# CURRENT ENDOSCOPIC TECHNIQUES FOR CTS

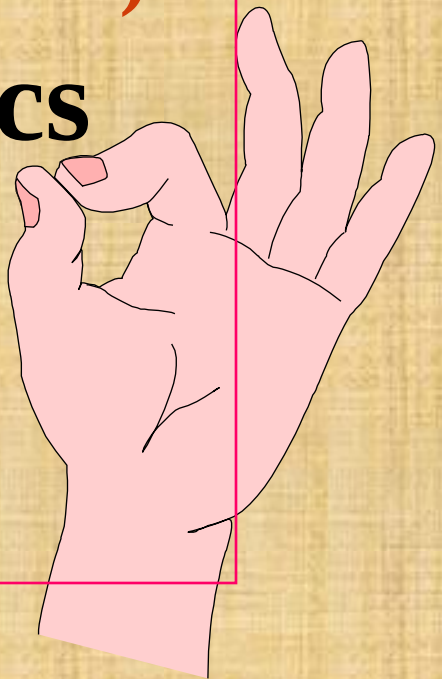

**Freih Odeh Abu Hassan**

**F.R.C.S. (Eng.), F.R.C.S. (Tr. & Orth.)**

**Professor of Orthopaedics**

**University of Jordan**

**Amman**

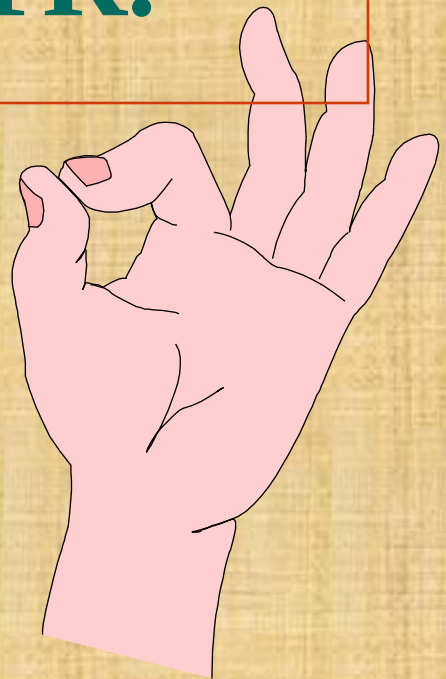
* **Canon & Love, 1946 :**

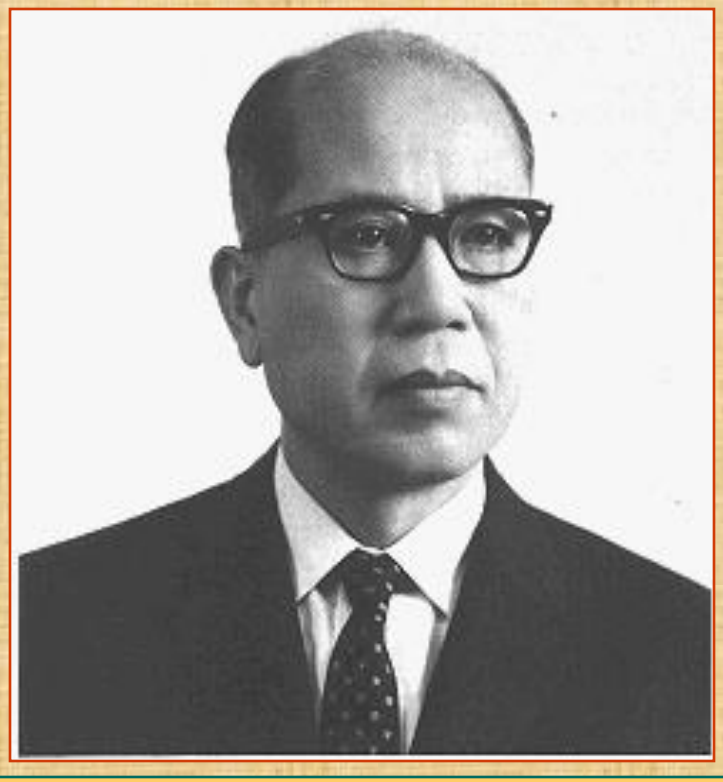
  **First release of TCL for CTS.**

* **Phalen, 1950 :**

  **Classic article (OCTR).**

* **Okutsu, 1987 : ECTR.**



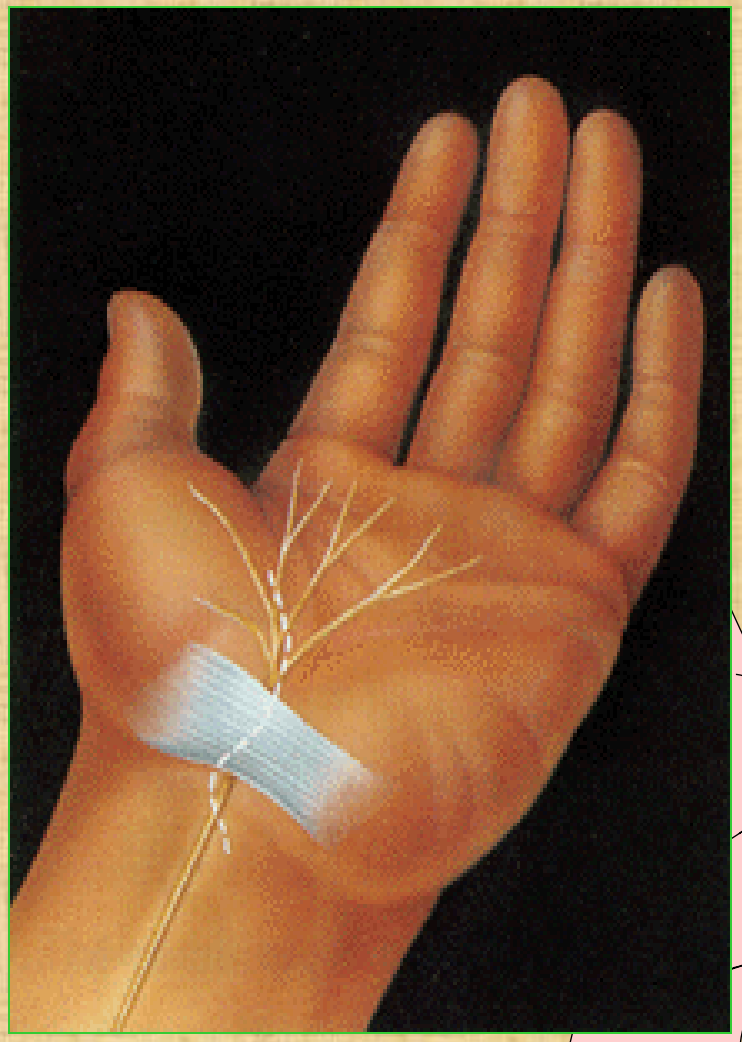


**Professor Kenji Takagi**
**( 1888-1963)**

**Professor Masaki Watanabe**
**(1921-1994)**

**JAPAN**

# Management

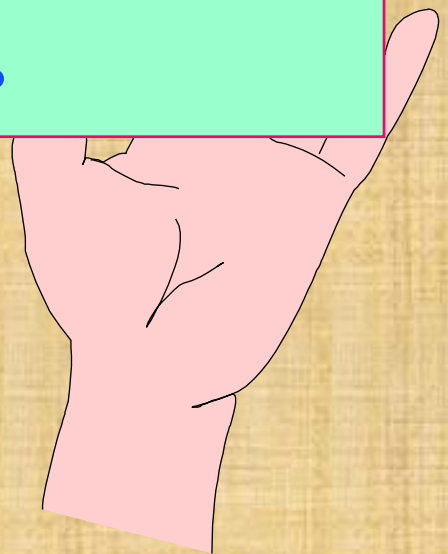



OCTR

* **Direct visualization.**
* **Safe, reliable, reproducible.**
* **Address other problems in the canal.!!**
* **Easy training, no equipments.**
* **Can be done by every surgeon.**

# OCTR (3035 cases)-Kuschner etal., Orthop. Rev. 1991

* 0.8% Nerve injury.
* Hypertrophic or painful scars.
* 1-2% complication rate.



# OCTR (McDonald Etal, 1978)

**18% Complications rate**

***6% inj. to Palmar cut. branch of Median N.**

***1% Superficial Palmar arch.**

= 6.5% Neuropraxias.

= 2% RSD.

= 2% Hypertrophic scars.

