The Scapholunate Ligament Complex

David J. Slutsky MD
Assistant Professor
Dept of Orthopedics
Harbor-UCLA

DISCLOSURES

~ There is no commercial support for this Talk
   And....
~ There are no conflicts of interest.

The Scapholunate Ligament Complex

- The stability of the scapholunate joint is not dependent wholly upon the scapholunate interosseous ligament (SLIL) but rather upon both primary and secondary stabilizers, which form a scapholunate ligament complex (SLLC).
- Each case of SL instability is unique and therefore should be treated with tissue specific repairs, which may partly explain why one procedure cannot successfully restore joint stability in every case.
The Scapholunate ligament Complex

- Elsaidi et al sequentially divided the RSC, LRL, SRL, SLIL and finally the dorsal capsule insertion on the scaphoid. There was no appreciable change in the radiographic appearance of the wrist.
- When the DRCL was then divided, a DISI deformity occurred.
- Elsaidi et al determined that the SLIL is the primary stabilizer of the SL articulation and that the DRCL, DIC, ST, and RSC ligaments are secondary stabilizers.
- The SL joint is therefore dependent on a complex of ligaments, each having a separate role but working in concert.


Geissler Classification of ligament injury

<table>
<thead>
<tr>
<th>Grade</th>
<th>Radiocapal (SLIL)</th>
<th>Midcarpal Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Hemarthrosis of SLIL, no attenuation</td>
<td>None</td>
</tr>
<tr>
<td>II</td>
<td>Incomplete partial or full substance tear, no attenuation</td>
<td>Slight gap (less than width of 3 mm probe)</td>
</tr>
<tr>
<td>III</td>
<td>Ligament attenuation, incomplete partial or small full substance tear</td>
<td>Probe can be passed between carpal bones</td>
</tr>
<tr>
<td>IV</td>
<td>Complete tear</td>
<td>Gross instability. 2.7 mm arthroscope can be passed between SL gap (shine through light)</td>
</tr>
</tbody>
</table>

This classification quantifies the resultant instability and not the actual size of the tear.

Geissler II?
Dynamic Wrist Arthroscopy


Grade IV SLIL tear

Awake arthroscopy local anesthesia no tourniquet

Scaphoid kinematics

Video courtesy of Gregory Bain M.D.
Type I Scaphoid

- The scaphotrapezial ligaments have a narrow proximal (scaphoid) attachment and is assoc. with a type I lunate. This facilitates rotation around the longitudinal axis of the scaphoid, as well as limiting flexion and extension of the bone.

Galley JI, Bain GI, McLean JM. J Hand Surg 2007

Type II Scaphoid

- Broad proximal attachment of the ST ligament limits longitudinal rotation of the scaphoid.
- These scaphoids are associated with type II lunates and therefore are limited from rotation and translation.

Galley JI, Bain GI, McLean JM. J Hand Surg 2007
Type I lunate – SL injury with a rotating scaphoid will exhibit abnormal flexion and requires a procedure to limit scaphoid flexion -
- dorsal capsulodesis
- DIC capsulodesis

Type II lunate – SL injury with a flexing scaphoid will exhibit abnormal rotation and require procedures to limit scaphoid pronation -
- Bone-ligament-bone
- Tri-ligament tenodesis
- Brunelli

SLLC arthroscopic assessment
- Palmar SLIL – volar radial portal, MCR
- Dorsal SLIL – 3,4 and 4,5 portal, MCU
- Dorsal capsule – volar radial portal, 6R
- ST ligaments – MCR, STT portal
<table>
<thead>
<tr>
<th>Structure</th>
<th>Instability</th>
<th>Geissler</th>
<th>Classification</th>
<th>Treatment Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palmar SLIL</td>
<td>I/II</td>
<td>III/IV</td>
<td>P</td>
<td>Shrinkage, volar plication, URL transfer, SL pinning, RASL, interosseous graft, limited fusion</td>
</tr>
<tr>
<td></td>
<td>III/IV</td>
<td></td>
<td>P</td>
<td></td>
</tr>
<tr>
<td>Dorsal SLIL</td>
<td>I/II</td>
<td>III/IV</td>
<td>D</td>
<td>Shrinkage, DIC capsulodesis</td>
</tr>
<tr>
<td></td>
<td>III/IV</td>
<td></td>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Combined</td>
<td>I/II</td>
<td>III/IV</td>
<td>C</td>
<td>Shrinkage, combined volar/dorsal plication</td>
</tr>
<tr>
<td></td>
<td>III/IV</td>
<td></td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Dorsal Capsule</td>
<td>I/II</td>
<td>III/IV</td>
<td>DC</td>
<td>Shrinkage, dorsal capsulodesis</td>
</tr>
<tr>
<td></td>
<td>III/IV</td>
<td></td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>ST ligaments</td>
<td>I/II</td>
<td>III/IV</td>
<td>ST</td>
<td>Bell capsulodesis, ST ligament shrinkage/plication, ST/SC fusion</td>
</tr>
<tr>
<td></td>
<td>III/IV</td>
<td></td>
<td>ST</td>
<td></td>
</tr>
</tbody>
</table>

