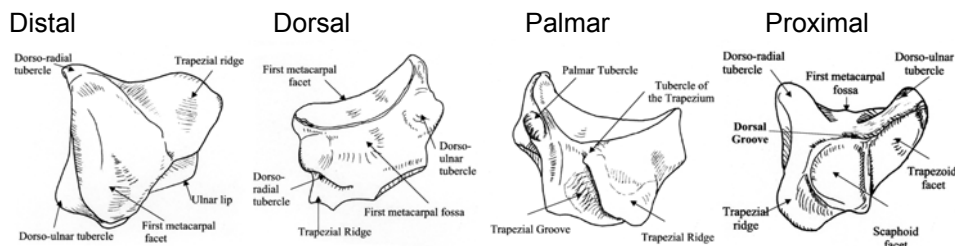


OSTEOARTHRITIS - THUMB-BASE

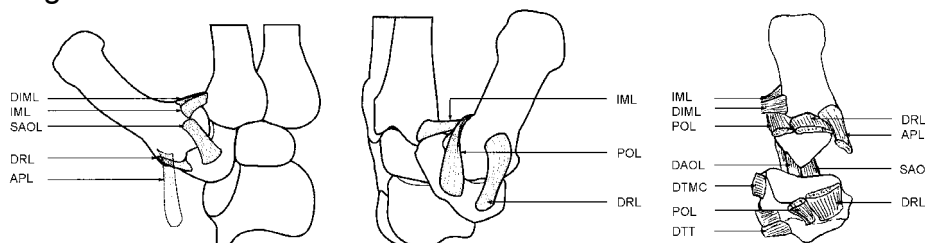
Anatomy

Trapezium



Joint

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



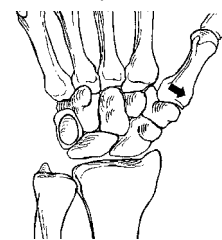
TMCJ Ligaments

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)

Osteoarthritis

Aetiology

Laxity
 Joint shape
 Joint damage



Prevalence
 (Armstrong)

Radiographic: (143 post-menopausal women, mean age 64yr)

No arthritis	65%
TMCJ only	25%
CMCJ + STT	8%
STT only	2%

(North & Eaton)

Radiographic/Cadaveric: 68 hands, mean age 75yr, M:F = 36:32)
 Anatomic incidence of arthritis: M:F = 53%, 80%

Distribution

	Radiographic	Anatomic
TMCJ	43%	60%
TMCJ(index)	22%	1%
T-Trapezoid	1%	1%
T-Scaphoid	37%	34%

Associations
 (Personal)

STT-OA in 87 patients undergoing surgery for TMCJ-OA

TMCJ alone	48%
TMCJ + early ST	42%
TMCJ + advanced ST	10%

OSTEOARTHRITIS - THUMB-BASE



Clinical

Presentation

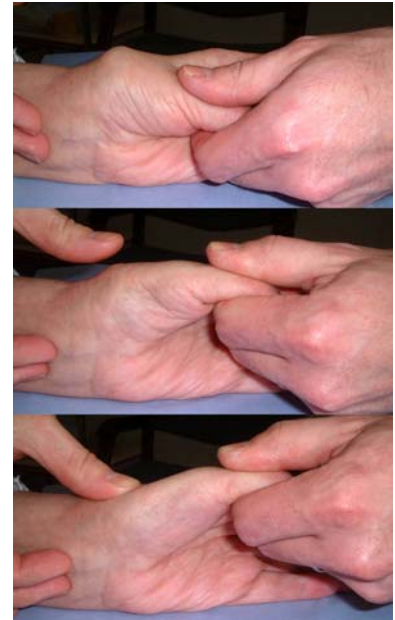
Pain
Weakness
Stiffness
Deformity

Dysfunction

Opening jars
Wringing out clothes
Carrying heavy books etc.

Signs

Deformity
Tenderness
Crepitus
Stiffness
Torque test
Shift test (photo)
Laxity



Differential

STT osteoarthritis
SLAC wrist
SNAC wrist
De-Quervain's tenovaginitis

Radiography

Plain views
Roberts view (Trapezium tilt)
Stress views (Eaton & Littler 1973)
Bone scan

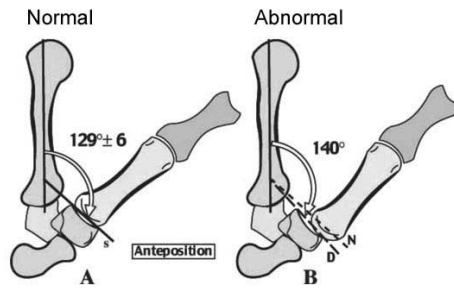
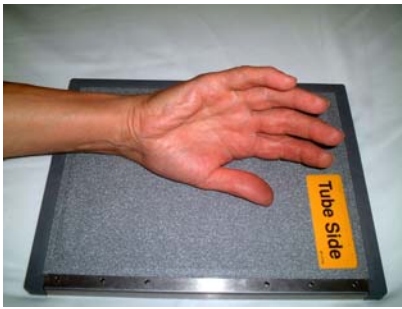
Classification
(Eaton and Littler)

I Widening of joint space, <1/3 subluxation
II 1/3 subluxation, fragments <2mm diameter
III >1/3 subluxation, fragments >2mm diameter, slight joint narrowing
IV Advanced. Major subluxation, joint narrowing, sclerosis, osteophytes

Revision
(Eaton et al.)