= 0.5% Tendon adhesions

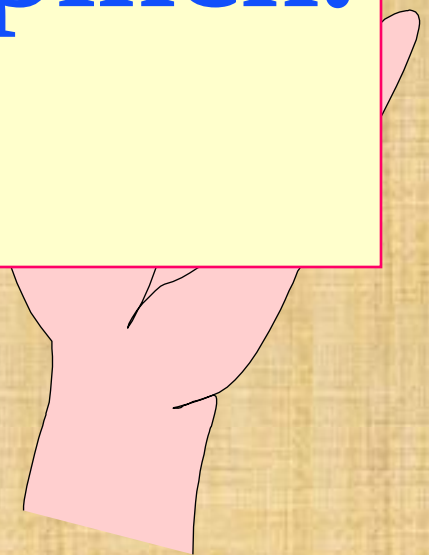
# Disadvantages of OCTR

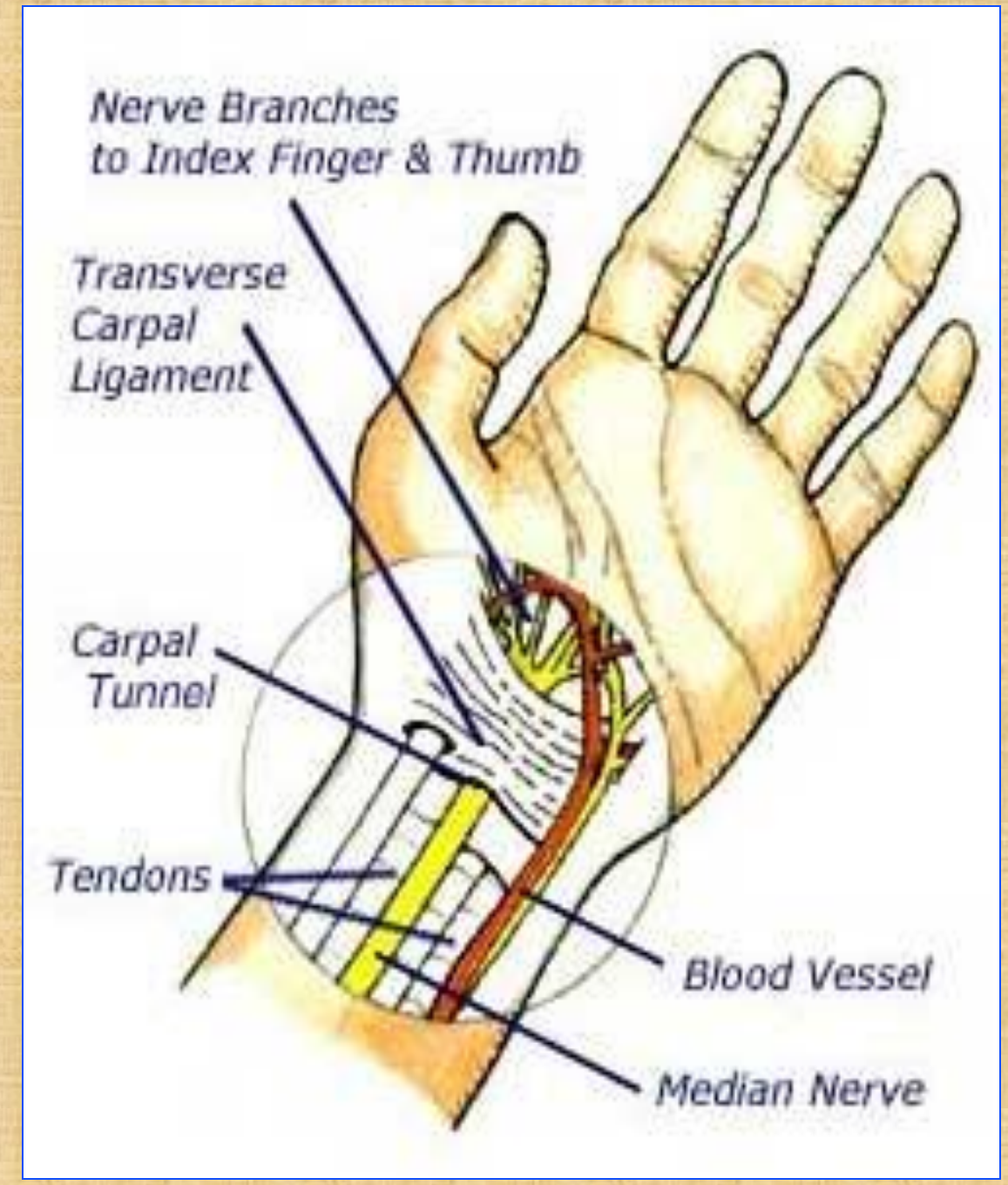
*Pillar pain.

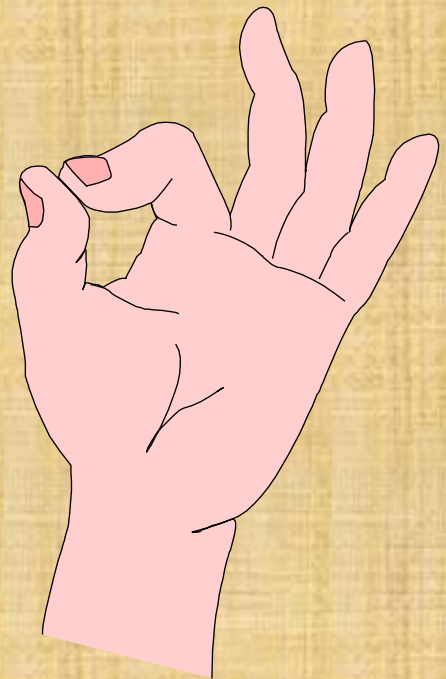
*Prolonged time to return to ADL and work.

*Recovery of grip and pinch.

*Scar tenderness.

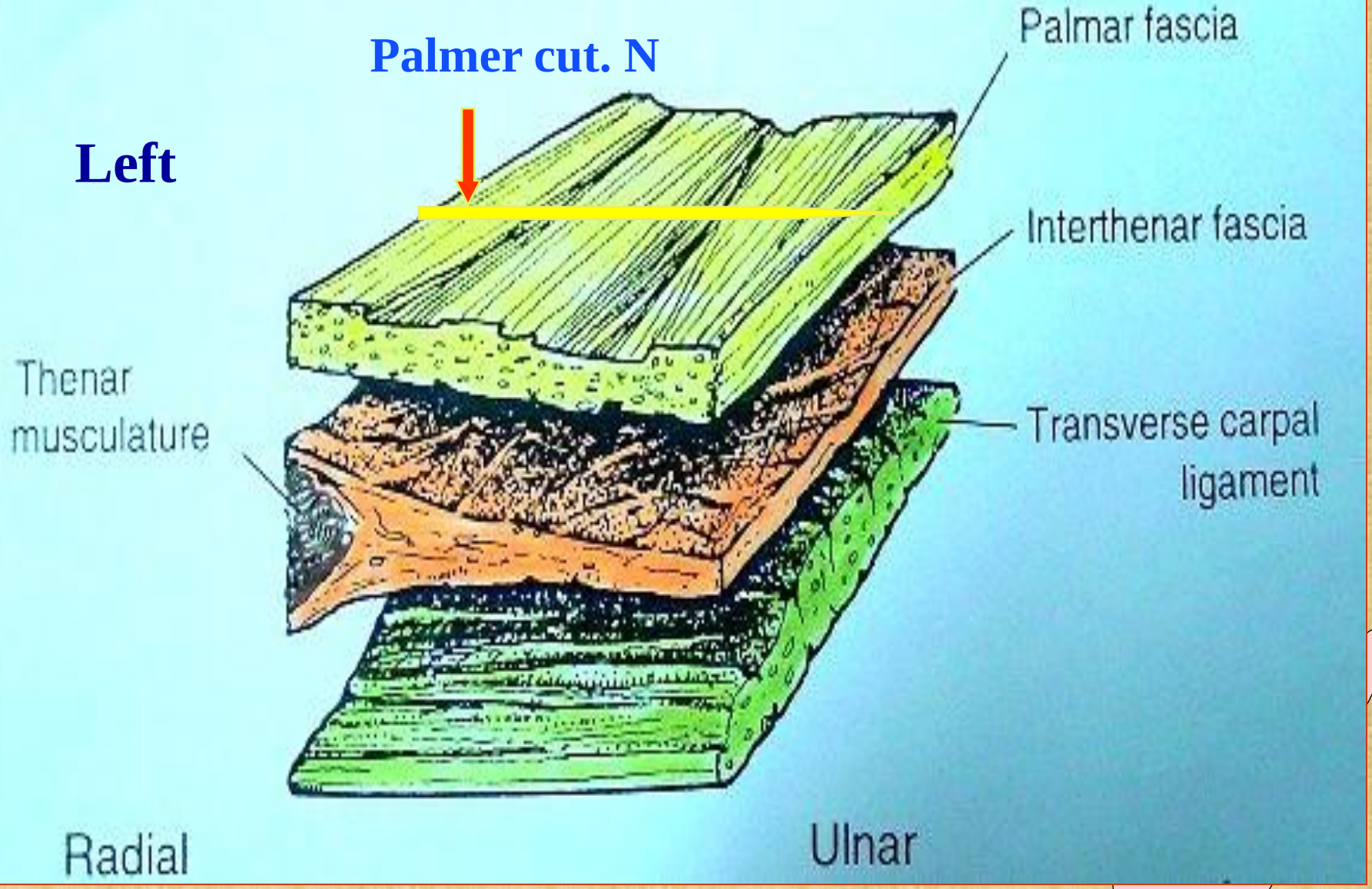



Nerve Branches
to Index Finger & Thumb
Transverse
Carpal
Ligament
Carpal
Tunnel
Tendons
Blood Vessel
Median Nerve



