Dupuytren contracture

Dr. Amit Mittal

Director- Hand Microsurgery Centre , Jaipur

DNB [Ortho - St. Stephen Hospital]

FNB - [Hand and Microsurgery - Ganga Hospital]

Facts

- **Genetic** - **AD** with variable penetrance
- **Association** - smoking epilepsy alcohol , AIDS,, vascular disorder
- **Prognosis** - < 50y, male , positive family history , bilateral , ectopic , plantar fibromatosis

Facts

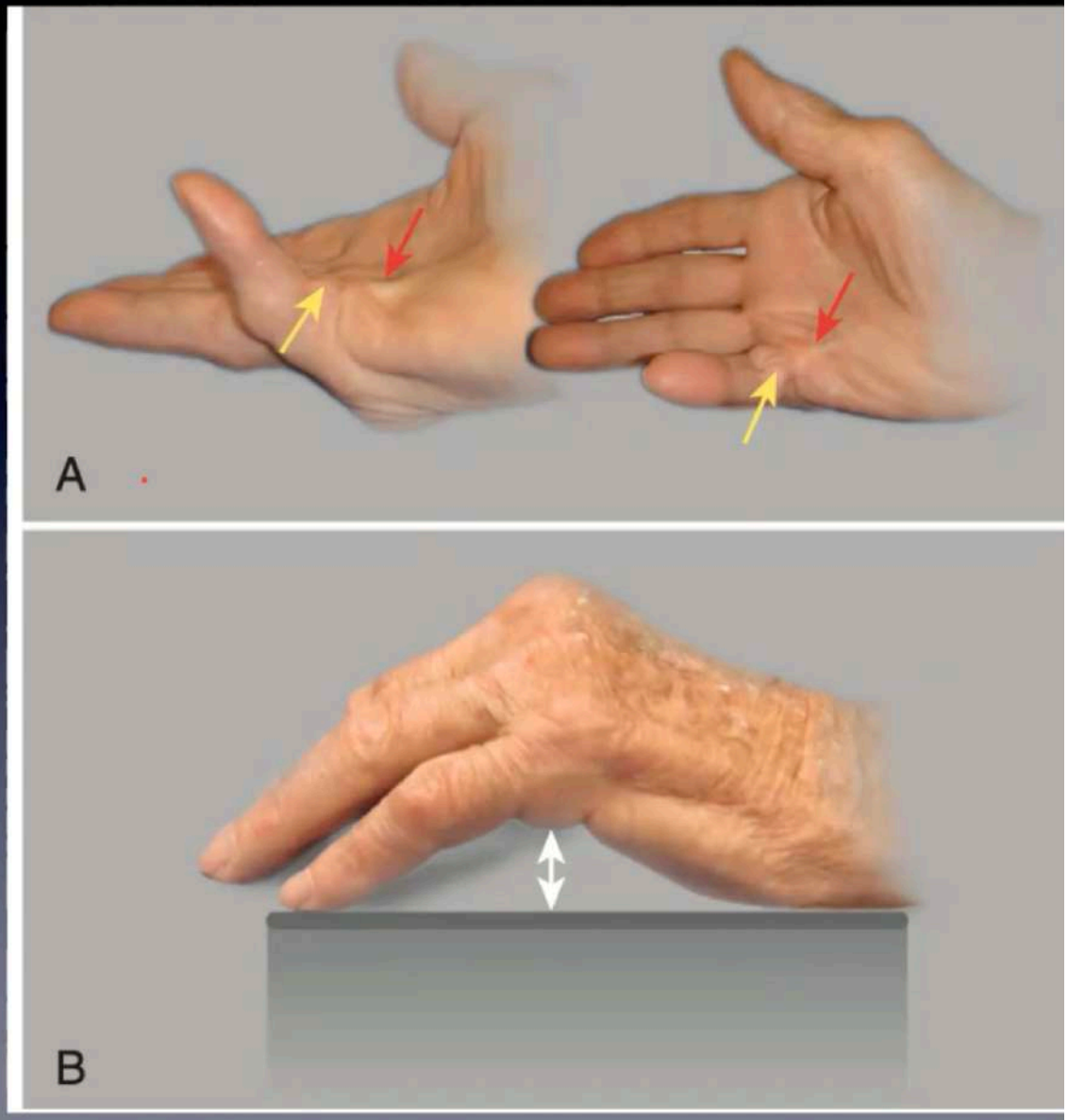
- **Mc - Ring and little finger**
- In Diabetes - radial side more involved
- Most contractures are **static**
- but central cord can cause dynamic contracture

Anatomy

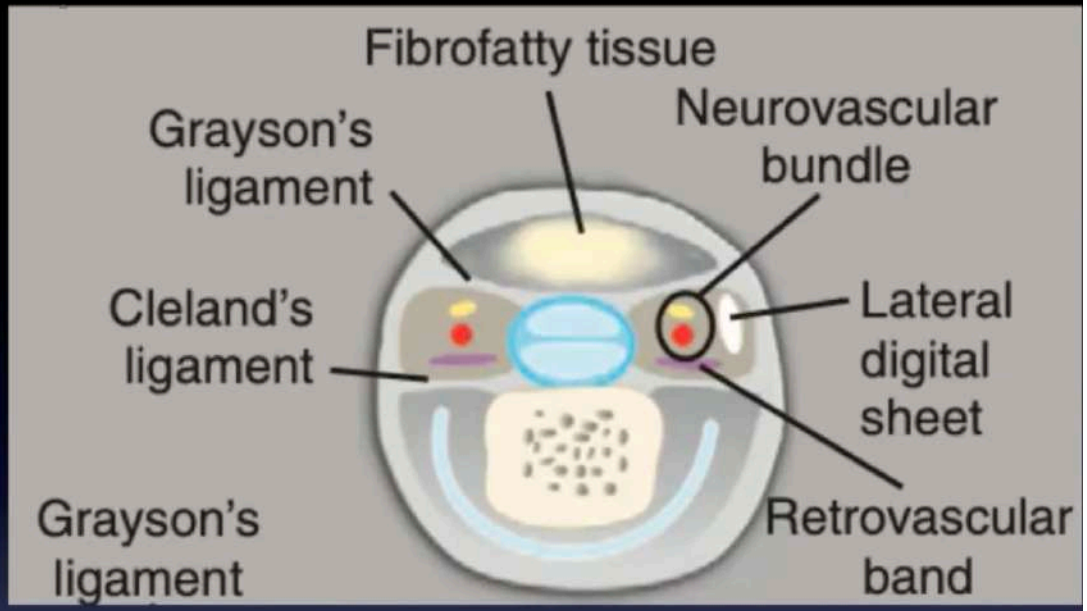
- Dorsal skin- Loose
- **Palmar skin** - tight that allow to grasp object
- due to presence of fascia, ligaments or bands that connect skin to skeleton in digits , palmar digital junction and palmar region .

