

TFC DEGENERATION

Anatomy	<ul style="list-style-type: none">L-shaped jointUlnocarpal and radioulnar jointsSigmoid notchTriangular fibrocartilage complexArticular discRadioulnar ligamentsUlnocarpal ligamentsStabiliser of DRUJCushion for load transmission
TFC lesions	<ul style="list-style-type: none">Type 1 – traumatic<ul style="list-style-type: none">A. Horizontal tear adjacent to radiusB. Peripheral detachment from ulnaC. Tear of ulnocarpal ligamentsD. Avulsion from radiusType 2 – degenerative<ul style="list-style-type: none">A. Thinning of the articular discB. Thinning of the articular disc + chondromalaciaC. Central perforation of the articular discD. Central perforation + partial L-T ruptureE. + DRUJ arthritis
Abutment	<ul style="list-style-type: none">= Ulnocarpal impingement= Ulnar impaction= ulnolunate impingement= ulnocarpal loading“A degenerative condition characterised by ulnar wrist pain, swelling and limitation of motion related to excessive load-bearing across the ulnar aspect of the wrist”
Abutment	<ul style="list-style-type: none">Ulnar plusdevelopmental variantdistal radial malunionShorteningDorsal angulationdistal radial growth arrestEssex-Lopresti lesionUlnar neutral
Biomechanics	<ul style="list-style-type: none">Ulnocarpal loading and ulnar length<ul style="list-style-type: none">Neutral ulna 20% radiocarpal load2.5mm ulna plus 42% radiocarpal load2.5mm ulna minus 4.3% radiocarpal loadUlnocarpal loading and radial alignment<ul style="list-style-type: none">Normal 11° tilt 20%Dorsal tilt 40° 65%

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Clinical features	Chronic ulnar-sided wrist pain Pain on ulnar deviation or rotation Ulnar-sided swelling Tenderness over TFC Snap ulnar deviation test Rotation in ulnar deviation
Radiography	PA and lateral in neutral rotation Ulnar length - measurement Radial alignment Ulnocarpal cysts/sclerosis DRUJ geometry (cylinder, spherical) DRUJ degeneration
Metrology	Articular surface method Concentric circles method Influenced by forearm rotation (ulna longer in pronation)

Assessment

Arthrography	Three compartment injection TFC and LT perforations > 75% perforations in asymptomatic contralateral wrist
MR imaging	TFC perforation - accuracy debated Intra-osseous abutment changes
Arthroscopy	Diagnostic gold standard Chondromalacia, LT tears, TFC pathology Treatment possibilities TFC debridement Wafer procedure

Management

Non-operative	Activity modification Splinting Analgesics
Operative	Ulnar plus or neutral (TFC debridement) Ulnar shortening osteotomy Wafer procedure – open (arthroscopic) Radial malunion + dorsal tilt Radial osteotomy +/- ulnar shortening

Ulnar osteotomy

Indications	Ulnocarpal impaction syndrome in ulnar positive and ulnar neutral wrists with congruent DRUJ surfaces
Pathology	Relative excess ulnar length Excess ulnocarpal loading TFC degeneration/perforation Lunotriquetral ligament degeneration/perforation Cystic change/oedema lunate, triquetrum, ulnar head

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Requirements	3.5mm DC or LCDC plate, 2.7mm in small bones Oscillating saw (Small AO distractor, K-wires)
Objective	Decompress ulnocarpal joint, unload TFC
Technique	Incision along subcutaneous border of ulna Protect dorsal branch of ulnar nerve Extra-periosteal exposure of ulna between FCU and ECU Apply 6-hole 3.5mm DC or LCDC plate, Insert 3 proximal screws, mark osteotomy Remove plate Reflect periosteum at level of osteotomy Oblique osteotomy 90% cut Parallel osteotomy 100% cut 2mm proximal Complete first cut Re-apply plate and proximal screws Reduce osteotomy, insert 2 distal screws with compression Insert lag screw through plate and across osteotomy Check screw lengths on image intensifier Closure in layers (Alternative: apply AO small distraction frame prior to osteotomy) (Alternative: apply plate to anterior surface of ulna)
Rehabilitation	Wool/crepe bandage, immediate mobilisation ROS 2 weeks Removable splint, limited loading until union
Complications	Infection Non-union Plate prominence DRUJ pain
Reference	Wehbe MA, Cautilli DA. Ulnar shortening using the AO small distractor. J Hand Surg [Am] 1995; 20: 959-64. Palmer AK. J Hand Surgery 14A: 594-606, 1989 Friedman SL, Palmer AK 1991