**Palmar SLIL**

Arthroscopic suture of the Palmar SLIL. Del Pinal et al. J Hand Surg Sept 2011

**VOLAR CAPSULODESIS FOR SCAPHOLUNATE DISSOCIATION**

Van Campen RJ, Moran SL. IWIW Chicago 2012
36 patients, age 38 yrs - f/u 11 mths (7-19)
- Geissler II/III, pain 5.4 mths (3-14)
- F = 63º (40-80), E = 71º (40-90)
- DASH: preop 34 (16-48), postop 9 (0-40)
- VAS: preop 3.4 (3-4), postop 0.31 (0-3)
- MMWS: E/G = 29, F = 4 P = 2

(Mathoulin C, Dauphin N, Walegaonkar AL. Hand Clin 2011)
Arthroscopic Dorsal Capsuloplasty
Ch. Mathoulin, Adeline Cambon-Binder

Acknowledgements to all EWAS members,
Especially: Jane Messina (Italy)
Abhijeet Wahegaonkar (India)
Luc Van Overstraeten (France)
Emmanuel Camus (France)
David Slutsky (USA)
Pak-Cheong Ho (Hong Kong, SAR China)
Loris Pegoli (Italy)
Max Hadrie (Germany)
Andrea Tandara (Germany)
Marc Garcia-Elias (Spain)
Marina Carrara (Brazil)
Gustav Mantovani (Brazil)
Martin Caloia (Argentina)
Gabriel Clembashi (Argentina)
Tanya Burgess (Australia)
Antonio Pagliei (Italy)

Classical ANATOMY

Scapholunate ligament: anterior, dorsal and intermediate

ANATOMY

Distal stabilization: FCR + STT Ligt + RSC Ligt
Importance of FCR
(Salva-Coll, Garcia-Elias et al, 2011)
SCAPHOLUNATE LIGAMENT
Main scapholunate joint stabilizer
Meade et al. 1990 – Short et al. – Looi et al. 2001

Yield Strength

Berger et al. '99

SCAPHOLUNATE LIGAMENT
Contributes to carpal proprioception

Sensory innervation

Mataliotakis et al. '09
Mataliotakis et al. '11
Importance of A1O nerve and PIO nerve too !!!!

ANATOMY

Only with sectioning insertion of the DIC a dorsal intercalated scapholunate instability deformity (DISI) ensued.
ANATOMY

Institut de la Main

Radiocarpal

Normal aspect

Midcarpal

ANATOMY

Institut de la Main

Arthroscopic testing and X-Rays measuring with and without load

1/ Normal wrist,
2/ section of Dorsal Capsule-SL attachment (DCSS),
3/ section of SLDL,
4/ DIC section.

(J. Messina (I), L. Van Overstraeten (B), E. Camus (F), A. Wahegaonkar (In), A. Tandara (G), A. Cambon-Binder (F), C. Mathoulin (F))

ANATOMY

Institut de la Main

Systematic worsening of SL diastasis after simple detachment of DCSS from dorsal SL.

SEVERITY
SL LAXITY
GRADE

CASES EVOLUTION AFTER SECTIONS

- Initial
- section aDIC/SL
- section SL
- section DIC
- section DRC

Two days of laboratory work, 10 young fresh cadaver
This structure (Dorsal capsulo-scapholunate Septum) is a bridge between the DST ligament and the dorsal SL ligament, and seems to be essential to the SL stability, and probably its tears could be considered as a first stage of SL instability...!!!

Prominent role of dorsal radiocarpal ligaments:

DIC/Dorsal ScaphoTriquetral Lignt
Dorsal Scapholunate Lignt
Dorsal Capsulo-Scapholunate Septum

The DCSS structure was identified between the scapholunate ligament and the DIC. DCSS always identified, consisting of three arches (two transverse arches in series along the distal line of the scapholunate interval, forming a confluence into the third which was larger than the previous mentioned.)