Pathognomic sign

- Nodule
- Cord
- Contracture

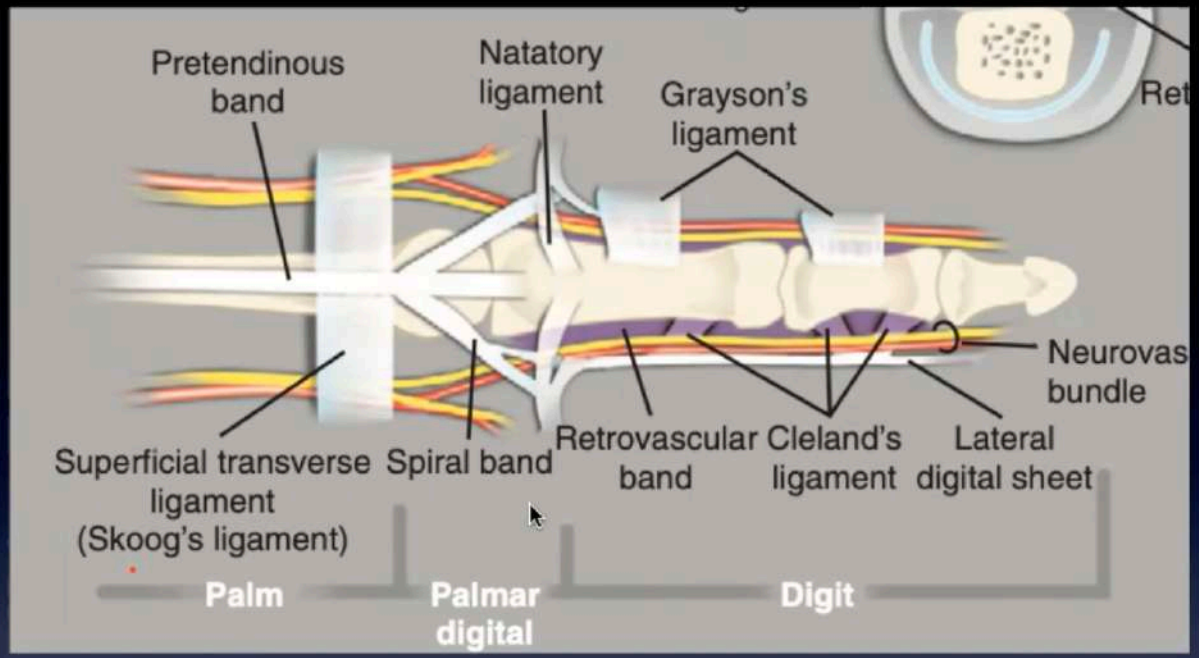


Digital fascia



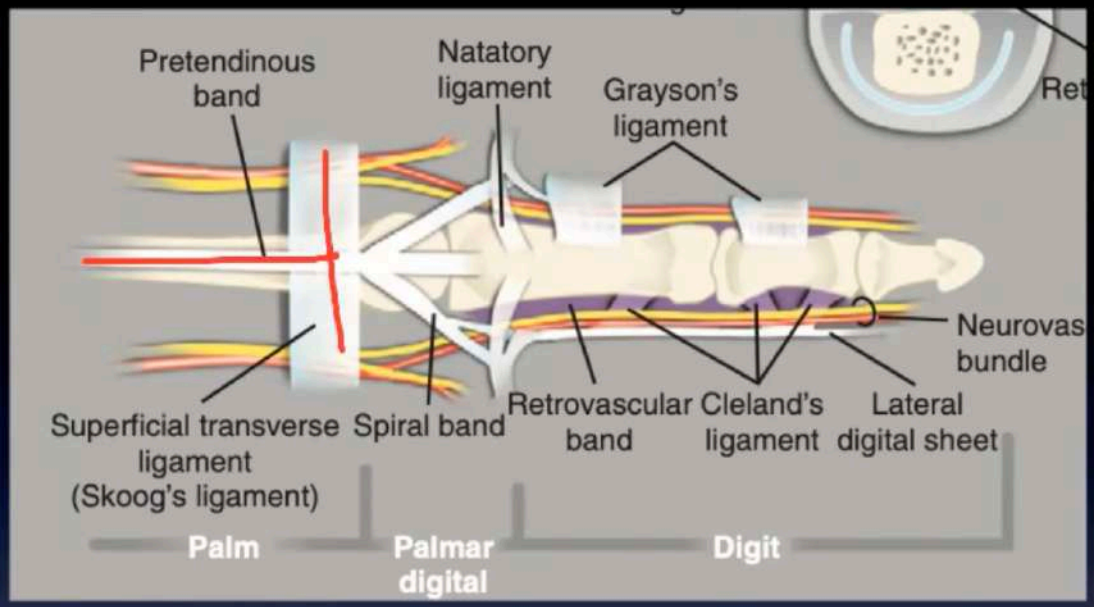
- Lateral digital sheet , superficial fibrofatty palmar and dorsal fascia , Cleland [dorsal]and Grayson ligament [volar].
- Cleland ligament is never involved in Dupuytren contracture .
- Superficial fibrofatty fascia become part of central cord.

Palmar digital junction



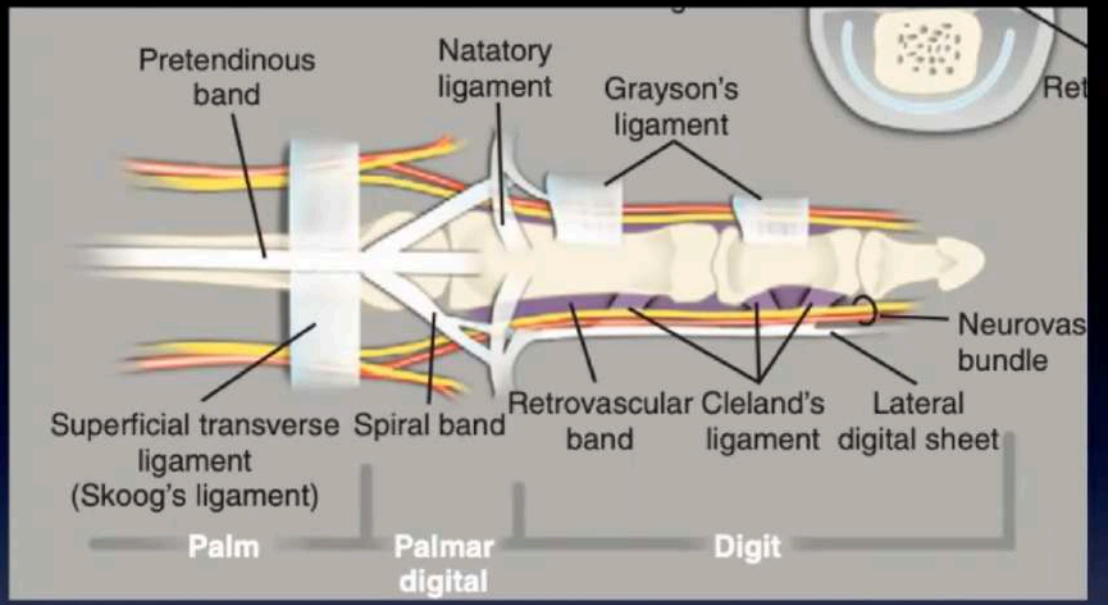
- Spiral band
- Natatory ligament
- Vertical fibre of league and juvara
- In digit they connect to Grayson and lateral digital Sheet
- In palm they connect to pretendinous band and superficial transverse ligament

palmar fascia



- Pretindinous band -
- Superficial transverse band - perpendicular and present dorsal to pretendinous band .
- Vertical fibre are adjacent to Metcarpal neck and attach to sagittal band extensor hood at MP joint level .