**Palmer cut. N**

**Left**



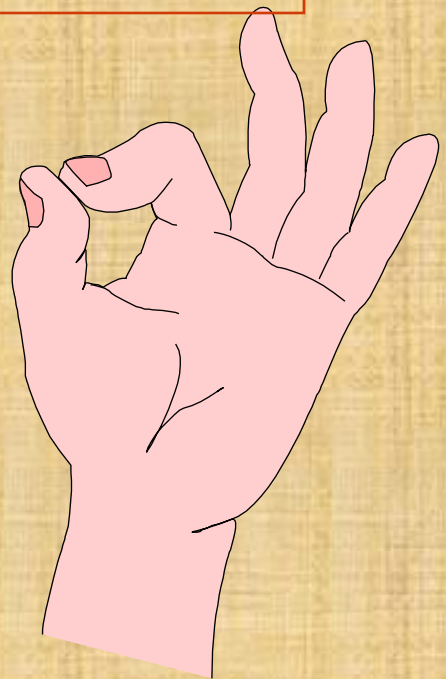
# Palmar cutaneous nerve

*Single branch,

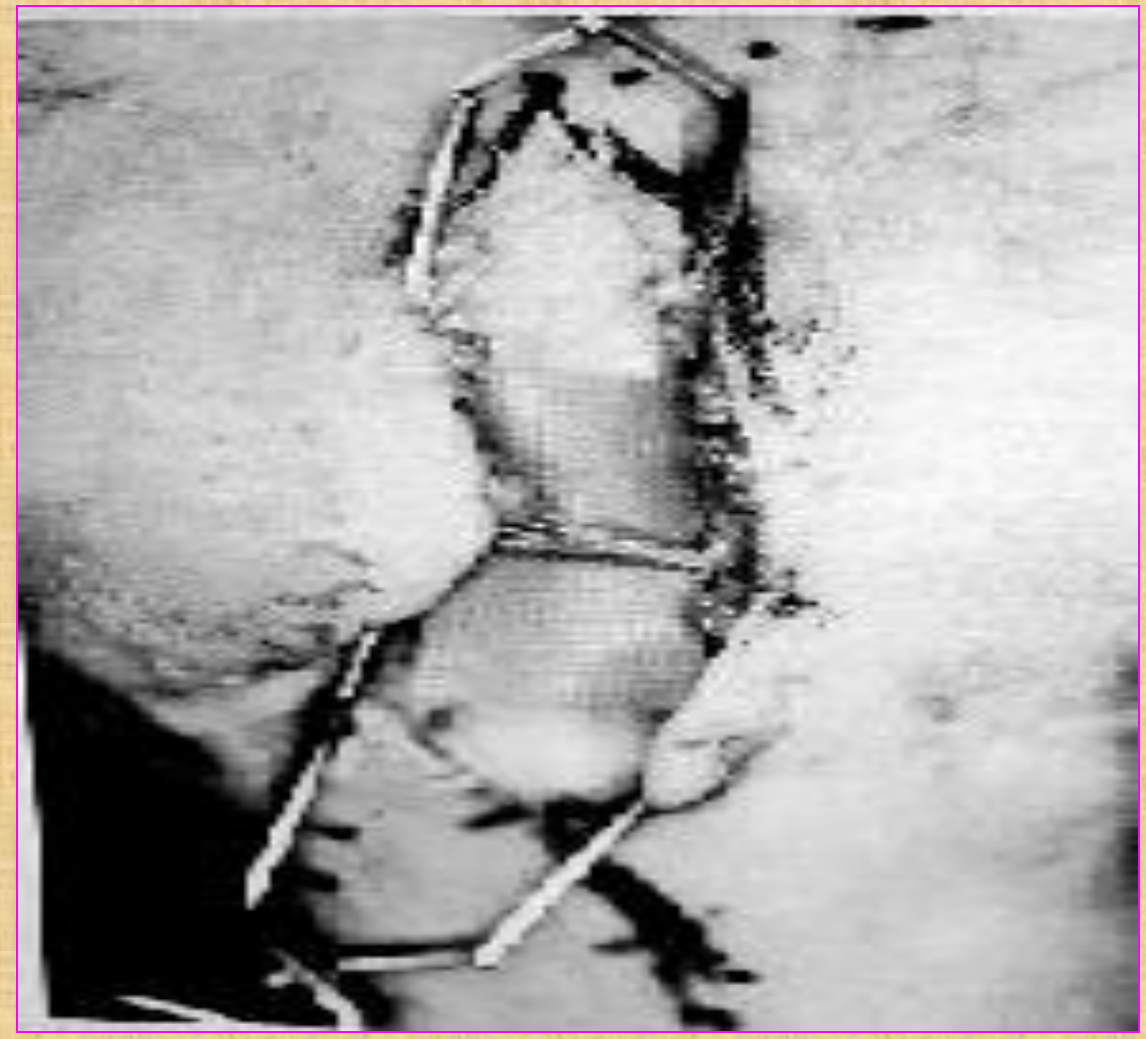
*Multi-fascicular,

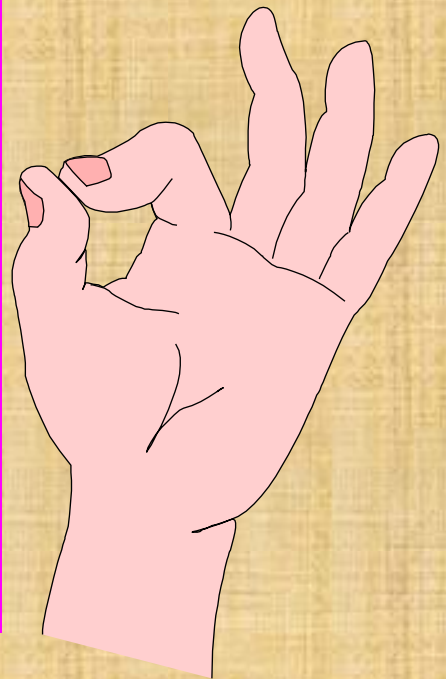
* 47%.

*Tomaino etal J.Hand S,1998*



# *If preserved in OCTR→no pillar pain or scar hypersensitivity



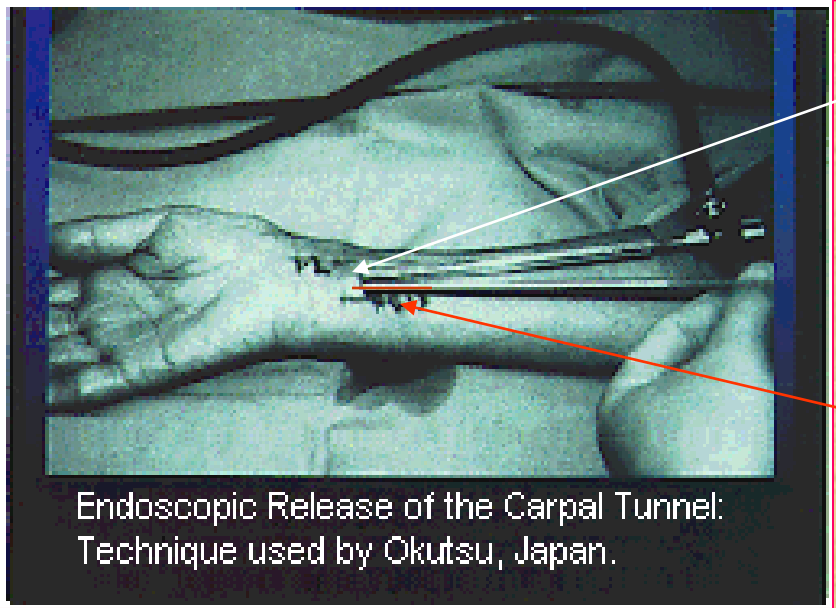


# 1987

## ECTR

| Proximal portal | Distal portal | Double portal |
| --- | --- | --- |
| *Okutsu<br>*Agee<br>*Menon | *Mirza | *Chow<br>*Resnick<br>*Brown |

