LIGAMENT INJURIES OF THE THUMB

Metacarpo-phalangeal joint

Type	Condyloid/ginglymus(hinge) joint Great variation in range of movement (ROM) Inverse relationship between ROM and susceptibility to injury		
Movement	Primary Secondary	Flexion/extension Abduction/adduction Pronation/Supination	
Stability	Bone	Little inherent stability	
	Ligament	Proper collateral ligament Accessory collateral ligament Volar plate	
	Insertions	Ulnar sesamoid	AddPoll AbdPB
		Radial sesamoid	FPB

Injuries	Ulnar collateral ligament Dorsal capsule Extensor expansion
	Volar plate
	Radial collateral ligament

Skiier's thumb

Mechanism	Fall onto outstretched abducted thumb 7% of all and 33% of upper limb skiing injures
Lesion	Majority of ruptures occur at distal insertion
Associations	Dorsal capsule Ulnar aspect of volar plate Extensor expansion Avulsion fracture
Examination	Swelling Bruising Deformity Tenderness Instability

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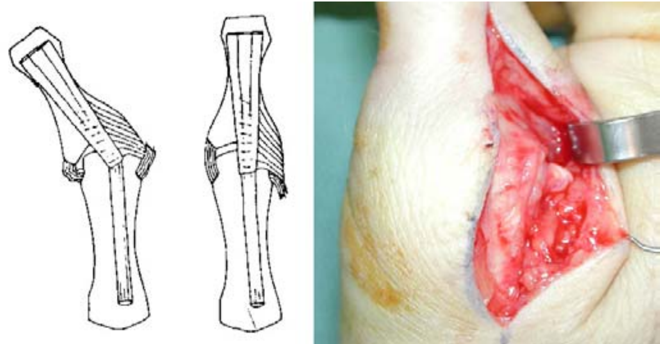
Imaging

Plain	To exclude fracture
Stressed	Not usually necessary
Ultrasound Arthrogram MRI	Questionable use



Stener lesion

Only occurs in complete lesions
Adductor aponeurosis interposed
Negates conservative management

Management

UCL injury	Stability	Management
Sprain	Stable	Rest ± Splint
Partial tear	<30° instability "End point"	Splint 4 weeks + Active exercises Graded return to activities
Complete tear	>30° instability* No "end point"	Surgical repair Splint 2 weeks in dressing Splint to 6 weeks + Active exercises Graded return to activities

*Comparison with the uninjured thumb and a solid "end point" is a better test than arbitrary numbers that do not take into account individual variation.

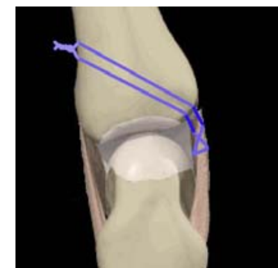
Objectives

Reattachment of ligament
Approximation to volar plate
Fixation of associated fracture
Dorsal capsule repair

Technique

Daycase
GA/RA
Lazy S terminating ulno-volar
Divide extensor expansion ulnar to EPL

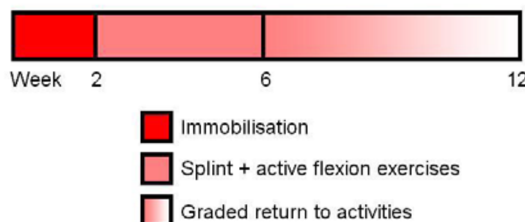
Direct repair
Bone suture

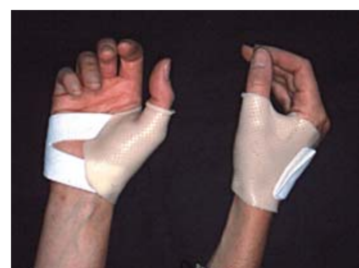


Protection

K-wire unnecessary in the majority
Splint need only be hand-based and should leave IPJ free

Rehabilitation





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Complications — Infection
K-wire problems
Stiffness
Sensory loss
Instability

Volar plate injuries

Dorsal dislocation — Much commoner than palmar
17% irreducible

Lesion — Volar plate rupture usually proximal
Can be distal to or through sesamoids
Associated with at least partial ruptures of collateral ligaments
Occasional palmar laceration

Management

<table>
<tr><td rowspan="2">Reducible</td><td>Stable</td><td colspan="2">Mobilise with extension block</td></tr>
<tr><td>Unstable</td><td colspan="2">Immobilise 2-4 weeks and then as above</td></tr>
<tr><td rowspan="2">Irreducible</td><td rowspan="2">Open reduction</td><td>Stable</td><td>Mobilise with extension block</td></tr>
<tr><td>Unstable</td><td>Repair and mobilise if secure</td></tr>
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Radial collateral ligament tear

