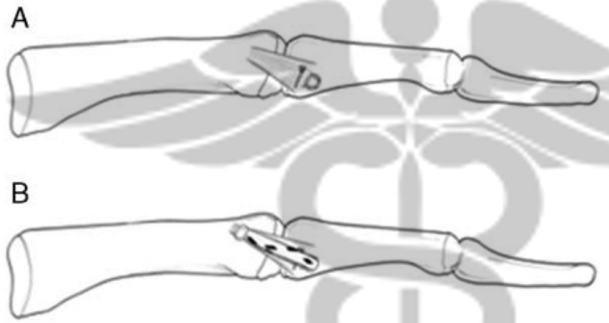

FIGURE 1. Illustration displaying primary repair of collateral ligament with suture anchor (A), primary repair with suture tape augmentation secured proximally with second anchor (B).

The Research

- 31 year old basketball player
  - 3 days postop, began range of motion
  - 8 days postop, thumb spica splint, suture out, start ball handling
  - 3 weeks, strengthening exercises, shooting drills
  - 5 weeks, return to sport

The Research

Kinematics of Thumb Ulnar Collateral Ligament Repair With Suture Tape Augmentation

Nilay A. Patel, MD,* Charles C. Lin, MD,*† Yasuo Itami, MD,*‡ Michelle H. McGarry, MS,*§
Steven S. Shin, MD,‖ Thay Q. Lee, PhD*§

- 8 cadavers were tested for angular stiffness
  - Intact
  - Complete UCL (proper and accessory ligament disruption) tears
  - Simple repair
  - Suture tape augmentation

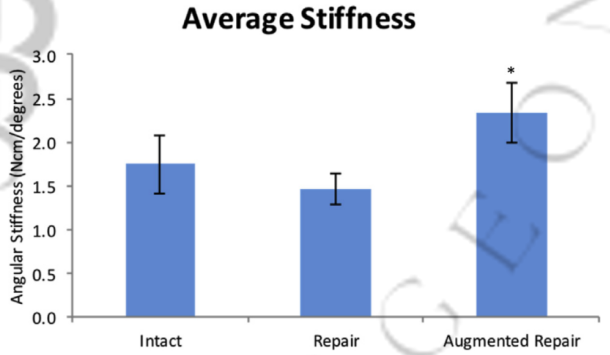

FIGURE 3: Average angular stiffness with sequential valgus loading of intact UCL, standard repair with suture anchor, and suture tape augmented repair. Statistically significant at $P < .05$: *versus repair.

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Suture Tape Augmentation of the Thumb Ulnar Collateral Ligament Repair: A Biomechanical Study

Steven S. Shin, MD,* Carola F. van Eck, MD, PhD,* Carlos Uquillas, MD*

The Research

- 12 cadavers with thumb metacarpalphalangeal joint ulnar collateral ligament injury
  - Half repaired with suture tape
  - Half repaired without suture tape
  - (intact Th MCP UCL UCL reported as 166.3 N and 294.3 N)

TABLE 1. Comparison of Biomechanical Testing Between Specimens With UCL Repair Only and UCL Repair With Suture Tape Augmentation

Applied Load	UCL Repair Only	UCL Repair With Suture Tape Augmentation	*P* Value
Maximum load (N) with mean SD (N)	8.02 (SD, 2.24)	46.56 (SD, 25.56)	.012*
Load at clinical failure (N) with mean SD (N)	5.77 (SD, 2.23)	22.27 (SD, 17.59)	.031*
Load at 15° deflection (N) with mean SD (N)	3.62 (SD, 1.06)	11.43 (SD, 13.30)	.031*
Load at 20° deflection (N) with mean SD (N)	4.25 (SD, 1.28)	14.42 (SD, 15.59)	.031*

*Indicates statistical significance ($P < .05$).