# Proximal Portal ECTR



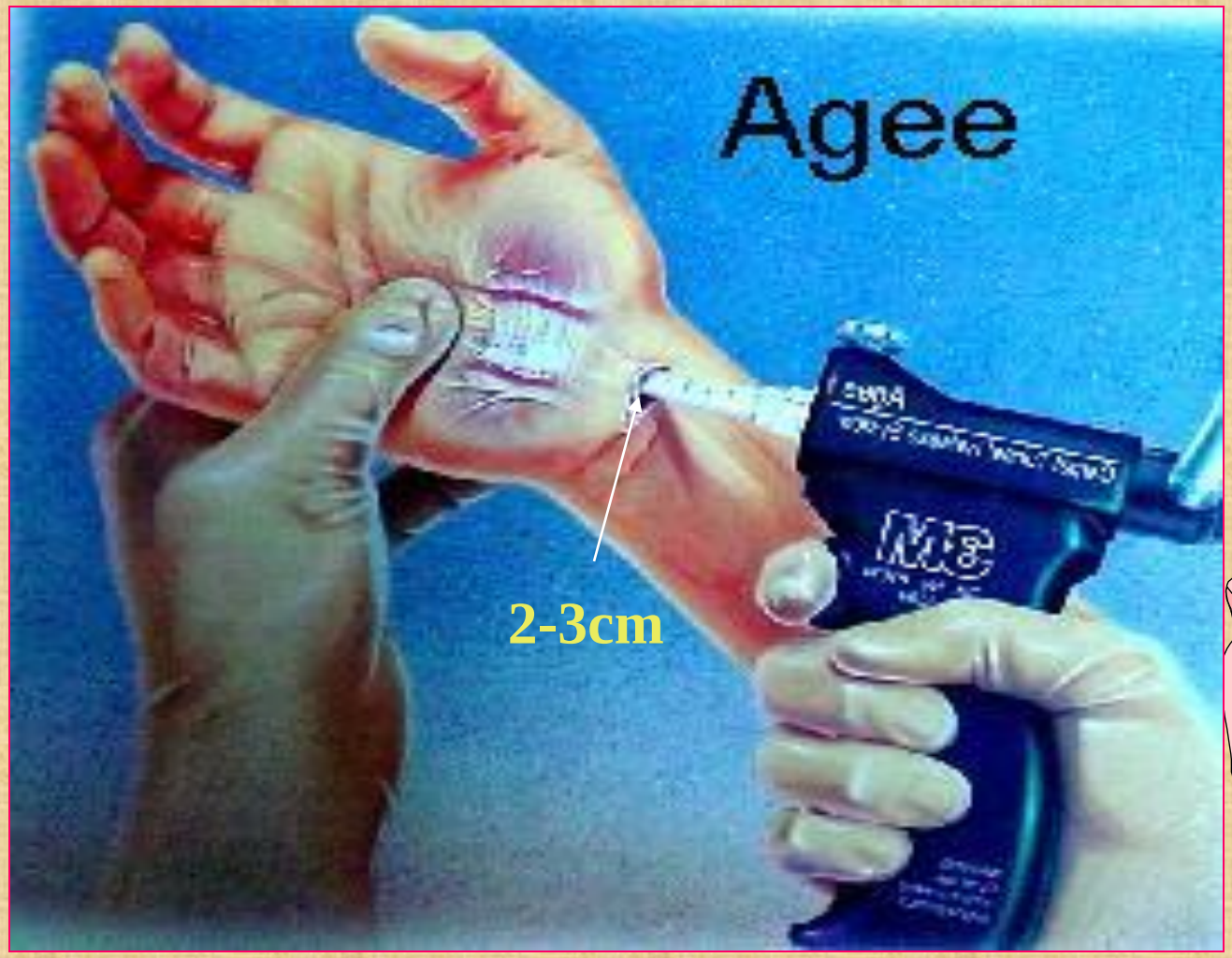

3cm

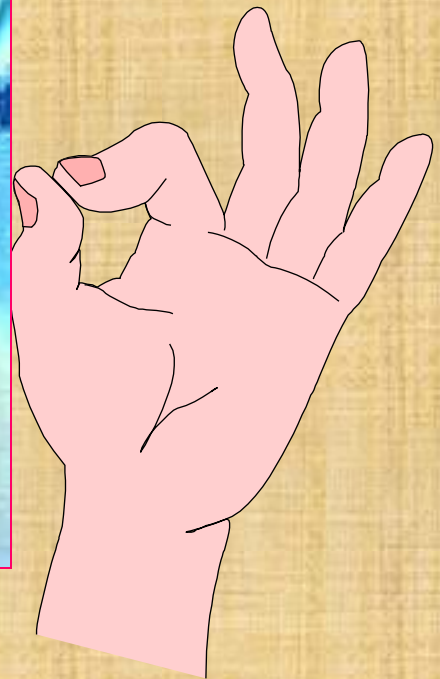
**Universal Subcuaneous Endoscope System**