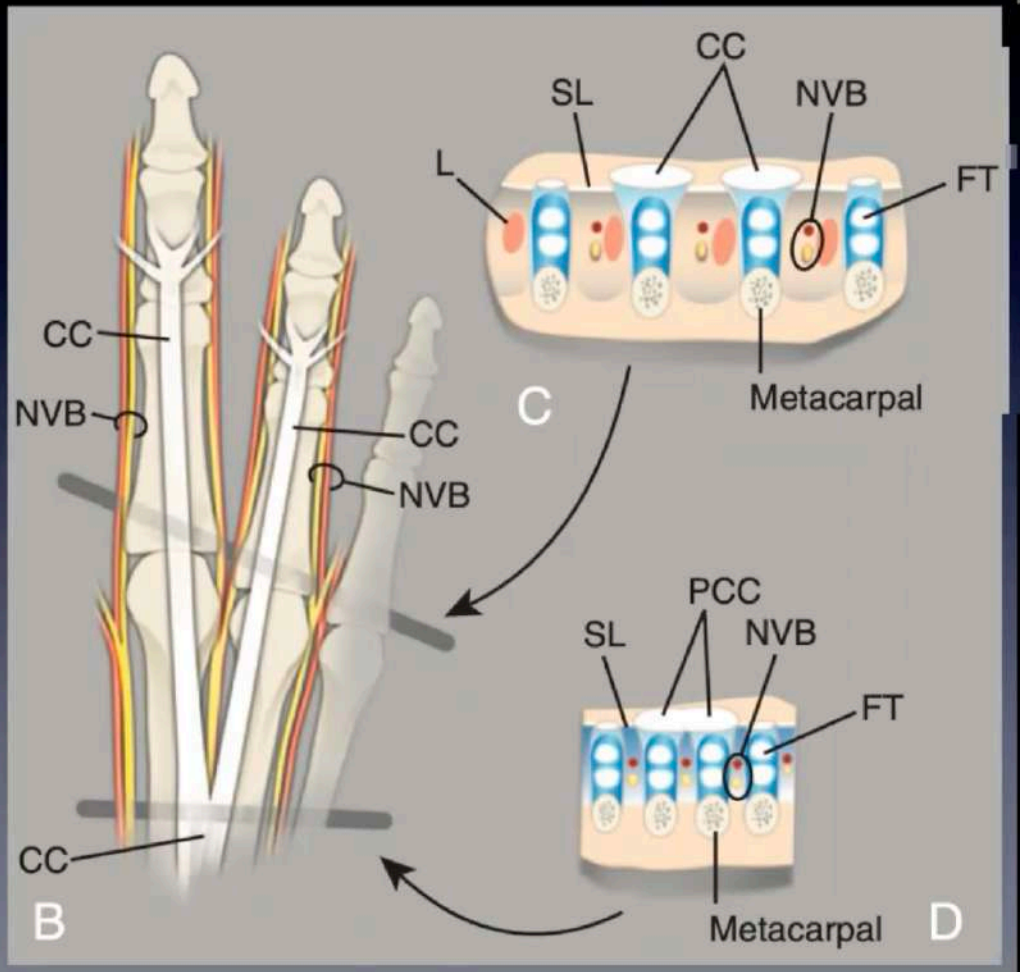
Palmar fascia



- In sagittal plane Pretendinous band - is most superficial that include vertical fibre connect to skin

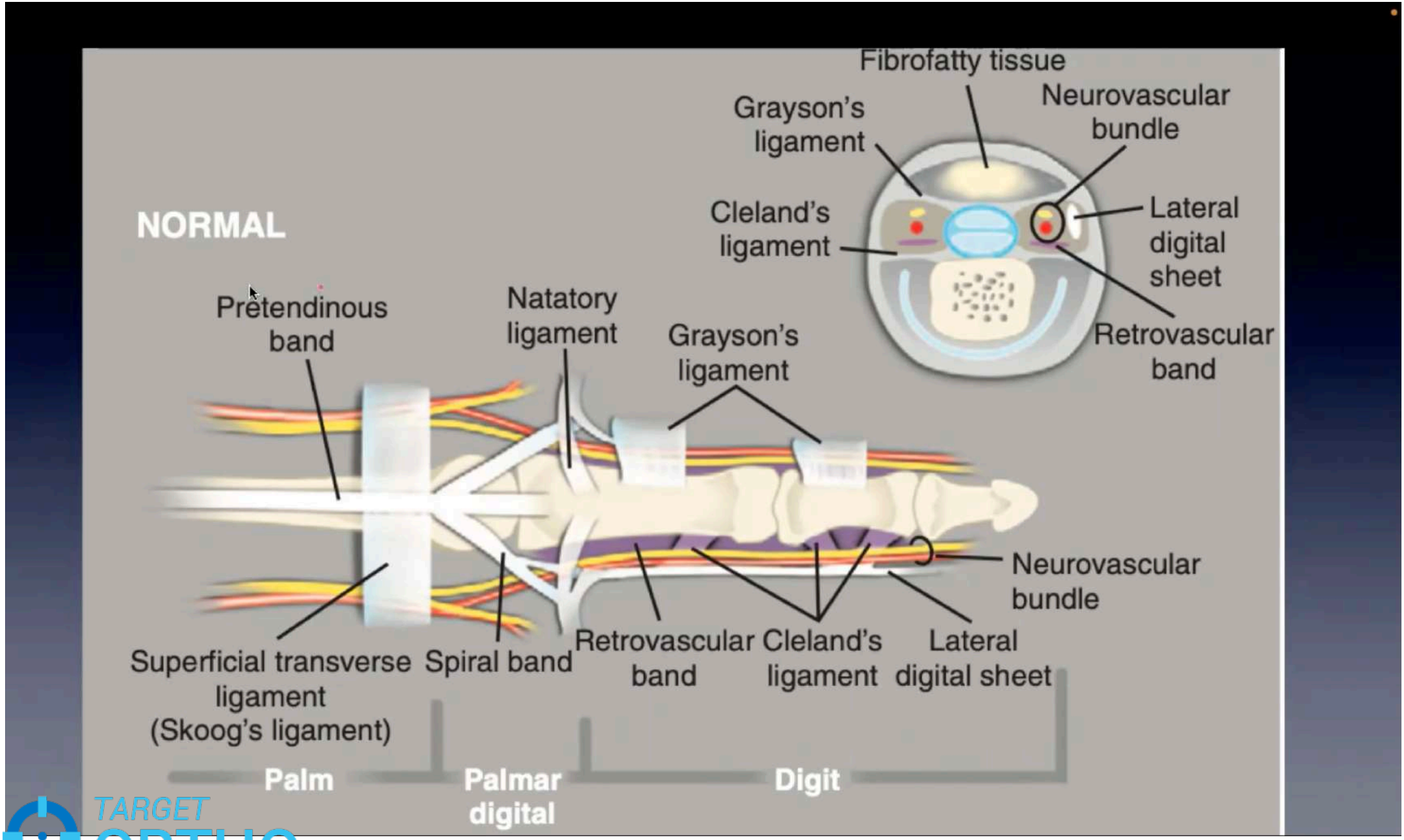
Vertical septa
Enclose metacarpal and flexor tendon