I Widening of joint space
II Slight joint space narrowing, Fragments <2mm diameter
III Significant joint destruction. Subchondral sclerosis or cyst formation. Fragments >2mm diameter. Normal scapho-trapezium joint
IV Involvement of both TMC and STT joints

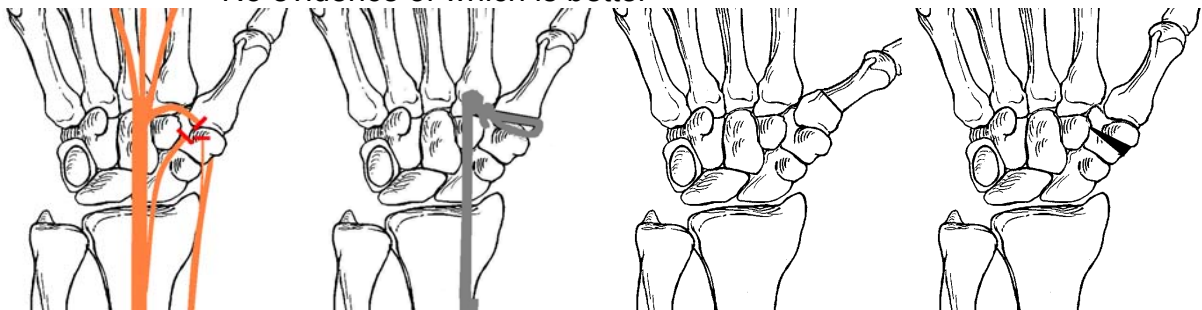
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Treatment

- | | |
|---------|--|
| Options | Activity modification
Splint
NSAID
Steroid injection
Surgery |
| Surgery | Denervation
Stabilisation
Osteotomy
Arthrodesis
Resection arthroplasty
Resection & LRTI
Interposition arthroplasty |

- Early Disease 4 Choices
 Joint preserving
 No evidence of which is better



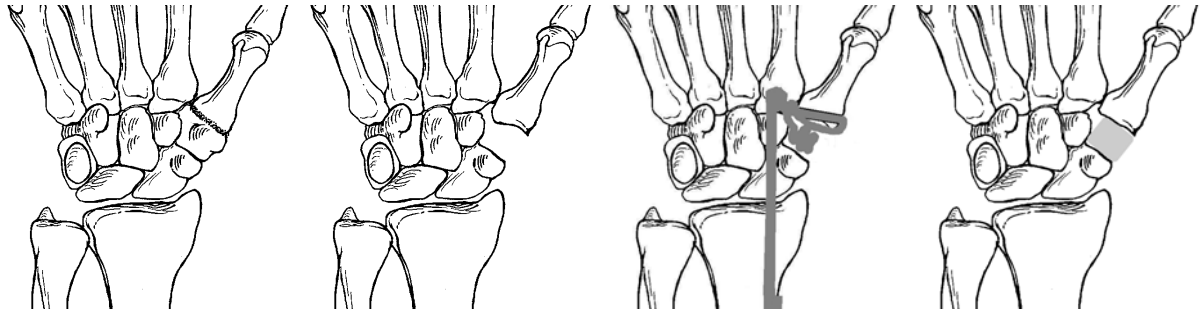
- | | | |
|-------------------------------|--------|-------------------------|
| Denervation
(Lorea) | Median | Motor branch (opponens) |
| | Median | Cutaneous branch |
| | Radial | 1st interosseous branch |
| | LCNF | Cruveilhier branch |

- | | |
|----------------------|--|
| Stabilization | FCR (Eaton & Littler 1973)
APL (Brunelli, JHS 1989, 14B, 209) |
|----------------------|--|

- | | |
|------------------|--|
| Osteotomy | Metacarpal or trapezial
Unloads areas of stress?
Osteotomy effect? |
|------------------|--|