2cm

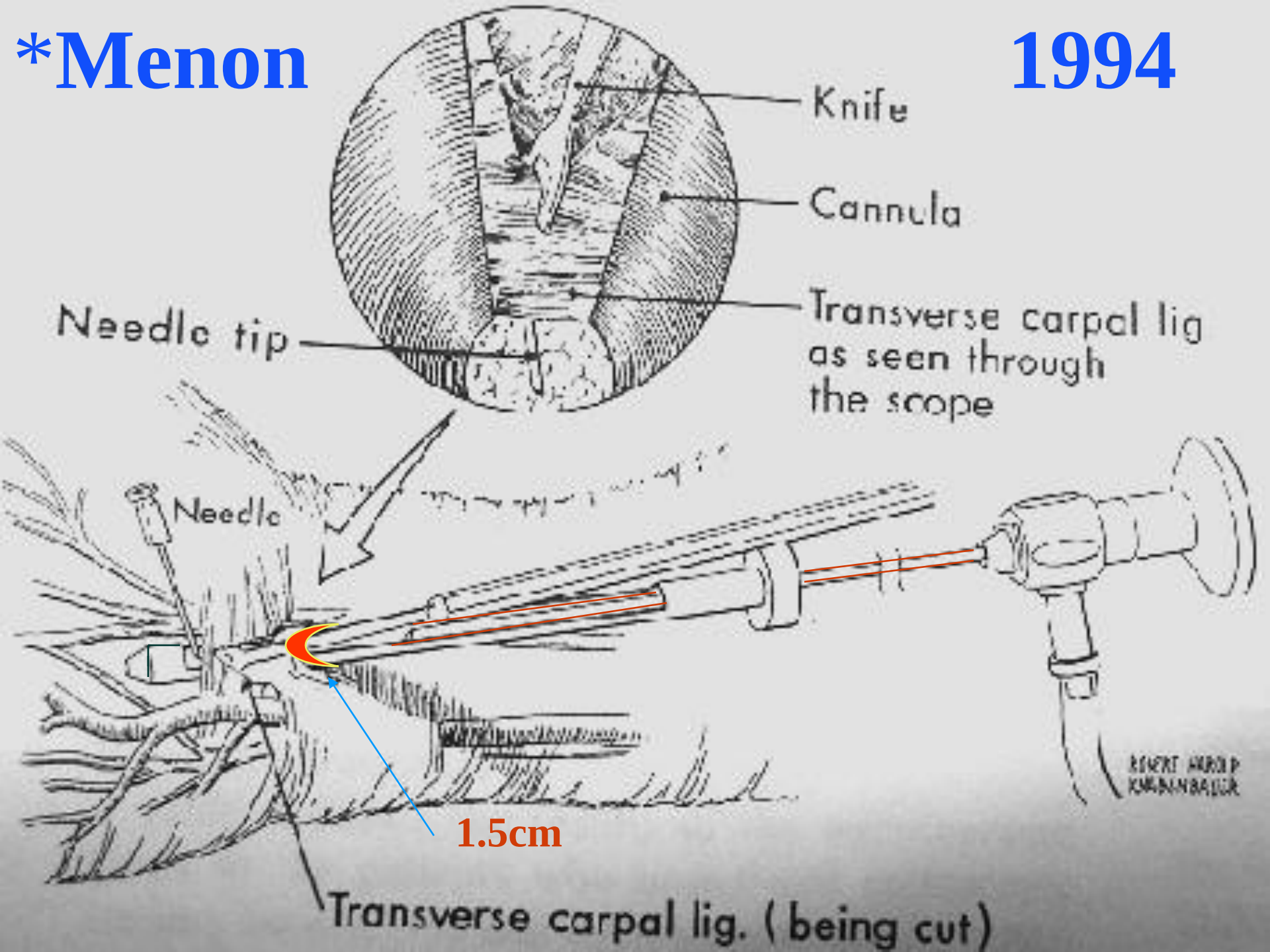
**1987**

# *Agee 1990



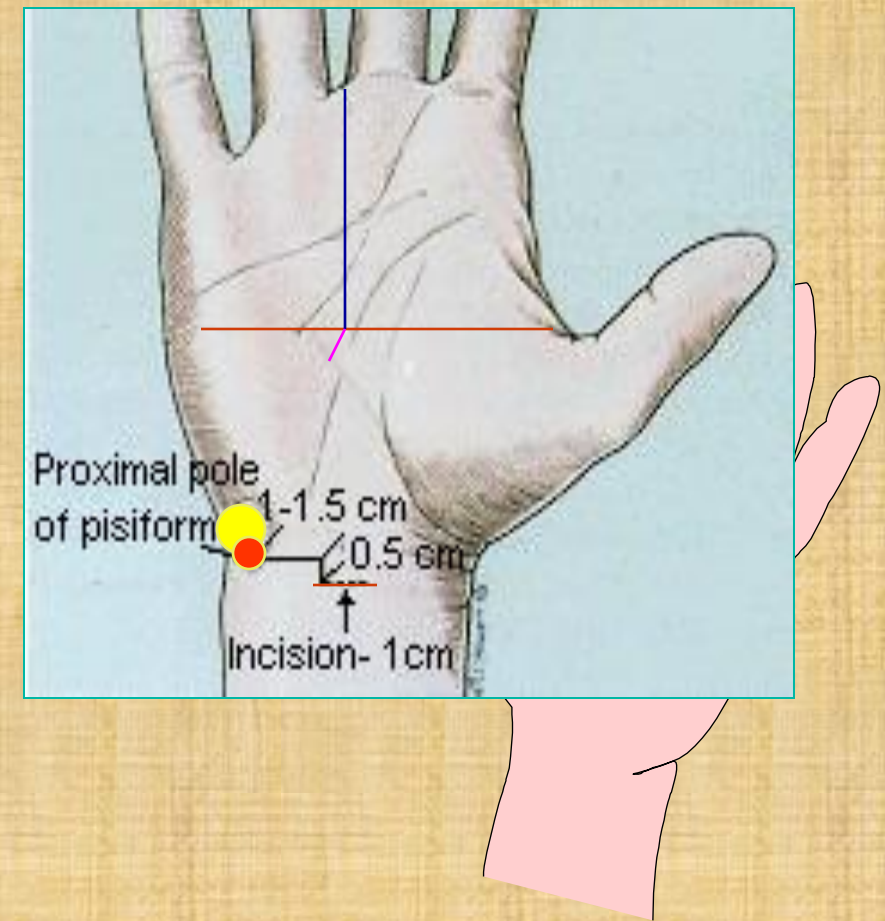



# *Menon 1994

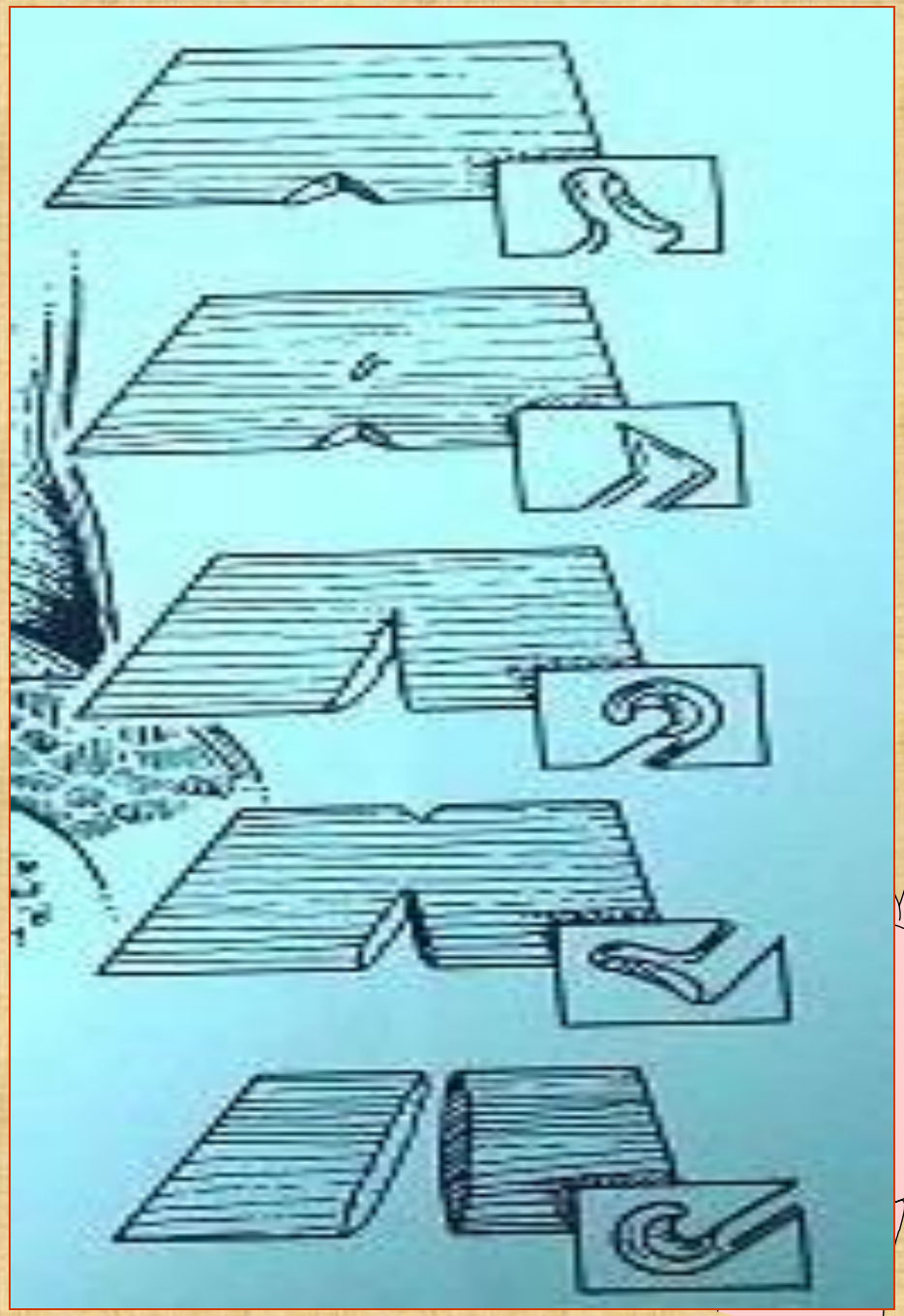

Knife
Cannula
Transverse carpal lig as seen through the scope
Needle tip
Needle
1.5cm
Transverse carpal lig. ( being cut)