Four months of laboratory work, 17 fresh cadavers

(M. Carrara (Br), T. Burgess (Aus), C. Mathoulin (Fr))
ANATOMY
Four months of laboratory work, 17 fresh cadavers

It demonstrated a wide diffuse attachment along the scapholunate ligament and then arced dorsally fanning out to a longer insertion into the dorsal capsule.

Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR

Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR
Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR
1 thread through 3,4 P, then DWC and ULNAR remnant
Retrieval through RMCP
Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR

Retrieval through RMCP

Institut de la Main

2nd thread through DWC and RADIAL remnant

Institut de la Main

Retrieval through the same RMCP

Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR
Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR
Knot made outside patient (Nicky’s knot)

Pulled inside MCJ by proximal traction

Arthroscopic Dorsal Capsuloligamentous Repair
ADCLR
Second knot subcutaneous in 3,4 Portal
Material

- 57 patients
- 34 men  23 women
- Mean age : 38.7 yo (range 17 to 63)
- Sports injuries : 46 cases
  - high level : 12 cases
- Average time between injury and surgery: 9.24 months (range 3 to 24)
**Material**

**EWAS Classification**
- Stage 2: 7 cases
- Stage 3A: 1 case
- Stage 3B: 16 cases
- Stage 3C: 18 cases
- Stage 4: 16 cases

**Garcia-Elias' Suggestion**
- Stage 2: 3 cases
- Stage 3: 25 cases
- Stage 4: 26 cases
- Stage 5: 3 cases

**Results**

**Follow-up: 30.74 months (range 18 to 43)**

- **Pain:**
  - Preop VAS: 6.17 Postop VAS: 0.7
  - Failure 2 cases (Stage 5 according Garcia-Elias)

- **ROM:**
  - normal flexion-extension in 28 cases (81.8%)
  - normal pronation-supination in all cases (100%)

- **Strength:**
  - Preop: 24.07 kgf Postop: 38.42 kgf

**Total functional outcomes**

<table>
<thead>
<tr>
<th></th>
<th>Pre-op</th>
<th>post-op</th>
<th>controlateral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexion Extension</td>
<td>52.45</td>
<td>63.55 (p&lt;0.01)</td>
<td>71.43 (p=0.26)</td>
</tr>
<tr>
<td></td>
<td>50.62</td>
<td>74.56 (p&lt;0.01)</td>
<td>77.89 (p=0.35)</td>
</tr>
<tr>
<td>Radial deviation</td>
<td>15.7</td>
<td>21.82 (p&lt;0.01)</td>
<td>27.36 (p=0.48)</td>
</tr>
<tr>
<td>Ulnar deviation</td>
<td>26.75</td>
<td>35.52 (p&lt;0.01)</td>
<td>37.28 (p=0.27)</td>
</tr>
<tr>
<td>Pronation supination</td>
<td>0-160</td>
<td>0-178 (p&lt;0.02)</td>
<td>0-179 (p=0.16)</td>
</tr>
<tr>
<td>Wrist strength</td>
<td>24.07</td>
<td>38.42 (p&lt;0.01)</td>
<td>40.81 (p=0.18)</td>
</tr>
</tbody>
</table>

- No problem with sporty level +++
Results

Outcome was related to:
- Stage 5 Garcia-Elias (2/3)

Outcome was related to:
- delay surgery (better outcome if short delay)

Complications:
- Slight flexion stiffness 6 cases (range 40° to 60°)
- One Sudeck (healed)

Results

**DASH:**
PreOp: Average 46.05 (range 13.64 to 90.91)
PostOp: Average 8.29 (range 0 to 40.91)

**Mayo WS:**
Excellent: 35 cases
Good: 18 cases
Average: 2 cases
Poor: 2 cases

Clinical case
Clinical case

ADCLR
SL pinning + Scapho-capitate pinning

Pre ADCLR

Post ADCLR
Clinical case

ADCLR
SL pinning + Scapho-capitate pinning

RESULTS
D + 2 months

Normal aspect

SLIOL unrepaired, Stability of dorsal part
OUTSTANDING ISSUES

Is the SLIOL really useless? **YES**

What is the real importance of proprioception? Do we act on proprioception with arthroscopic repair? **YES**

Does the distal volar ligamentous lesions (stt) exist? ??

Are isolated lesions of the DCSS pre-unstable lesions, or are they another entity? **YES**

What is the real place of extrinsic ligaments? **SLLComplex**

Conclusion

DSL, DST, DCSS lig.s seem essential in SL stability

SLLComplex: a new concept!!!!!!