OSTEOARTHRITIS - THUMB-BASE

Advanced disease



Arthrodesis

Contra-indications

Pan-trapezial arthritis
Stiff MCPJ

13% non-union rate

Satisfactory functional outcome

Relatively immobile

72% loss of ab/adduction

61% loss of ext/flexion

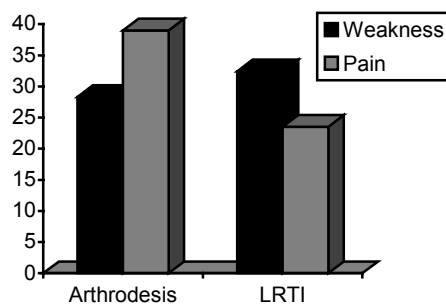
75% of compensatory motion at MCPJ

Comparison

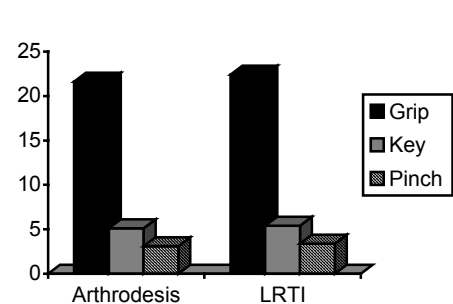
(Mureau & Rademaker JHS 2001 26A, 869-76)

Demographics	Arthrodesis	LRTI
Department	Orthopaedic	Plastic
Patients/Hands	26/32	17/24
Sex (M:F)	3:23	4:13
Age (yr)	54	58
Follow-up (yr)	7.4	6.0

Visual Analogue Scores



Power testing (Kg)



Arthrodesis had:-

Longer immobilisation (9 vs 5weeks)

7 non-unions

More operations

More stiffness

More complications (39%)

Poorer outcome even excluding non-unions

OSTEOARTHRITIS - THUMB-BASE

Trapeziectomy

Outcome

Prospectively studied series of 87 trapeziectomies in 77 patients followed up at a mean of 10 months after surgery (Sex M:F=18:69; Age 59(±7); Side R:L=50:37) (Personal series)

Measure	Pre-op	Post-op	Stat
IPJ-TROM	88°	82°	=0.005
MCPJ-TROM	67°	56°	<0.001
TMCJ-Abduction	4.2	4.5	=0.002
TMCJ-Extension	3.4	4.0	<0.001
Span I-V (cm)	18.6	19.3	<0.02
FD (cm)	0.8	0.9	ns
Power grip (kg)	17	22	<0.001
Pulp pinch (kg)	1.9	3.0	<0.001
Key pinch (kg)	3.3	3.9	=0.005
ADL (Questionnaire)	7	3	<0.001
Function (VAS)	50	28	<0.001
Pain (VAS)	73	21	<0.001
Trapezoido-metacarpal distance	7	1	<0.001
Scapho-metacarpal distance	11	2	<0.001

Complication rate

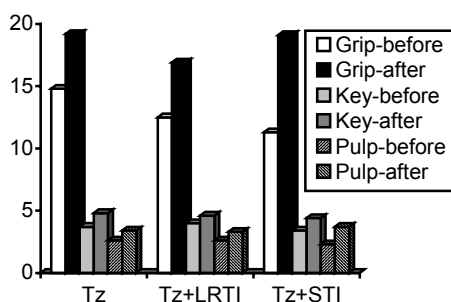
Hands (Patients)	87	(77)
Radial nerve sensory change	6	
Radial nerve neuroma (scar tenderness)	2	
Recurrent joint pain	3	
Tendon rupture (FCR)	2	
Subjective instability	1	
Total (Percent)	14	(15%)

Comparison

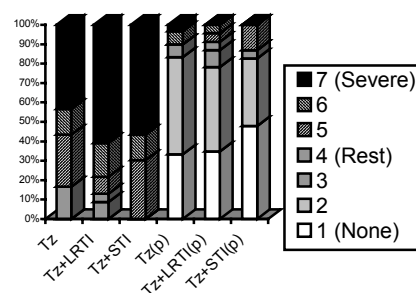
(Davis et al. JHS 1997 22B, 689-694)

Demographics	Trapeziectomy	Tz+LRTI (FCR)	Tz+STI (PL)
Number of women	30	23	23
Age (yr)	57	61	58
Dominance (D:ND)	17:13	15:8	8:15
Adjunctive procedure	3	6	9
Tourniquet time (min)	48	56	72
Follow-up (m)	12	12	12

Power testing (Kg)