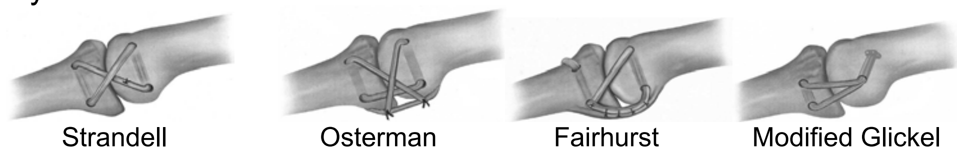
Incidence — About 10 times less common than UCL injuries

Lesion — Proximal and distal detachment about equal
Mid-substance tear more common than UCL
Extensor expansion much broader preventing Stener lesion

Management — Broadly similar to UCL injuries
No consensus on management of complete tears

Gamekeeper's thumb

Reconstruction — Static
Dynamic



Strandell Osterman Fairhurst Modified Glickel

Technique	Failure moment (N-mm)	Stiffness(N-mm/deg)
Intact UCL	2312	76.7
Strandell	236	5.6
Osterman	160	4.2
Fairhurst	134	3.5
Glickel	925	22.6

Volar plate insufficiency

Pathology — MCPJ hyper-extension
Volar plate rupture/attenuation

Causes — Congenital
Spasticity
Trauma
Arthropathy

Surgical options
Tenodesis
Capsulodesis
Sesamoid fusion
Arthrodesis

Objective
Stabilise MCPJ in slight flexion

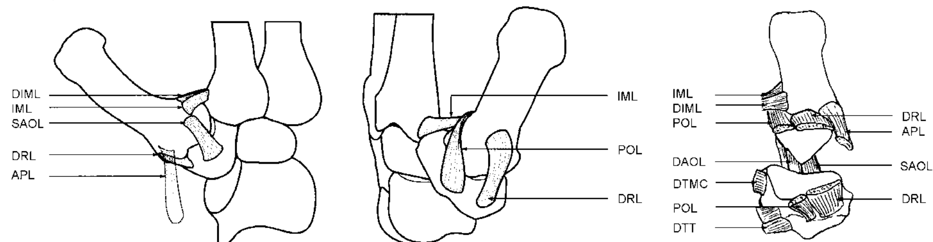
Technique
RA/GA & upper arm/forearm tourniquet
Mid-lateral approach to thumb MCPJ
Divide accessory collateral ligament
Identify under-surface of sesamoid
Position joint in slight flexion
Note point of abutment between sesamoid and metacarpal head
Remove articular surfaces from sesamoid and MC head section
Pass suture/wire trans-osseously to appose sesamoid to MC head
(Trans-articular K-wire optional)
Layered closure

Rehabilitation
Dressing with Scotchcast® splint
Wrist & thumb mobile
Wound inspection & ROS at 2 weeks
(K-wire removal at 4 weeks if used)
As per UCL repair (see above)

Complications
Infection
Stiffness
Recurrence
Painful wire loop
Digital nerve damage

Trapezio-metacarpal joint

Joint
Saddle joint
Little bony constraint
Disparate joint surface radii
Incongruous joint surfaces
Large forces



TMCJ Ligaments

APL	Abductor pollicis longus	DTT	Dorsal trapeziotrapezoid
DAOL	Deep anterior oblique (beak)	IML	Intermetacarpal
DIML	Dorsal intermetacarpal	POL	Posterior oblique
DRL	Dorsoradial	SAOL	Superficial anterior oblique
DTMC	Dorsal trapeziometacarpal	UCL	Ulnar collateral (not shown)

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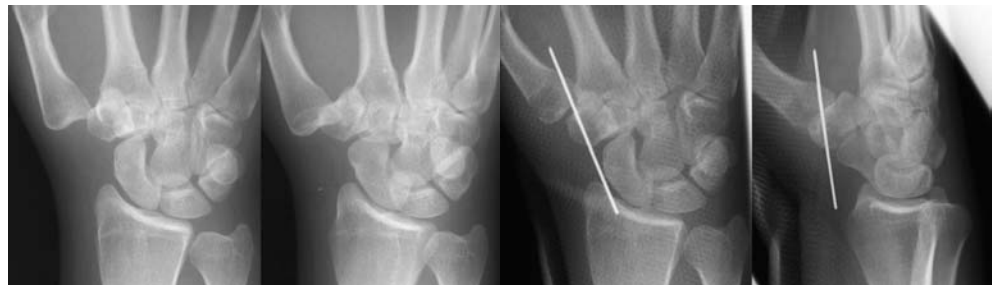
Acute injuries