Arthroscopic
capsuloligamentous
repair is a simple and reliable procedure
convenient for the patient
with chronic scapho-lunate bars,
except in stage 5 (GE)

These encouraging first results need a longest follow-up.
A TECHNIQUE FOR ARTHROSCOPIC REPAIR OF THE VOLAR S-L LIGAMENT

Francisco del Piñal, MD, Dr Med. (*)
Hand-Wrist Unit and Department of Plastic Surgery. Mutua Montañesa.
SANTANDER, SPAIN.
(*) nothing to disclose.

A TECHNIQUE FOR ALL-INSIDE SUTURING IN THE WRIST

Francisco del Piñal
Hand-Wrist Unit and Department of Plastic Surgery. Mutua Montañesa.
SANTANDER, SPAIN.
pacopinal@gmail.com

1B tear without instability

PERIPHERAL
1B tear without instability


The problem…THE KNOT

Technical Note
A Novel Technique of All-Inside Arthroscopic Triangular Fibrocartilage Complex Repair
Jeffrey You, M.D., Paul Dautenhahn, M.D., and A. Lee Oxenten, M.D.

Arthroscopy 2007.
A TECHNIQUE FOR ALL-INSIDE SUTURING.


Requirements.
1 year postop.

CLINICAL EXPERIENCE...

- 8 Volar S-L Repair.
- 6 Volar and Dorsal S-L Repair.
- 4 Volar capsule and Ligaments repair (PLFD).

CLINICAL EXPERIENCE...
In summary, ...

Sardínera’s Beach. View from the Operating Room.
Open scapholunate ligament repair and capsulodesis

Luchetti Riccardo
Rimini (Italy)

### Stage I to VI

<table>
<thead>
<tr>
<th>Feature</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial injury</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>SL Repairable</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Integrity STT lig</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Reducible</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Normal cartilage</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

**Percutaneous K-wire fixation and/or Dorsal capsulodesis**

---

<table>
<thead>
<tr>
<th>Feature</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial injury</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>SL Repairable</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Integrity STT lig</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Reducible</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Normal cartilage</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

**Ligament repair + K-wire fixation (+ Dorsal capsulodesis)**

---
SLIL Tears

Algorithm of Treatment

- Arthroscopic Shrinkage & Pinning
- Open Repair
- Augmentation by Capsulodesis
  - Reconstruction by B-L-B graft
  - Reconstruction by Tenodesis

Historical Techniques


- All of them crossed the radio carpal joint
- Reduction of wrist flexion

Historical Techniques
Dorsal ligaments of the wrist

- Dorsal Intercarpal Lig
- Radio Triquetral Lig

Procedure

- Isolated
- Associated, with SLIL repair
Surgical Technique

- Longitudinal skin incision (Traditional)
- Transverse skin incision (Short)

Traditional Technique
Surgical Technique

Longitudinal dorsal skin incision

Step 1

Surgical Technique

Capsulotomy

“Ligament splitting capsulotomy”
Berger – Bishop, 95

Surgical Technique

Step 1
Surgical Technique

Step 2

SL and SC pins fixation

Step 3
Present Series

• 2001-2004
• Cases: 18 (9 F, 9 M)
• Age (mean): 35 y.o. (15 to 57 y.o.)
• Affected side: 11 L, 7 R
• Type of lesion: all hyperext. but one
• Time elapse from injury to surgery: 10 mo (2 to 24 mo)
• Watson test ++ in all cases

Wrist ARS

• RC and MC ARS (18 cases)
  – SL instability: 100% (Geissler type 3)

  • Correlation with MRI: 87%
  • Correlation with x-ray: 56%

ARS: gold standard

Type of SLIL lesion

• Partial (stage 1) = 14
• Complete (stage 2) = 4

with SLIL tear but still repairable
**Postop Rehab**

- Spica cast immobilization for 4 weeks
  - Immediate finger mobilization
  - Hand edema drenage
- Rehab after first month
  - Active and passive wrist mobilization
- Wrist splint protection for one month more
- Return to work after 3 months
- Sport activity after 3 months

---

**Case # 1**

- AA, f, 32 years old, right dominant.
- Right partial SLIL tear
- MRI positive
- Watson test: positive
- MWS: 70

**Wrist Arthroscopy**

- SLIL instability type 3° according with Geissler
Case # 1

Results

- Pain: 2
- Complete wrist ROM
- Grip strength increased
- Return to previous work
- Watson test: negative
- MWS: 100