Pain

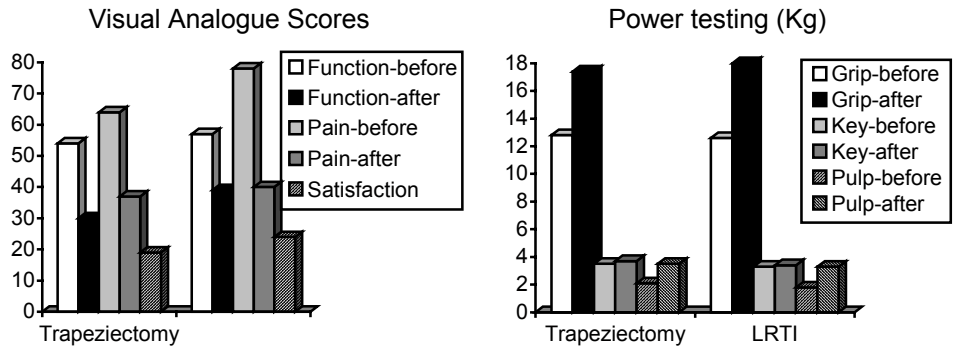


Comparison

(Belcher & Nicholl. JHS 2000 25B, 350-356)

Demographics	Trapeziectomy	LRTI (APL)
Number	19	23
Sex (M:F)	1:18	4:19
Age (yr)	63 (±2)	58 (±1)
Side (R:L)	13:6	13:10
Tourniquet time (min)	27 (±3)	42 (±1)*
Follow-up (m)	14 (1)	14 (1)

OSTEOARTHRITIS - THUMB-BASE



Complications

Complication/Author	Davis ¹	Nylen ²	Belcher ³	Weilby ⁴	Total
Hands	76	100	87	100	363
Sensory loss	12	11	6	8	37
Scar tenderness	2		2		4
Infection	3	1		6	10
Tendon pain/tendonitis	7	2		7	16
Tendon rupture			2	2	4
TMCJ instability			1	4	5
Recurrent joint pain			3		3
MCPJ stiffness		1			1
RSD	2	3			5
Carpal tunnel syndrome		2			2
Total	26	20	14	27	87
Percent	34%	20%	15%	27%	24%

1 Tz/LRTI(FCR)/STI(PL). 2 LRTI(FCR). 3 Tz±LRTI(APL). 4 LRTI(FCR)

Partial excision

Combined with interposition
Open
Arthroscopic

Arthroplasty

Silastic
Metal
Composite
Ceramic
Other (Dacron, Gelfoam, Gore-Tex, Marlex, Permacol, Polyurethane)

Complications

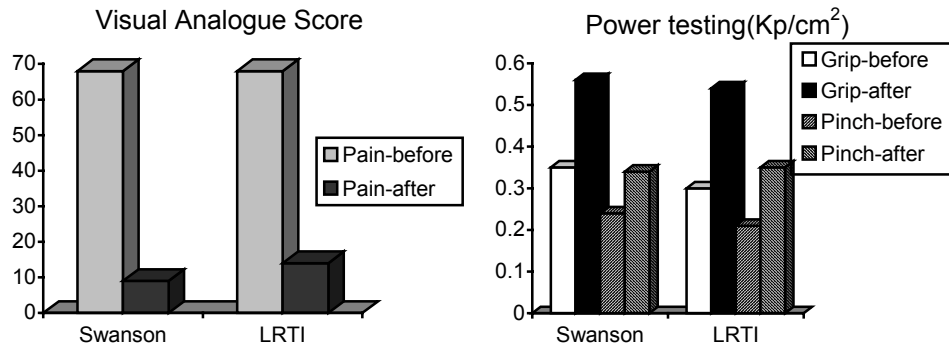
Synovitis
Loosening
Subluxation
Dislocation
Failure

Comparison

(Tagil & Kopylov JHS 2002 27B, 452-56)

Demographics	Swanson	LRTI
Number	13	13
Sex (M:F)	1:12	1:12
Age (yr)	62	62
Follow-up (m)	45	41

OSTEOARTHRITIS - THUMB-BASE



Overview

Technical problems	Nerve injury Incomplete resection Tendon injury	
Decisions	Carpal tunnel syndrome Gross instability Scapho-trapezoidal arthritis	
ST arthritis	Common association to TMCJ OA Does not seem to affect outcome from surgery in the majority Routine ST resection not justified on radiological grounds May be justified on clinical grounds	
Outcome	The effects of even the most masterly operation can be marred by unrealistic expectations of speed of recovery and functional outcome	
Conundrums	Recurrent joint pain (ST, ScMC) Recurrent deformity Nerve injury	
Revisions	General	Neuroma burial Scapho-trapezoidal resection
	Trapeziectomy	Trapezial re-excision Implant interposition (ScMC impingement)
	Arthroplasty	Implant removal Stabilisation
	Arthrodesis	Re-fusion
Conclusions	Correct management of early TMCJ osteoarthritis is unknown. Trapeziectomy is the gold standard for the management of late TMCJ osteoarthritis. Indications for LRTI are undefined. No evidence that arthrodesis improves strength to compensate for stiffness. No evidence that implants improve outcome to justify their increased complication rate.	

OSTEOARTHRITIS - THUMB-BASE

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