# Double Portal ECTR

# Chow Subbursal 1989

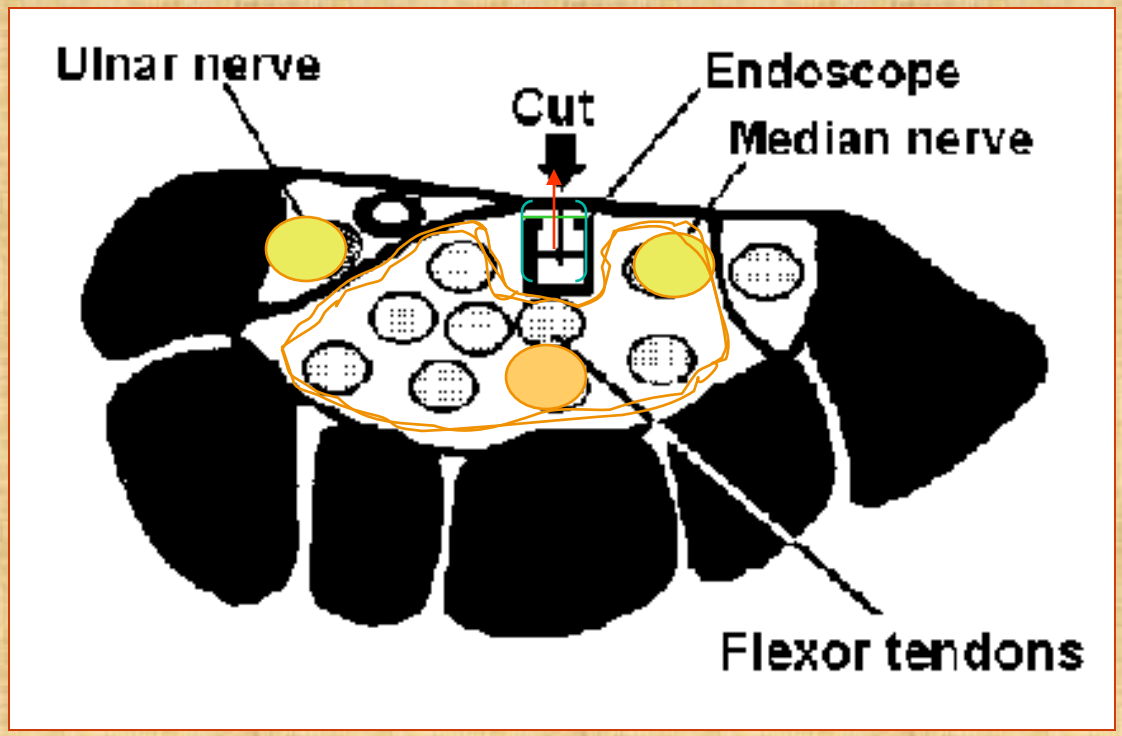
# Step by step

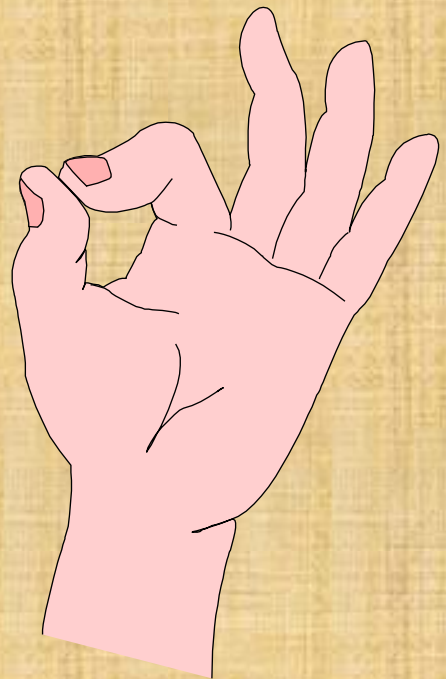



WEBSHOTS

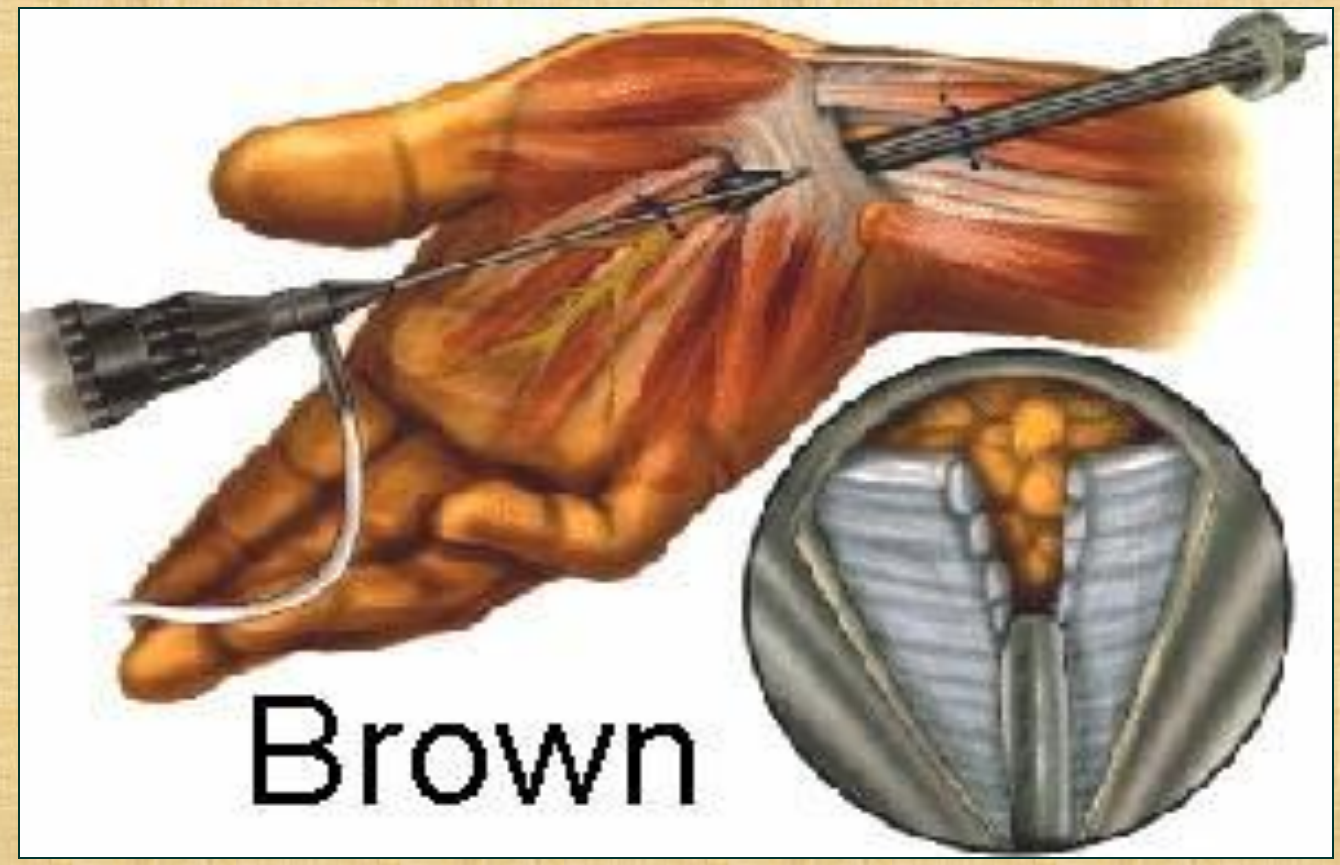
# Resnick &Miller 1991

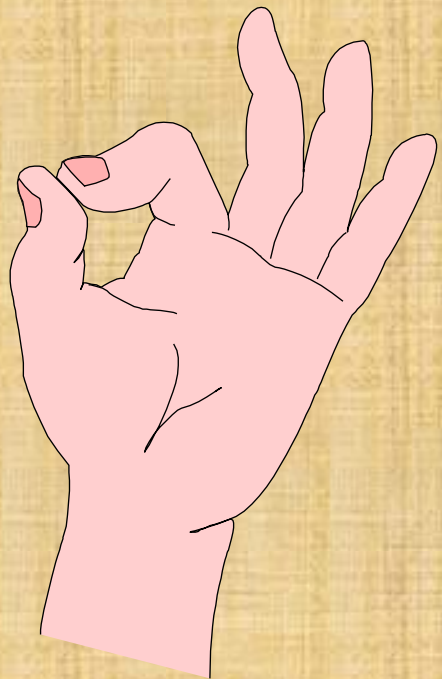
**Modification of Chow technique to A subligamentous or extrabursal approach**