Case # 2

- CAS, f, 55 years old, right dominant.
- Right wrist partial SLIL tear
- X-rays: positive
- MRI: doubtful
- Watson test: positive
- MWS: 85
Case #2

Follow up at 1 month

Case #2

F-up: 10 months

• Pain: 0
• Incomplete wrist ROM
• Grip strength: 100%
• MWS: 95
• Return to prev. work

Clinical Results  
18 cases

Parameters | Preop | Postop | p
--- | --- | --- | ---
Pain (VAS) | 8 | 5 | <0.005
Flex – Ext (°) | 127 | 123 | ns
Grip Strength (Kg / %) | 24 / 75 | 27 / 87 | <0.05 / ns
MWS (Cooney) | 62 | 84 | <0.005
MWS (Krimmer) | 72 | 90 | <0.005
DASH | 38 | 20 | ns

Pts didn’t require any more surgical procedure
**Comparison with literature**

<table>
<thead>
<tr>
<th>AUTHORS</th>
<th>#</th>
<th>F-up (months)</th>
<th>Pain</th>
<th>F/E (%)</th>
<th>Grip strength</th>
<th>MWS (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moran</td>
<td>31</td>
<td>54</td>
<td>83</td>
<td>70</td>
<td>73</td>
<td></td>
</tr>
<tr>
<td>Minami</td>
<td>17</td>
<td>49</td>
<td>87</td>
<td>93</td>
<td>83</td>
<td></td>
</tr>
<tr>
<td>Kobayashi</td>
<td>21</td>
<td>14</td>
<td>?</td>
<td>81</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Luchetti</td>
<td>18</td>
<td>15</td>
<td>80</td>
<td>87</td>
<td>84</td>
<td></td>
</tr>
</tbody>
</table>

*(Dorsal capsulodesis by using the DIC ligament)*

**Modification of the Surgical Technique**

*According to the SLIL lesion*

- Clinical eval: Watson test +/-
- X-ray: no DISI def
- Arthroscopy: stage 2/3

**Surgical Technique**

Transversal dorsal skin incision with ext. retinaculum preservation
Surgical Technique

Double parallel incision with dorsal capsule preservation

Surgical Technique

Capsulotomy

Ligament flap harvested from DIC
Surgical Technique

Ligament flap passed under the capsule ...

Surgical Technique

... and over the SL ligament ...

Surgical Technique

... and fixed to the lunate with anchor
Postop Rehab

- Immobilization (for 3 weeks)
- Earlier rehabilitation

Same results

... even better, related to minor SL lesion

Conclusion

- Valid surgical procedure
- Indication for stage 1 to 3 (with SLIL repair)
- Easy technique
- Patients’ informed consent about the risk of partial lost of wrist flexion
Thanks for your attention
Results of a Modified Brunelli Procedure for Chronic Scapholunate Instability

Wrightington Hospital, UK

Sir John Charnley

“Never operate on a bone that you can swallow”
Some things have changed

Some things have changed

www.wrightington.com
Berger Approach

- Dorsal to volar
- 1.6mm K wire
- 2.9mm cannulated drill hole
1/3 FCR passed along tunnel

Emerges here

Brunelli IV
Tri Ligament tenodesis
Stanelli
RESULTS OF TRI-LIGAMENT TENODESIS: A MODIFIED BRUNELLI PROCEDURE IN THE MANAGEMENT OF SCAPHOLUNATE INSTABILITY

From the Centre for Hand and Upper Limb Surgery, Wrightington Hospital for Joint Diseases, Wigan, UK

One hundred and sixty-two patients with a diagnosis of scapholunate instability underwent a modified Brunelli procedure over a 7-year period. One hundred and seventeen were assessed with the help of a questionnaire sent to those, 55 patients attended for clinical evaluation. The mean follow-up was 4 (1-48) years. There were 62 patients with dynamic scapholunate instability and 45 patients with static instability. The average age was 38 years. There were 50 males and 67 females. A total of 77 (48%) patients had no relief pain with a mean visual analogue score of 3.67 (3.0 – 7.3). The loss in the area of flexion-extension was due to a reduced range of flexion (mean loss 30%), while 80% of extension was maintained, compared with the contralateral side. The grip strength on the operated side was reduced by 20% of the non-operated side. There was no statistically significant difference (P > 0.13) in the range of movement or the grip strength between the static and dynamic group and patients with or without flexor tendons. Ninety (59%) patients were satisfied with the result of the surgery (good to excellent) and 88% of the patients felt that they would have the same surgery again. We feel that these results compare favourably with the early results published from this unit and recommend this procedure for dynamic and static scapholunate instability.