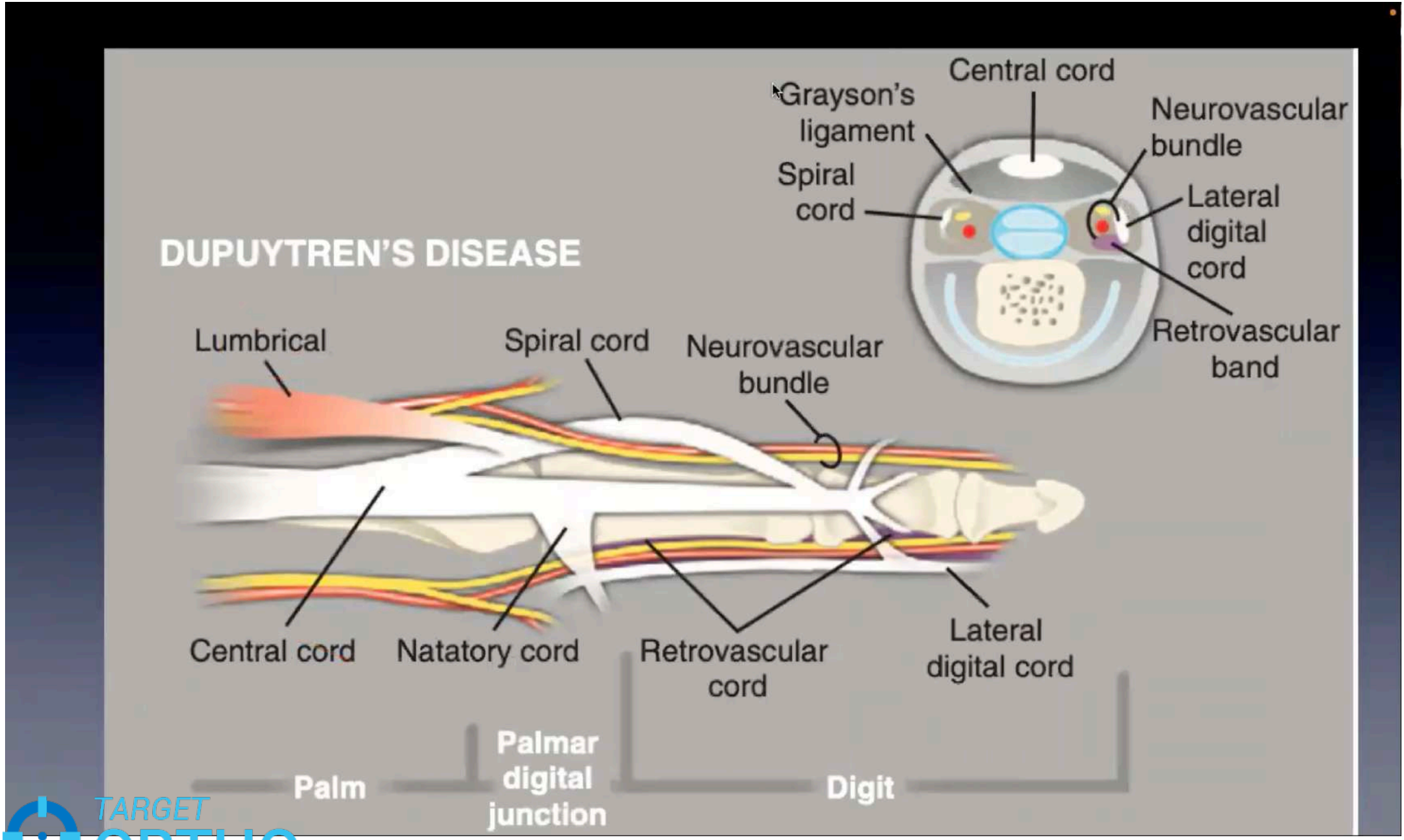
- Vertical septa connect 5 structure
- Vertical septa of legueu and juavara ,
- volar plate ,
- deep inter metacarpal ligament
- saggital band and
- loosely to A1 pulley



Central cord

- Originates from
- Pretendinous band , Palmar superficial fibrofattly tissue
- First layer - vertical fibre to skin
- Middle layer - cord proper longitudinal
- Deep layer vertical fibre to deeper structure



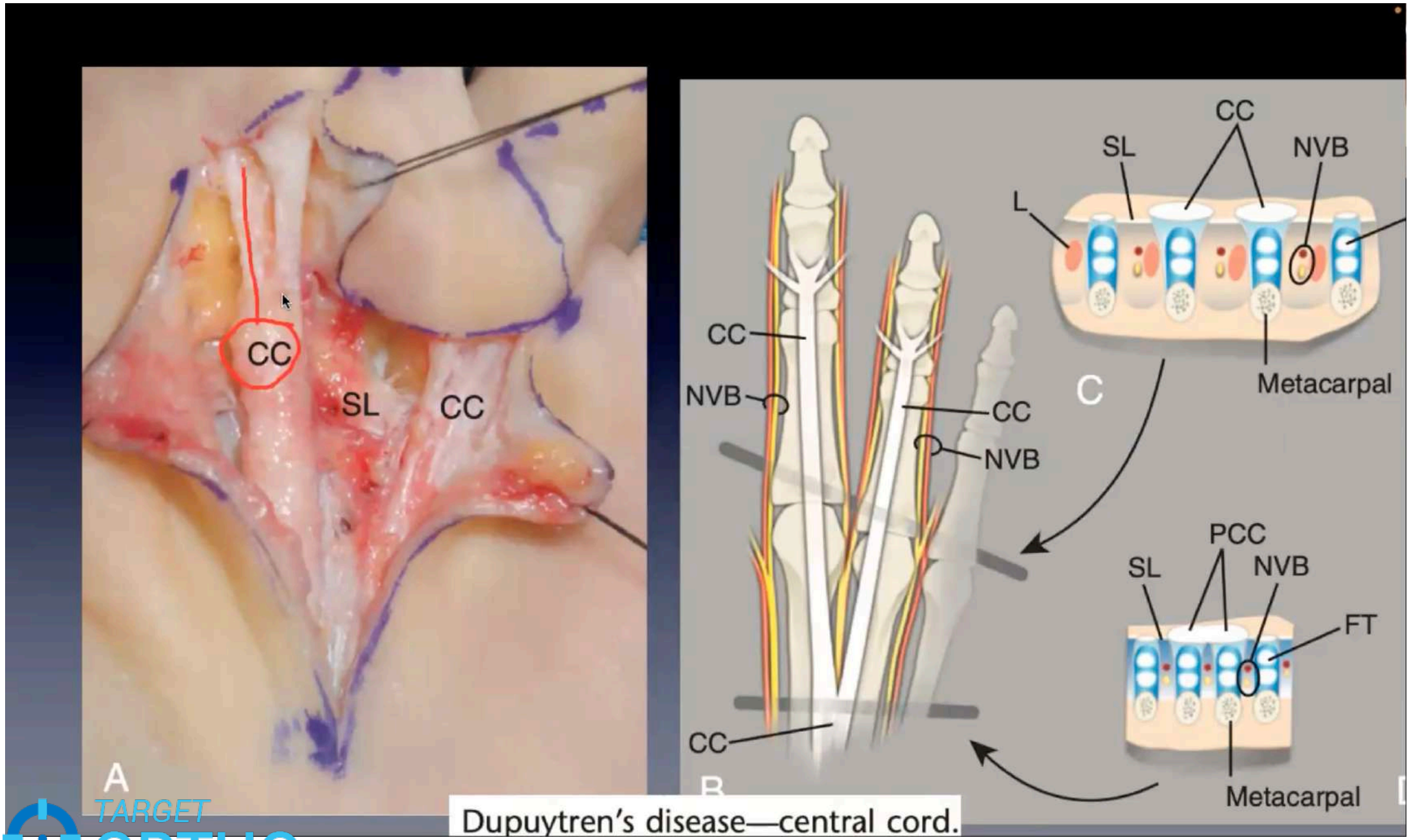


Central cord

- Insert to
- Skin of Ppx
- Mores distally to Mpx base , grayson ligament , lateral Digital sheet
- It brings NVB midline at site of insertion site distally and not proximally

Central cord

- It causes contracture of both MP and PIP joint
- Common cause of dynamic contracture of finger whose measurement changes with finger position as it crosses both MP and PIP joint



Dupuytren's disease—central cord.

Spiral cord originate from five structure

- Pretendinous band
- Spiral band of gosset
- Lateral Digital sheath
- Vertical band of legueu and Juvara
- Grayson ligament
- Only part that is not involved of palmar Digital junction is natotory ligament

Spiral cord

- Common Digital nerve of little and ring finer divide at mp joint
- Radial Digital nerve of little finger passes over spiral band and then reach mid lateral position between Grayson and Clevland ligament.
- Spiral cord contracture bring this radial Digital nerve of little finger proximal centrally and superficially and risk for injury .