# *Brown 1993

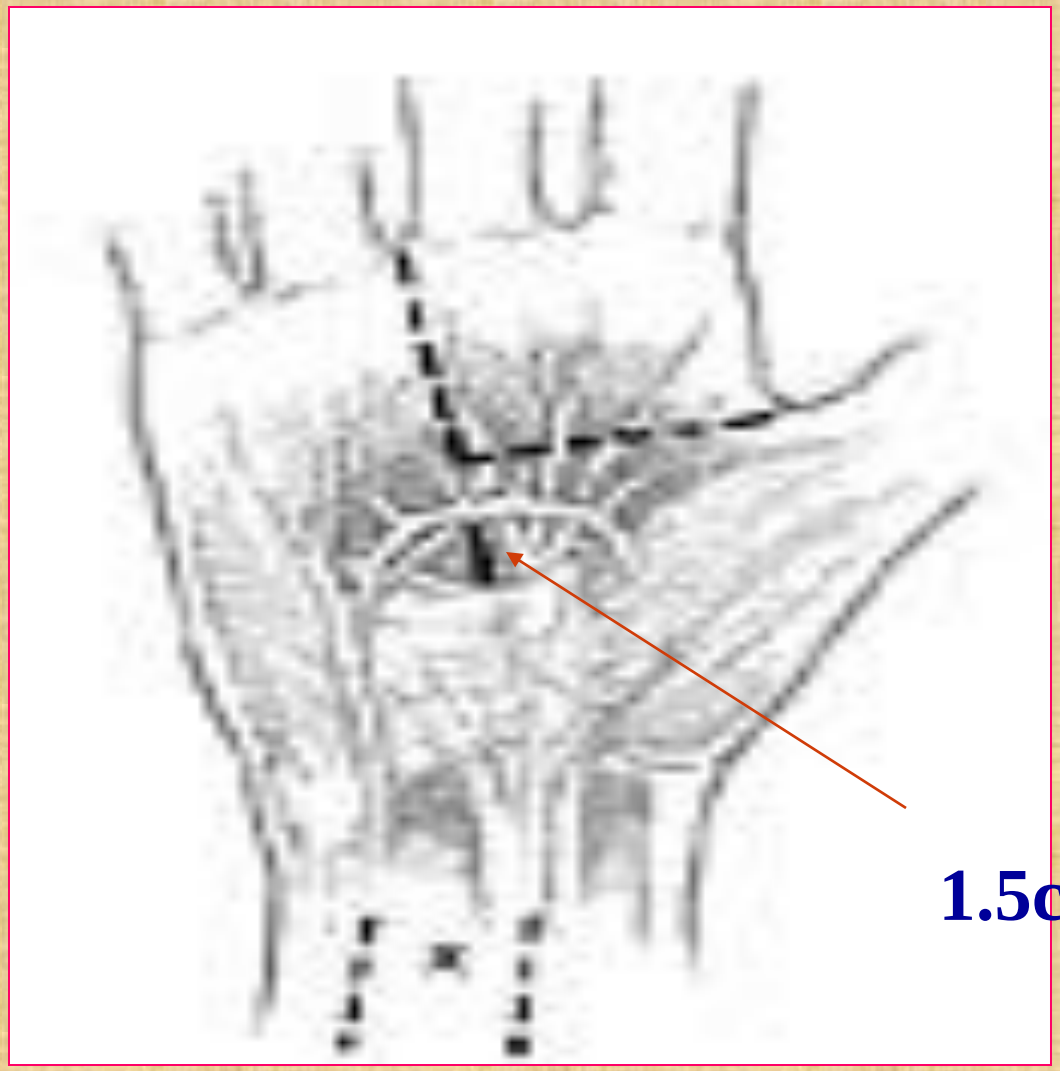


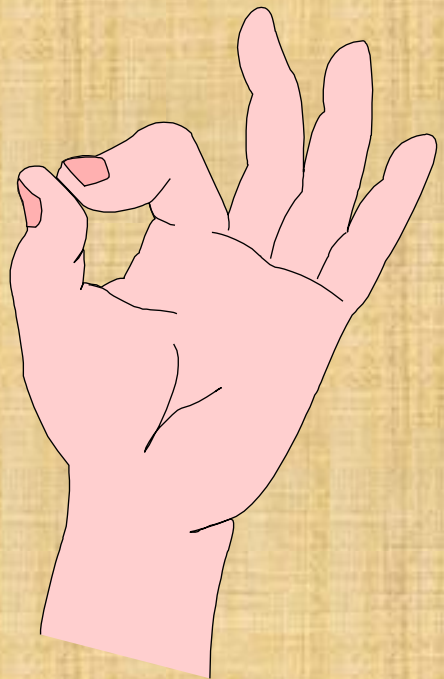



# Complications (Nagle Etal) Arthroscopy, 1996

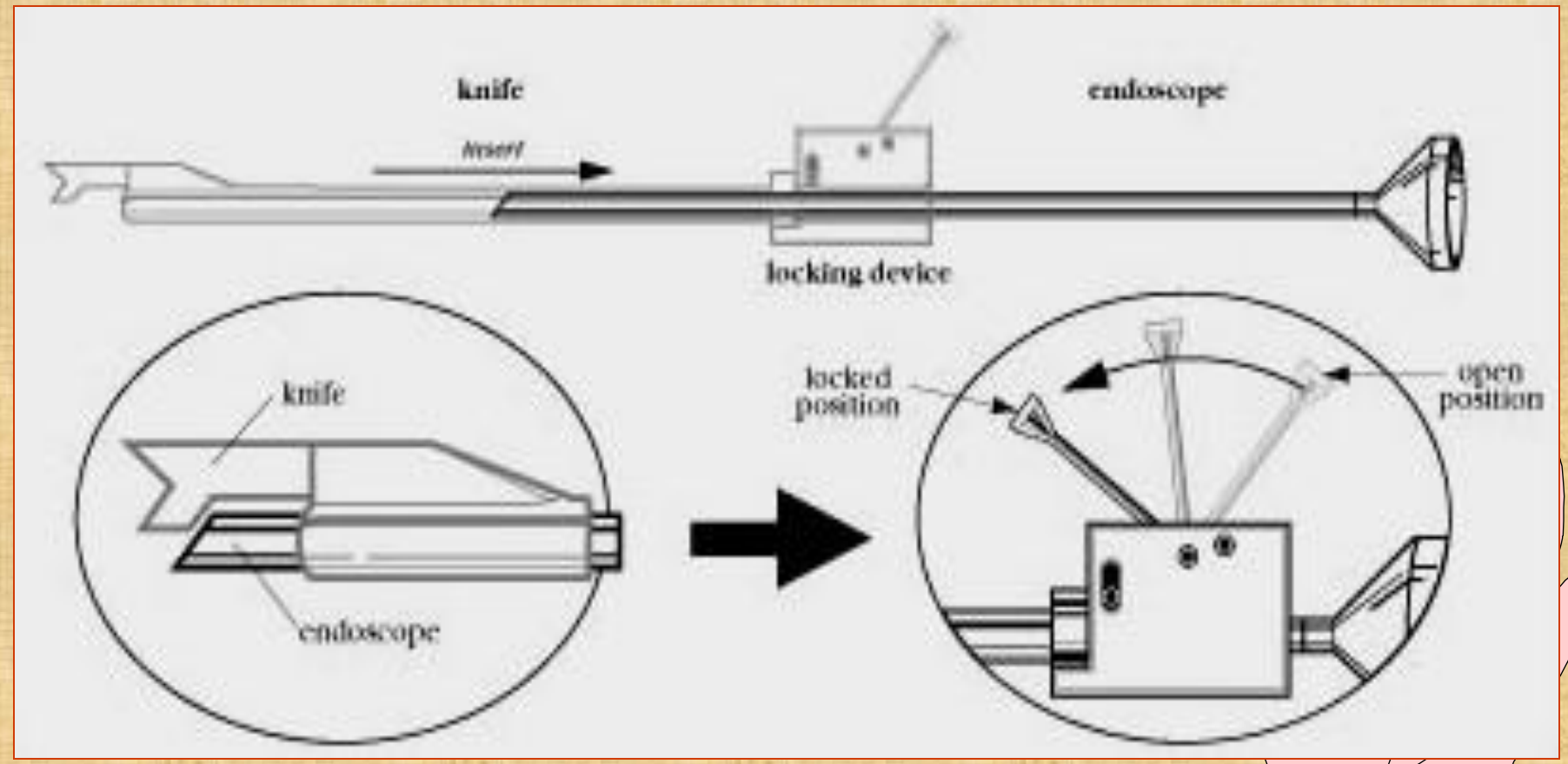
| Complication | Transbursal<br>110 case | Extrabursal<br>530 case |
|---|---|---|
| Nerve injury | 6.3% | 1.3% |
| Failed surgery (OCTR) | 7.3% | 1.3% |
| RSD | 2% | 0.2% |
| Other injuries | 2.7% | 0.75% |

# Mirza Distal Portal ECTR



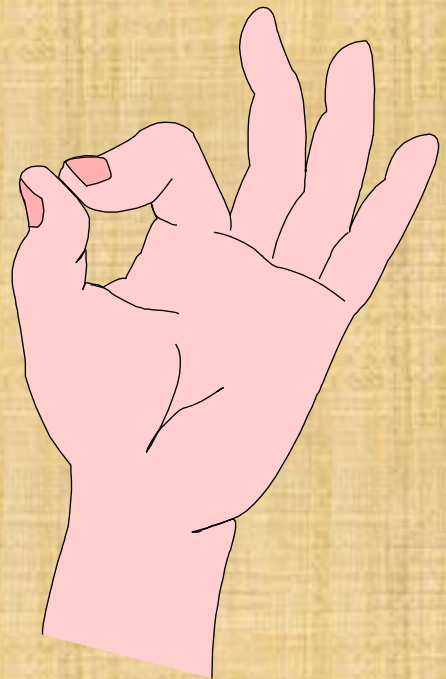



# Mirza 1995




## Pushing knife

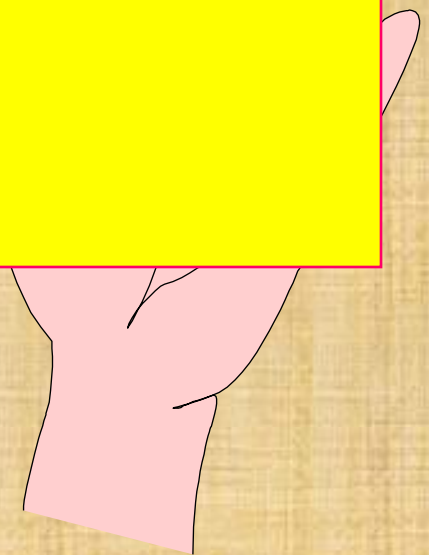

Neurosurgeons



# Jimenes etal, (1987 - 1997)

J. Neuro Surgery, 1998

* 52 Article.
* 8068 Procedure.
* 2484 Single portal.
* 5584 Dual portal



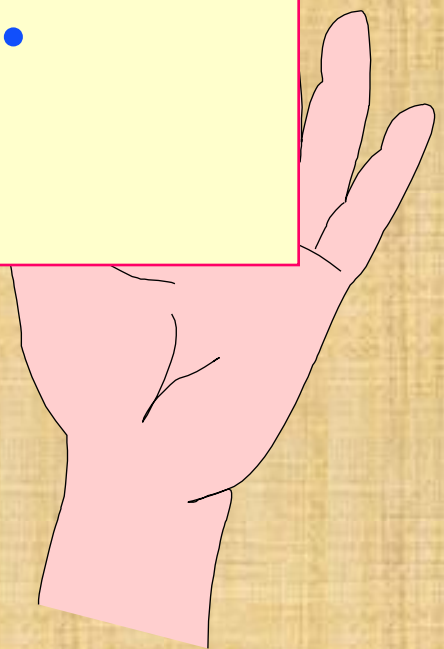
# Results a Critical Review

*96.52% success.

*2.67% complications.

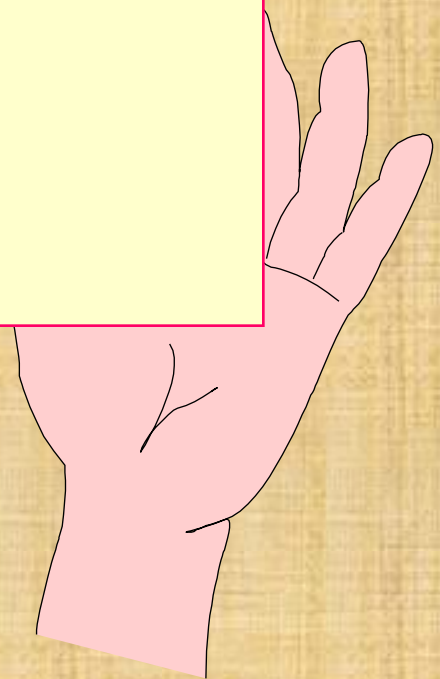
(Mostly temporary).