General
- Rare
- Often missed
- Little literature
- Long-term instability

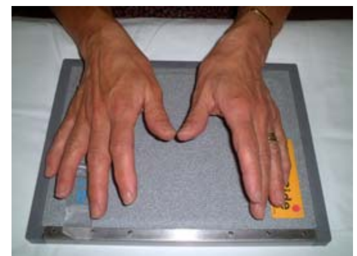
Diagnosis
- Subluxation
- Tenderness
- Instability
- Radiograph
- MRI

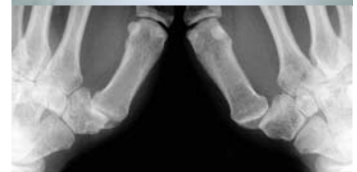
Management

Condition	Treatment
Reduced and Stable and Well-seated	Protective splint Rehabilitate along symptomatic lines
Reducible but Sloppy and/or Subluxed	Reduce and K-wire 2-4 weeks Splint 6 weeks Rehabilitate over 12 weeks
Irreducible or Unstable or Redislocated	Reduce and K-wire 2-4 weeks Ligament reconstruction Rehabilitate as above



Chronic instability

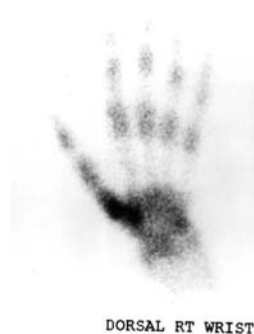


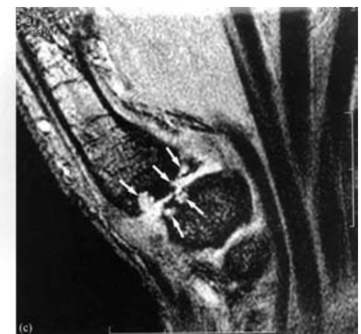


General
- Precursor to degenerative arthritis

Presentation
- Pain
- Weakness
- Stiffness
- Deformity

Imaging
- Plain views
- Stress views (Laxity)
- MRI
- Bone Scan





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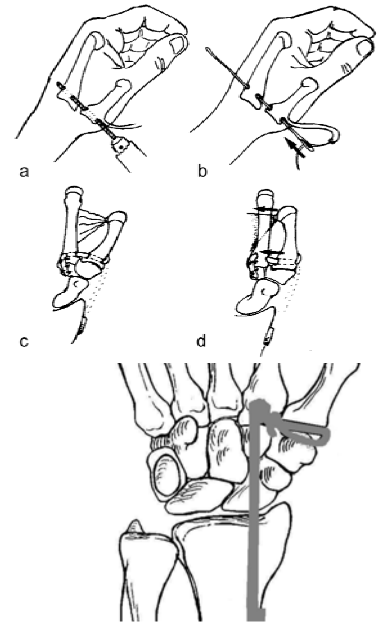


Surgical options

Stabilisation
Osteotomy
Arthrodesis

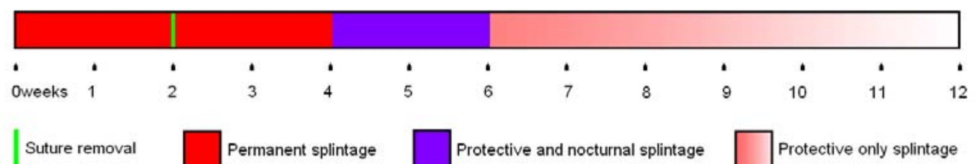
Stabilization

FCR (Eaton & Littler 1973)
APL (Brunelli, JHS 1989, 14B, 209)
ECRL
PL

Eaton Littler

RA/GA Daycase
Anterior approach to joint
Reflect thenar musculature
Harvest half FCR
Pass FCR through drill hole and tension
Repair capsule
K-wire to maintain reduction
Dressing+Splint

Rehabilitation



Results

37 FCR Reconstructions
All Littler&Eaton Grade I
FU 5 (1-17) years

Excellent	67%
Good	30%
Poor	3%

Brunelli

15 APL Reconstructions
FU 21 (15-25) months
VAS 1.2

Excellent	4
Good	7
Poor	3

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