Journal of Hand Surgery (British and European Volume) 2006; 31-B: 1: 115-117

http://www.wrightington.com

Methods

✓ 162 patients with chronic SLD ‘95-02
✓ Part 1
✓ Postal questionnaire
  ✓ VAS
  ✓ Problem solve
  ✓ WWS
  ✓ Satisfaction
  ✓ Surgery again
  ✓ Compensation
Methods

- 162 patients with chronic SLD ‘95-02
  - 74 Male  88 Female

Part 2

- Clinical review
  - Grip Strength
  - Range of movement
  - Employment status

Results

Part 1 Questionnaire

- 117 replied (72%)
  - Male 52  Female 65
  - Mean follow up 50.2 months (9-100)

Part 2 Clinical Review

- 55 Reviewed
  - Male 25  Female 30
  - Mean follow up 45.1 months (10-98)

Wrightington Wrist Score

- Hand in back pocket
- Straight lift grip
- Take change
- Personal care
- Hand to face
- Use a screw driver
- Do usual work
- Rise from a chair

- 1=no problem
- 2= with difficulty
- 3= with aid
- 4= unable

- 8 = best score
- 32 = worst score
Wrightington Wrist Score

Worse

Group 1 (117)  Group 2 (98)

VAS PAIN

VAS Problem solved = 6.03 (sd 2.85)

Completely cured

Not at all

Group 1 (117)  Group 2 (98)

VAS Pain solved = 6.77 (S.D. = 2.71)
Satisfaction

- All responders: 81%
- Reviewed: 19%

Grip Strength = 79%

Range of Motion

- 35° Loss of Flexion - Extension (26% of non operated side)
- 13° Loss of Radial - Ulnar deviation (12%)
Employment

- 21 (34%) of those reviewed were taking part in heavy or light manual labour
- 4% unemployed

- 24 patients (43%) had changed their occupation or duties

Surgery again?

- 88% would have the same again overall
Outcomes of Modified Brunelli Procedure in Professional Athletes with Scapholunate Instability

Ashleigh Williams1, Chye Yew Ng2, Mike Hayton 2

Presented BSSH 2012 York

Methods

- Retrospective review
- All procedures performed by senior author (MJH)

16 professional athletes who underwent a modified Brunelli procedure between 2008 - 2011 identified from the database

Patients were emailed a questionnaire and follow-up telephone interview

11 rugby
2 boxing
1 motorcycling (bilateral wrist)
1 golf

Results

Patient demographics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of operations</td>
<td>16</td>
</tr>
<tr>
<td>Age</td>
<td>Mean 30 years (range 18 - 42)</td>
</tr>
<tr>
<td>Gender</td>
<td>All male</td>
</tr>
<tr>
<td>Dominance of hand operated on</td>
<td>9 dominant, 7 non dominant</td>
</tr>
<tr>
<td>Level of competition before injury</td>
<td>9 international, 7 national</td>
</tr>
<tr>
<td>Time to surgery after injury</td>
<td>Mean 30 weeks (range 2 - 76)</td>
</tr>
<tr>
<td>Follow-up</td>
<td>Mean 24 months (range 3 - 43)</td>
</tr>
</tbody>
</table>
Subjective outcome measures

<table>
<thead>
<tr>
<th>Instability</th>
<th>VAS pain score at REST</th>
<th>VAS pain score at ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preoperative</td>
<td>0.0000</td>
<td>2.5000</td>
</tr>
<tr>
<td>Postoperative</td>
<td>0.0000</td>
<td>2.5000</td>
</tr>
</tbody>
</table>

Mann-Whitney U test

- p value 0.047
- <0.001
- <0.001

Functional scores at final review

Quick DASH
7.66 SEM 2.11 (range 0-25)

Wrightington activity of daily living, assessment for wrist function
9.25 SEM 0.38 (range 8-13)

Return to play

- 10 of 15 (67%) returned to play at their pre-injury level of competition.
- 5 of 15 (33%) returned to a lower competition level:
  - 3 directly related to the wrist injury
  - 2 due to other unrelated injuries

But for other injuries 12 out of 15 (80%) returned to playing
Summary

Modified Brunelli procedure in professional athletes generally

- Relieves wrist pain with (p<00.1)
- Appears to improve stability (not significant)
- Improves functional outcome scores

But for other injuries 12 out of 15 (80%) returned to playing

Thank you