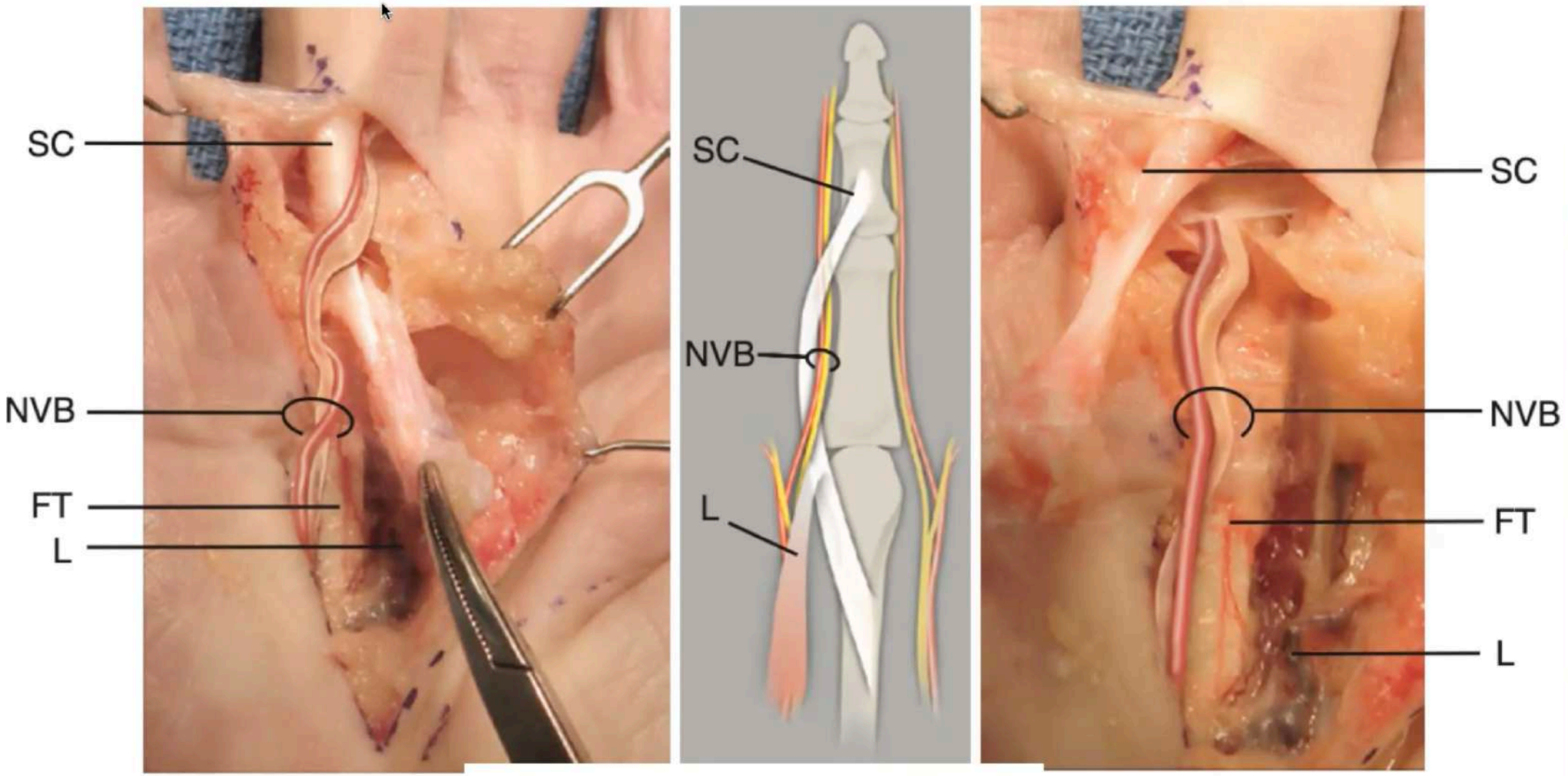


Figure 5.6 Dupuytren's disease—spiral cord.

- Ulnar side of little finger don't have natatory ligament and abductor digits minimi act as cord

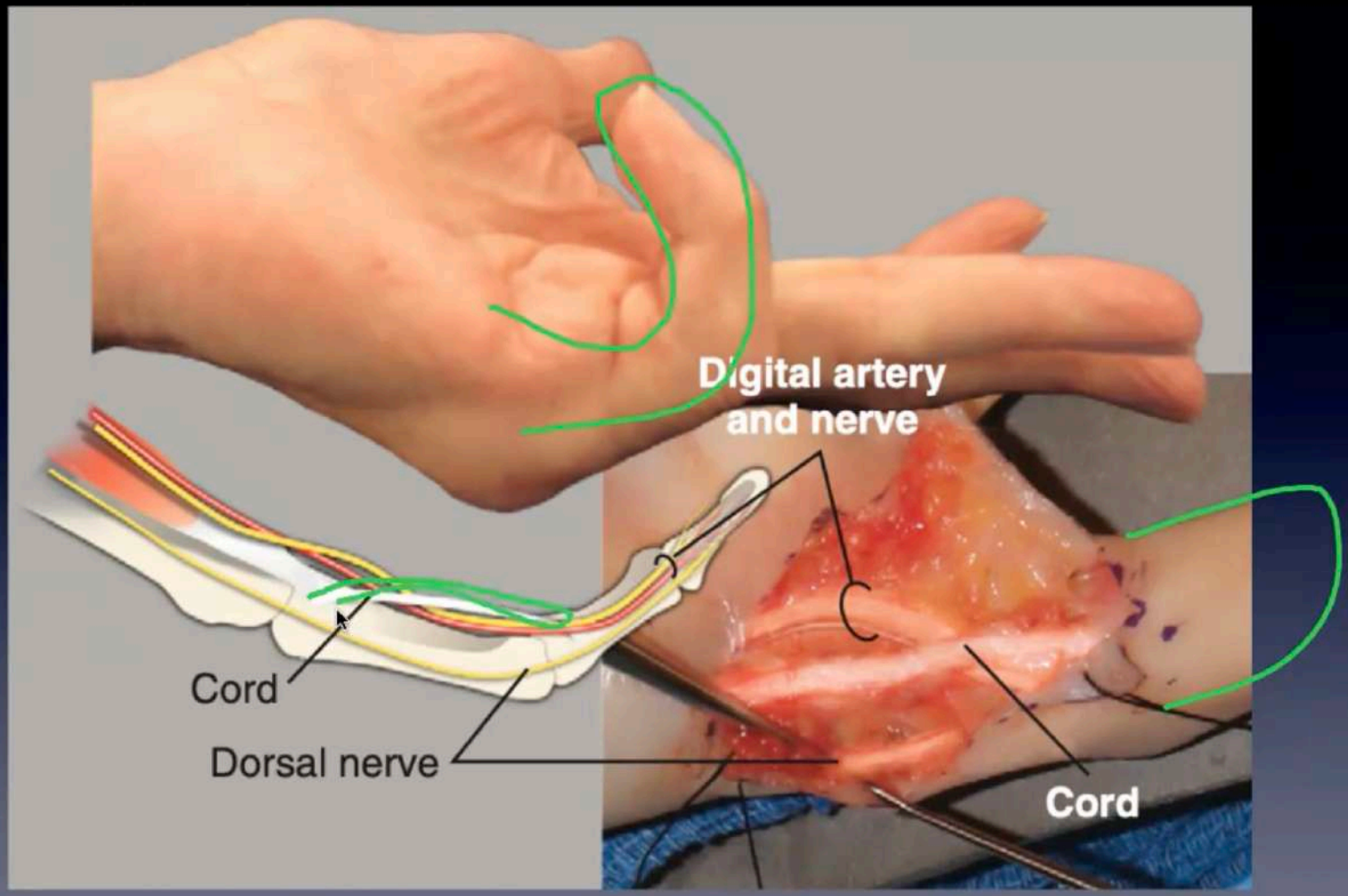


Figure 5.7 Dupuytren's disease—abductor digiti minimi cord.