*2.61% Failure rate



# Return to work Acritical Review

* Range: 10 - 22 days.
* Mean : 17 days.
* Double in OCTR

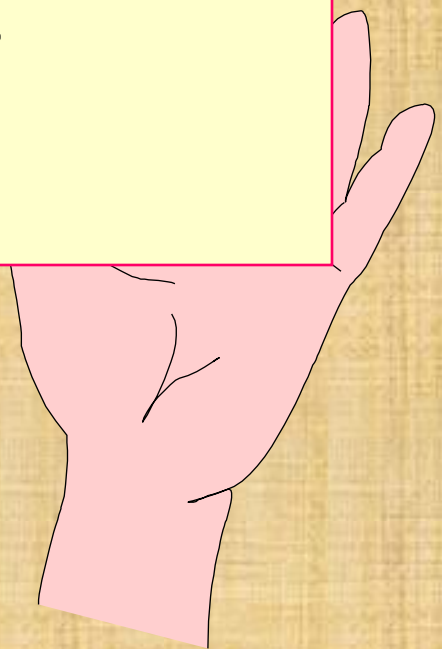


# Contraindications to ECTR

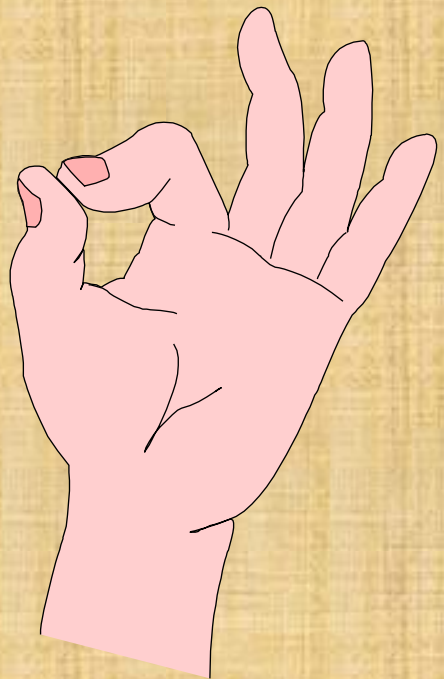
## Acritical Review

1.Restriction of wrist movement.

2.Altered Carpal anatomy.



# Hand surgeons



# ECTR Vs OCTR

54 Publications.

9514 ECTR

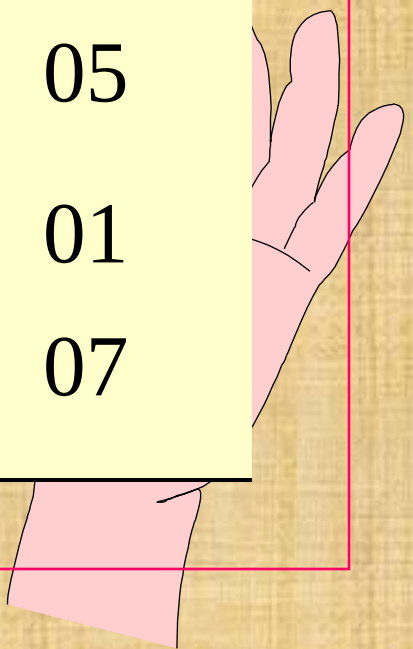
1203 OCTR

1983 ----- 1996

Boeckstyns Etal, J.Hand. S. 1999

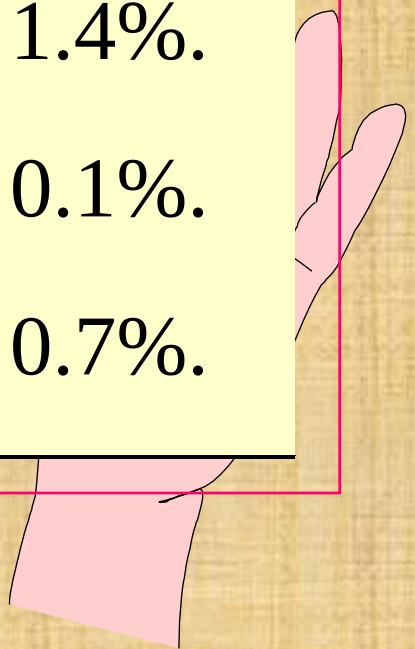
# PCR Studies (10)

| *ECTR N : 461* | *Complications* | *OCTR N : 572* |
|---|---|---|
| ***00*** | Permanent N Problems. | 02 |
| ***20*** | Transient N Problems. | 05 |
| ***00*** | Tendon lesion. | 01 |
| ***06*** | Other complications | 07 |



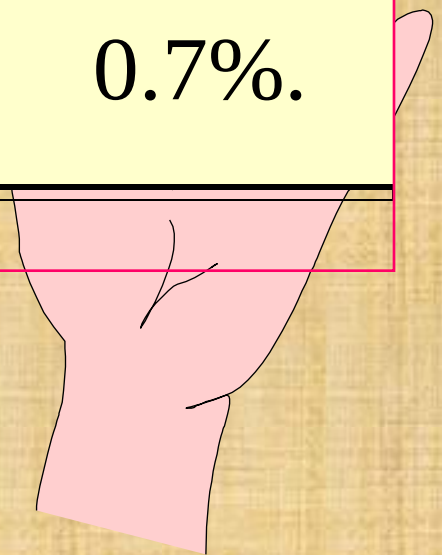
# All Controlled Studies (20)

| ECTR N : 1016 | Complications | OCTR N : 1124 |
|---|---|---|
| **0.4%** | Permanent N. Problems. | 0.2%. |
| **4.7%** | Transient N. Problems. | 1.4%. |
| **0.1%** | Tendon Lesion | 0.1%. |
| **1.2%** | Other Complications. | 0.7%. |



| Single portal<br>N :1877 | Complications | Double portal<br>N: 6247 |
|---|---|---|
| 0.2% | Permenant N inj. | 0.4% |
| 1.6% | Temporary N. inj | 2.55% |
| 0.8% | Other complications | 1.5% |

| ECTR N : 9516 | Complications | OCTR N : 1203 |
|---|---|---|
| 0.3%. | Permanent N. Problems. | 0.2%. |
| 2%. | Transient N. Problems. | 1.4%. |
| 0.03%. | Tendon Lesion. | 0.1%. |
| 1%. | Other Complications. | 0.7%. |



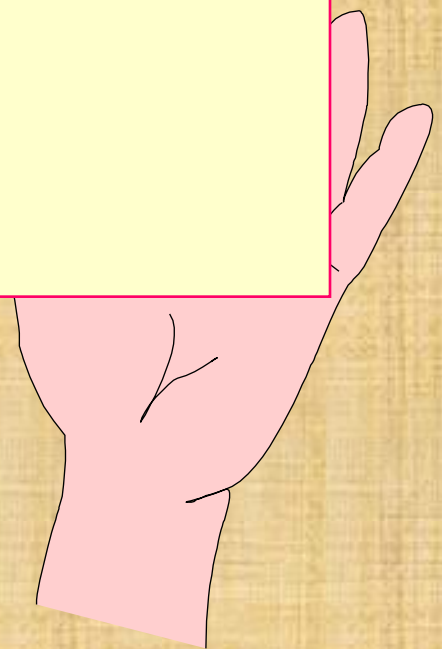
# ECTR Vs OCTR

* **Comparable permanent N. problems.**
* **Only case reports indicates high risk of ECTR.**
* **Reversible N. problems > with ECTR.**

* **Tendon lesions extremely rare.**
* **Other complications**

**(RSD, haematoma, wound problems … etc).**

**(Same in both)**



# Failed ECTR

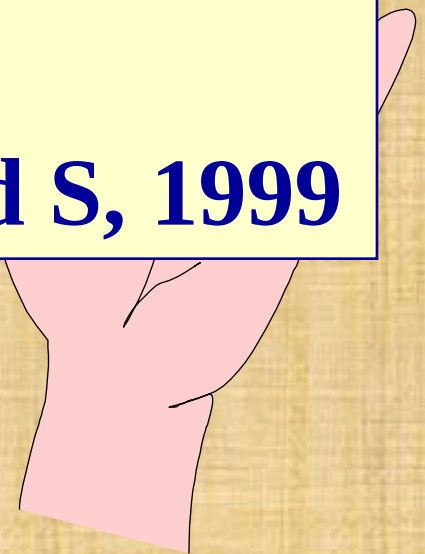
## 22 Patient , 24 hands

**All needed revision open surgery**

***22 → incomplete division of TCL**

***02 →Median N. Inj.**

**Varitimidis etal, J.Hand S, 1999**



# CONCLUSION

1- Technique born to live like Ilizarov

2. Needs Surgeons with hand interest.

3. It has a definite advantages of early recovery and less tender scar and pillar pain.

4. Success and complications as OCTR.
5. Needs proper training.
6. Cost !!!


THANK YOU
WEBSHOTS