The Research

Return to Play in Athletes After Thumb Ulnar Collateral Ligament Repair With Suture Tape Augmentation

Daniel B. Gibbs,*† MD, and Steven S. Shin,† MD

Investigation performed at the Kerlan-Jobe Orthopaedic Clinic, Los Angeles, California, USA

- 18 thumbs in 17 competitive high school, collegiate, and professional athletes
  - Athletes who sustained an in-season injury (72.2%) returned to play
    - at any level at a mean ± SD of 30.9 ± 10.1 days
    - at the same level at 36.3 ± 11.2 days
  - Athletes who sustained an out-of-season injury (27.8%) returned to play
    - at any level at 101.4 ± 86.6 days
    - at the same level at 114.6 ± 87.0 days

The Research

Can we do it faster? accelerated rehabilitation following thumb ulnar collateral ligament repair with suture tape augmentation

H.B. Parikh, MD[a,*], M.C. Herman, MA, OTR/L, CHT[b], S.S. Shin, MD[a]

[a] *Department of Orthopaedics, Cedars-Sinai Medical Center, 444 S San Vicente Blvd Suite 603, Los Angeles, California*
[b] *Pro Rehab with Mo, Redondo Beach, California*

Table 1
Summary of accelerated rehabilitation protocol following thumb UCL repair with suture tape augmentation. Patients are able to return to unrestricted work, sports and activities within 5-6 weeks post-operative, compared with more conservative 12-week protocols.

Time Since Surgery	Rehabilitation Progress	T e
Immediately post-operative	Immobilization in a plaster thumb spica orthosis	
7-10 days post-operative	Active and passive range-of-motion Exercises + custom orthotic/neoprene wrap	
2 weeks post-operative	Grip strengthening	
3 weeks post-operative	Pinch strengthening	
5 to 6 weeks post-operative	Return to unrestricted work, sport, and daily activities	

The results: 1 week

The results: 4 weeks

The results: 6 weeks

The PHWE protocol

Immediate Post-op 7-10 day:

- Plaster thumb spica with IPJ free.
- Non-weight bearing
- AROM forearm, elbow, and shoulder
- Avoid inadvertent valgus stress on the UCL

Post-op 7-10 visit:

- Fabricate hand based thumb spica with IPJ free (HBTS)
- Unrestricted thumb AROM
- Gentle thumb PROM
- Engage in light ADL
- Proximal strengthening of the wrist, forearm and shoulder

Post-op 2 weeks:

- Grip strengthening
- Sports specific skills in rehab

The PHWE protocol

Post-op 3 weeks:

- Pinch strengthening (lateral, tip, 3-jaw)
- Wean HBTS/neoprene wrap
- Non-contact sports with sport orthosis

Post-op 4 weeks:

- Discharge HBTS
- Contact sport with sport orthosis

Post-op 5-6 weeks:

- Return to unrestricted work, sport, and daily activities contingent on achieving ROM and strength goals.
- With sport competition, as needed sport orthosis.

Post-op 6 weeks:

- discontinue sport orthosis pending athlete comfort level and physical nature of competitive play
- Finalize HEP and discharge to HEP