Lateral cord

- Originates from lateral digital sheath proximally from coalescence of natatory ligament and spiral band
- Ulnar side of little finger don't have this fascial arrangement ,however abductor diet minima act as lateral cord

Lateral cord

- Inserts in dermis and dent not cause severe PIP point contracture
- except in little finger where it attach to MPX, however via Grayson ligament and can cause PIP contracture
- Dent displace the NVB

Retrovascular cord

- Ordinate from digital fascia dorsal to NVB and separate from Clevland ligament .
- Doesn't cause the PIP joint contracture
- But in combination with lateral cord it cause DIP joint hyperextension contracture

Commissural cord

- Originates from contracture of first web natatory ligament which are identified as first web distal and proximal commissural ligament .
- Vulnerable NVB are radial NVB of index and bot radial and ulnar NVB of thumb

Cord combination

- Are common endnote just individual one

Most common Cord combination

- Central cord and lateral cord
- This cause MP and PIP joint contracture and Bring NVB centrally

Cord combination

- Second common
- Central cord - spiral cord
- This cause sold sheet around NVB

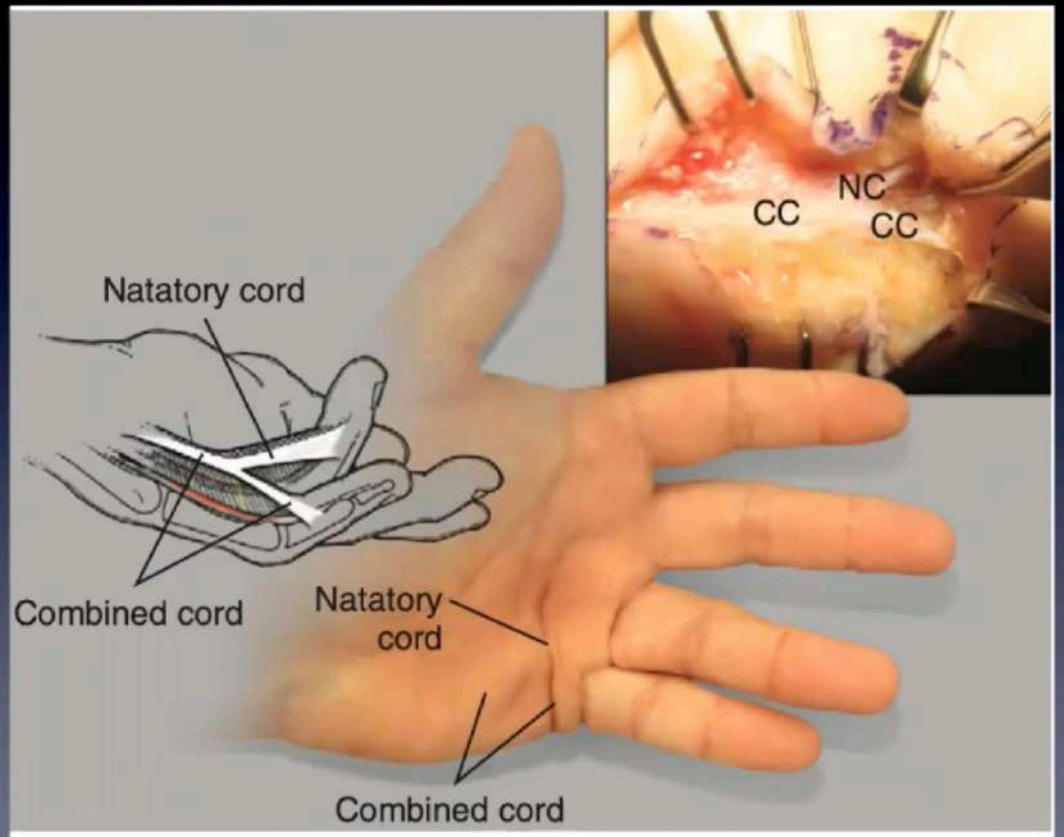


Figure 5.8 Dupuytren's disease—combination cord: central cord (CC) and natatory cord (NC). *(Courtesy of School of Medicine,*

- Central cord or spiral cord in combination with natatory cord cause MP joint contracture of adjacent finger due to Y shape cord
- that can be delt with collagenase injection in natatory cord that correct contracture of both finger

Treatment

- Fascioectomy - always Open
- Fasciotomy - Needle , Enzymatic

Goal surgery

- Cure disease - **Never**
- Release contracture - yes
- Improve function -yes

Indication - surgery

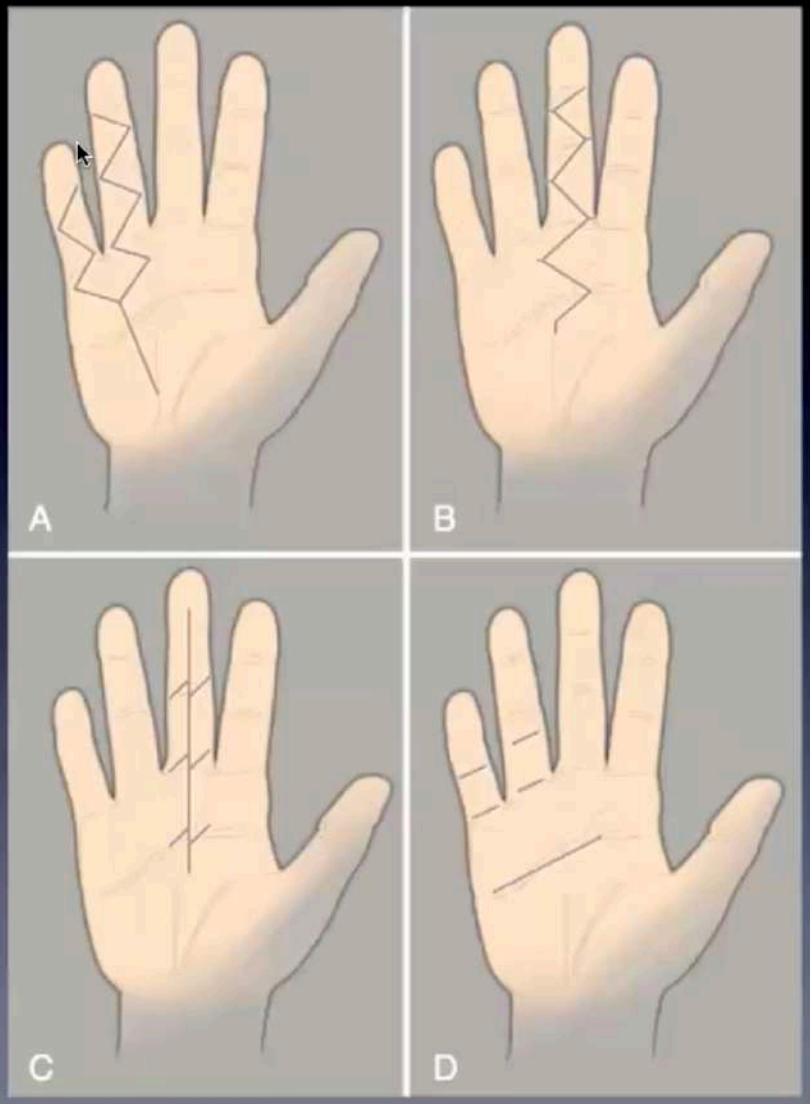
- Progression should be there
- MP > 30
- PIP >20
- Web contracture
- Note - difficult to put hand in closed space with above severity
- Results of especially pip joint contracture is less predictable

Recurrence

recurrent disease severe enough to necessitate repeat surgery must be reviewed with each patient. The incidence of recurrent disease and disease occurring in areas previously not affected is high (20% to 80%), but recurrence mandating repeat surgery for patients whose first surgery was after age 50 is not as frequent, although still possible. As with all

Steps of surgery

- 1. Skin incision planning - **4 types**
- 2. Fascia
- 3. Joint contracture



Principle of surgery - Skin

- No incision should cross flexion crease at right Angle after wound closure
- Thin ,potential avascular skin flap avoided
- Disease free subcut tissue should be left on the flaps [else excise and ssg]
- Dissection started proximally and proceed distally [appropriate make incision in palm , partially release cord , palmar Digital junction and finally digit]

Principle - Fascia

Open limited fasciectomy is most popular

- **Proximal extent -**
- 1. proximal end of cord , nodule or
- 2. Superficial palmar vascular arch
- Prefer to incise and remove partially the superficial inter metacarpal ligament of skoog to protect NV bundle

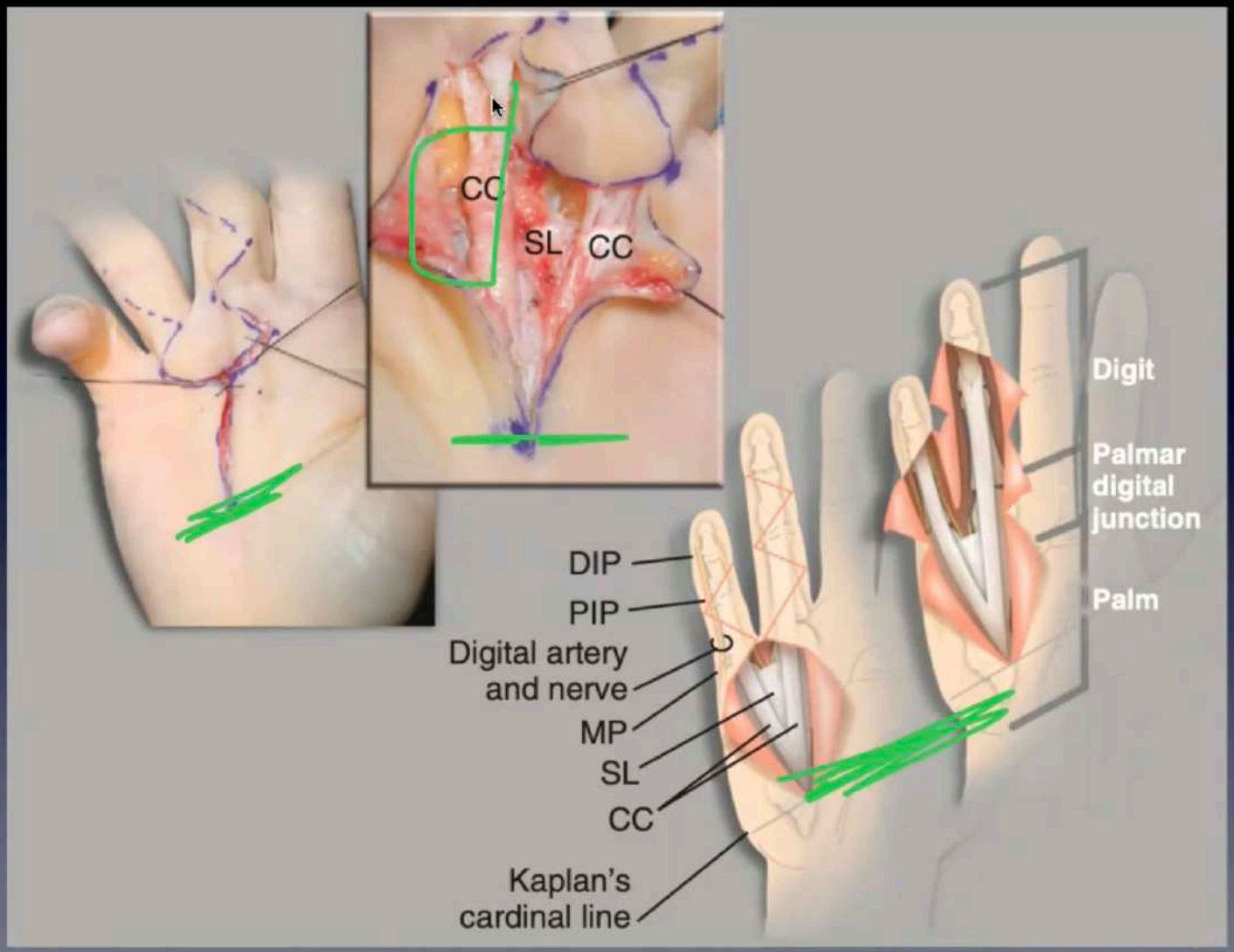


Figure 5.13 Dupuytren's zigzag limited fasciectomy technique. CC, central cord

Principle - fascia Segmental fascioectomy

- Closed fasciotomy abandoned - risk of nvb
- Open fascoitomy- single cut -done in selected cases
- **Intermediate approach** - between Limited fascioectomy and open fasciotomy - segmental fascioectomy through series of short cut and has advantage of limited dissection and minimal scarring