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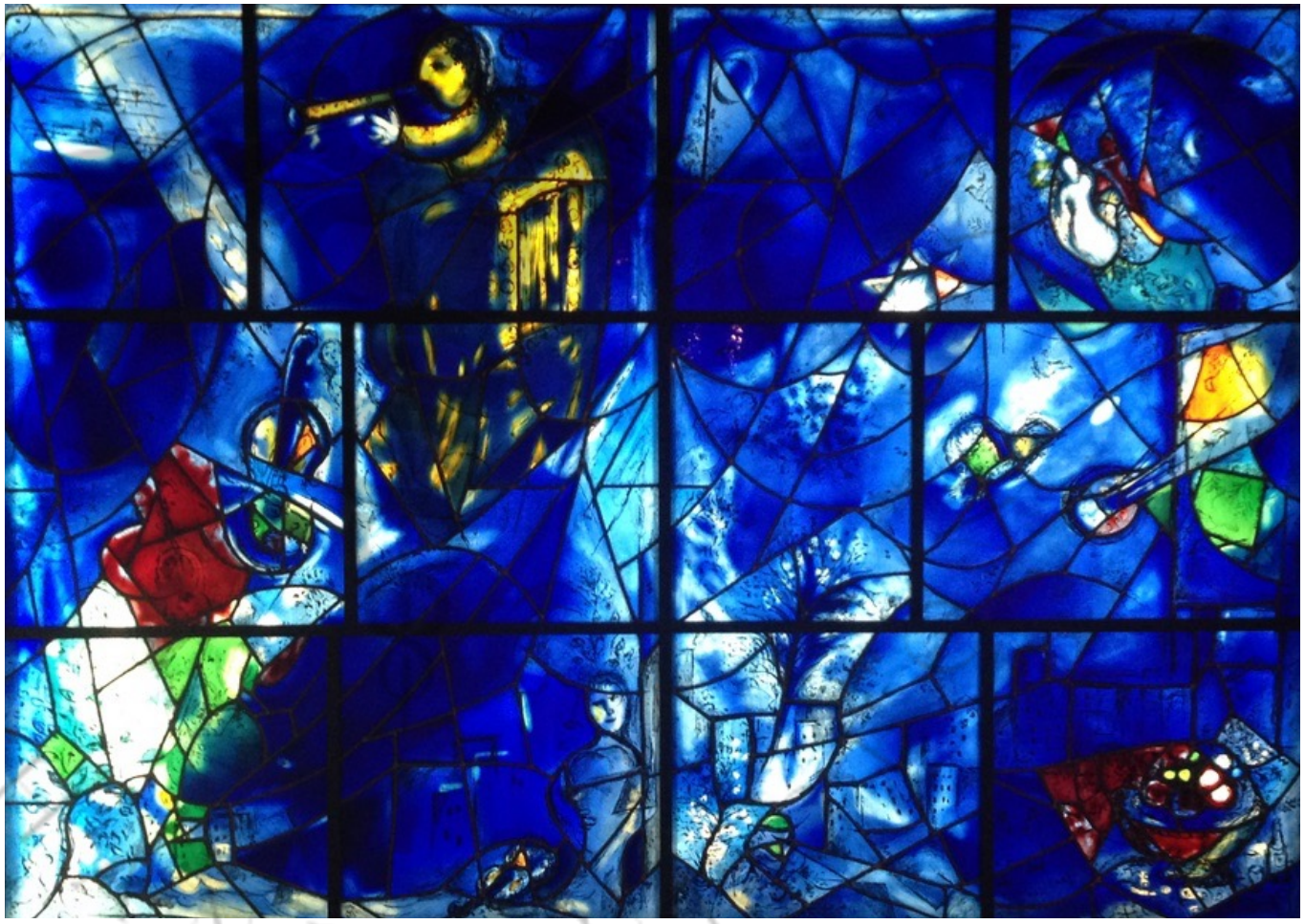
Thank you!



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Future considerations

Biological Versus Nonbiological Reconstruction of the Ulnar Collateral Ligament of the Thumb Metacarpophalangeal Joint: A Retrospective Study

Sergi Barrera-Ochoa, MD, PhD,* Rita Cavaca, MD,*† Rita Sapage, MD,*‡ Julio Martínez-Garza, MD,* Jose Prieto-Mere, MD,* Gerardo Mendez-Sanchez, MD*‡

- Retrospective chart review
  - 72 patients from 2002-2012 with chronic injuries
    - poor tissue quality that precluded primary repair

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FIGURE 1: A Surgical technique for NBLR. A 1.35-mm guidewire was placed proximal to the ligament's origin into the dorsal–ulnar metacarpal head, approximately 6–8 mm proximal to the articular surface. **B** The guidewire was then overdrilled using a cannulated 3.0-mm drill bit, 1 cm into the bone, as limited by the depth stop. **C** Proximal fixation point in the metacarpal neck at the 9 o'clock position.

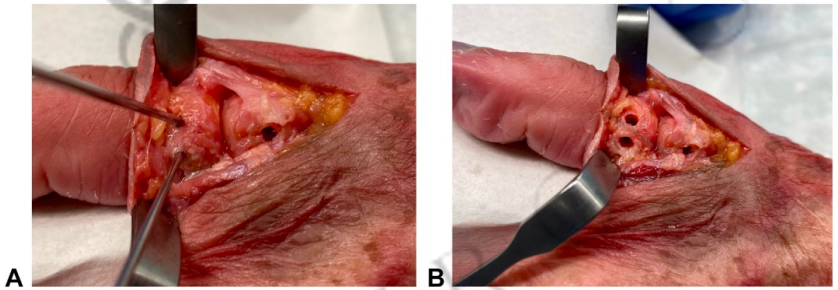

FIGURE 2: A Surgical technique for NBLR. Two 1.35-mm guidewires were placed at the ligament's insertion into the ulnar base of the proximal phalanx, approximately 6–8 mm distal to the articular surface. **B** The guidewire was then overdrilled using a cannulated 3.0-mm drill bit, 1 cm into the bone, as limited by the depth stop.

Future considerations

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FIGURE 4: Final appearance of the NBLR.

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- "In our sample, NBLR using a 2-mm suture tape achieved excellent short-term results that were comparable with those achieved with BLR, in terms of MCP joint stability, ROM, and pain reduction."