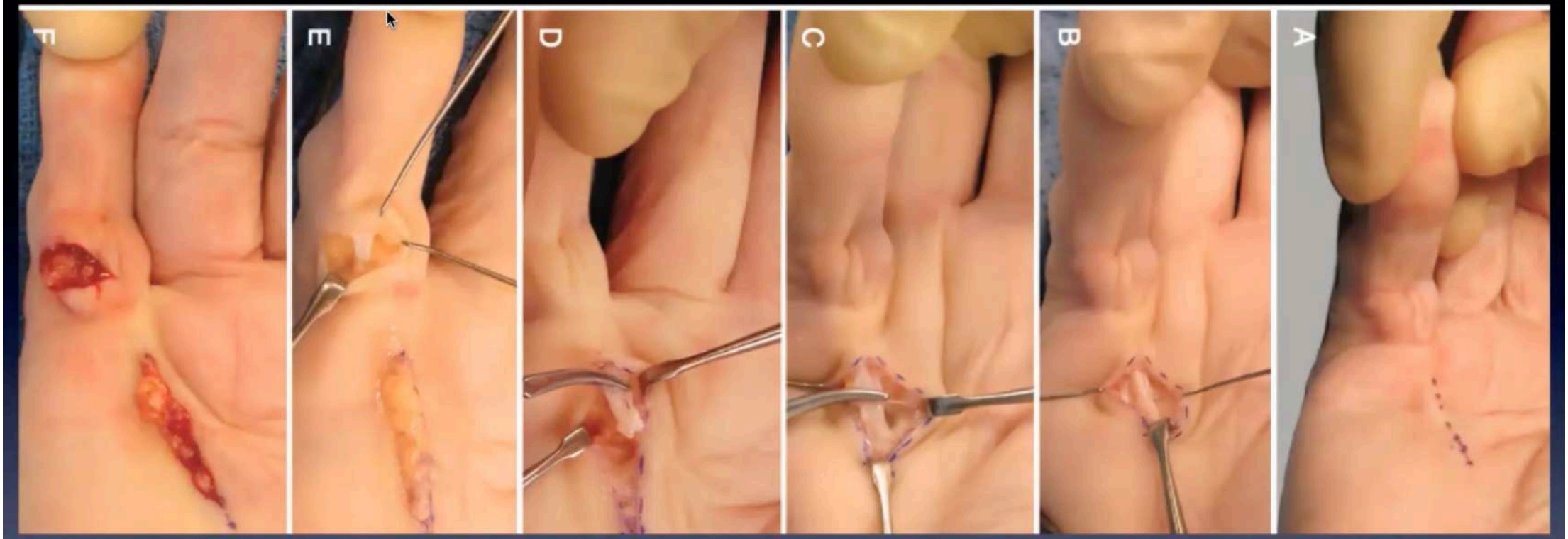


Figure 5.10 Dupuytren's fasciectomy—segmental fasciectomy. **A,** Palmar incision. **B,** Central cord in palm. **C,** Central cord in clamp. **D,** Central cord transected proximally. **E,** Central cord exposed over proximal phalanx area. **F,** Two segments of central cord removed. **G,** Hand flat postoperatively with full correction of contracture. *(Courtesy of School of Medicine, SUNY Stony Brook, NY.)*

Principle - fascia
Dermofasciectomy + SSG
Fascia with overlying skin is excised

- Advocated in young patient with **recurrent aggressive with skin shortage**
- **SSG- act as firebreak of uninvolved tissue - reduce recurrence**

Principle - fascia
Transverse incision [Mc Cash]

Expose ,excise the cord and left open without SSG

- Advocated in older age patient with inadequate skin because of severe contracture
- with this active ROM is possible which is not possible with ssg.

Other Principle - fascia
Percutaneous needle fasciotomy
25 guaze needle

- Works better for MP joint contracture than PIP joint contracture
- 58% recurrence rate at 3 y
- Tendon rupture .5%

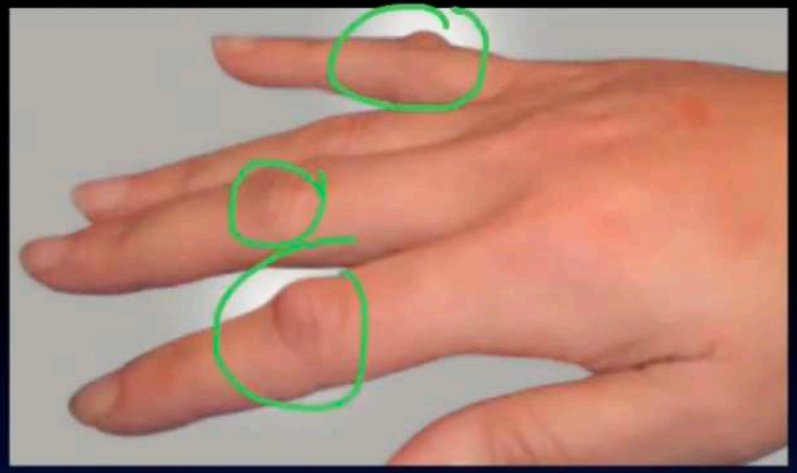
Other principle -fascia
Enzyme fasciotomy

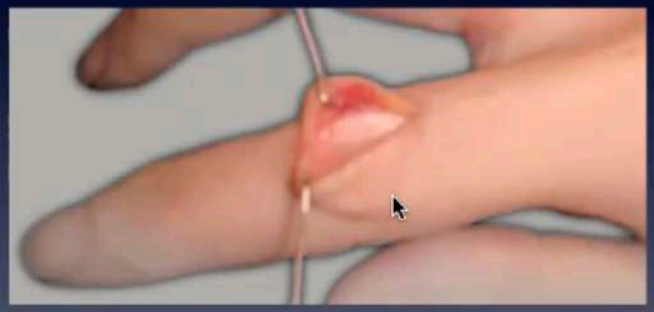
- Collagenase - clostridium histolyticum
- Collagenase - consist of multiple subtypes that are cross reactive and different specificities and act synergistically
- Collaenase is Mixed and has good lytic activity
- Common complication - pain swelling, bruise pruritus,
- No systemic allergy
- Rare - tendon rupture , crps , pulley ligament injury

Treatment for -Dupuytren nodule

- **Mildly tender but it usually resolve even nodule persist .**
- So Primary treatment - observational
- **Surgical excision** for -
- 1. nodule over trigger finger
- 2. Unrelentless night pain as its rare possibility of fibrosarcoma

Treatment for Dupuytren knuckle

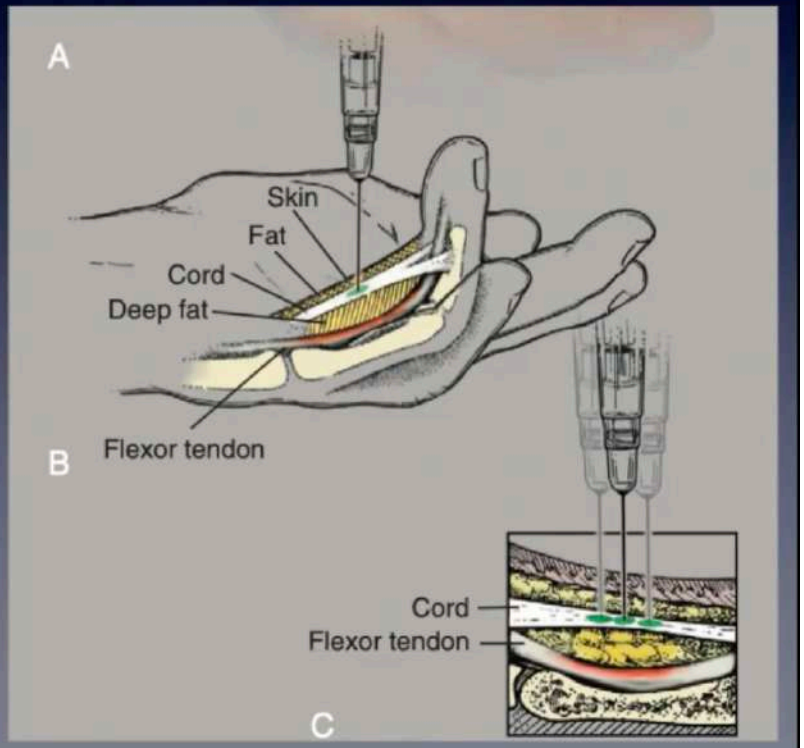




- Primary treatment - observational
- Surgical excision for painful , excessively late that find difficult to wearing ring
- Risk - **boutonniere deformity** as there is no interval between pad and extensor tendon so be careful to separate tendon from pad .

First line of treatment

- **Collagenase**
- 27 guaze needle insulin syringe
- one third Dose is placed three close
- but different spots in the cord
- Mp joint contracture -.58mg in .25 ml
- Pip joint contracture -.58 mg in .20ml



- Manipulation done next day
- Manipulation - flexor tendon protected by flexion the wrist
- Mp joint straight by flexion pip joint
- Pip joint straight by flexing the mp joint
- Lignocaine anesthesia not needed generally
-

- Patient who didn't correct contracture to 5 degree or less will try 2nd or 3 rd injection 30 days interval .

Current treatment for Dupuytren contracture

In older patients with significant contractures causing considerable functional complaints but who also have significant comorbidities, I substitute a limited segmental fasciectomy or open fasciotomy for the partial fasciectomy described earlier. In young patients with recurrent disease, I use a dermofasciectomy with skin grafts from the medial arm or groin. In older arthritic patients with associated skin problems, I try to avoid skin grafting and use the open palm McCash technique, which allows immediate active range of motion exercises.