

# Dupuytren's disease Anatomy, Pathology and Presentation

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## Anatomy

Palmar fascial Complex (5 components)

-Radial aponeurosis

Pretendinous band (PTB) to thumb: Very small

Distal commissural ligament (DCL): Extension of natatory ligament (NT)

Proximal commissural ligament (PCL): Extension of transverse ligament of the palmar aponeurosis (TLPA)

- Ulnar aponeurosis

Abductor digiti minimi (ADM): soft tissue coalescence

- Central aponeurosis

Three dimensional fiber orientation

Longitudinal

PTB: split distally. Split PTB terminates into 3 layers (McGrouther)

- Superficial layer: Attaches in dermis

- Middle layer: 1) Free in digit and 2) Continue as spiral band

- Deep layer: Flexor and extensor mechanism

Transverse

NL: Continuous proximal border and U shape distal border.

Contributes to formation of lateral digital sheet (LDS)

TLPA: Deep to PTB, gives origin to septa of Legueu Juvara

Vertical

Grapow vertical fibers: Superficial to palmar fascial complex

Legueu Juvara (L&J) septa: 8 septa, 7 components

-Palmodigital fascia

Spiral band (SB) of Gosset: Along with soft tissue coalescence

Contributes to the formation of LDS

-Digital fascia (neurovascular bundle surrounded by 4 ligaments)

1. Gosset lateral digital sheet

2. Grayson's ligament

3. Thomine retrovascular fibers

4. Cleland's ligaments

Landsmere retinacular ligaments (transverse and oblique)

## Pathology

Nodules: Palmar or digital

Cords: Palmar, palmo-digital or digital

Normal bands form pathologic cords

Cords cause tissue or joint contracture

### -Dermopathology

Grapow fibres → Micro-cords → Skin thickening  
1<sup>st</sup> layer of split PTB → Dermal cord → Skin pit

### -Radial aponeurosis

PTB → Pretendinous Cord → MP joint flexion contracture  
DCL → Distal commissural ligament cord → First web space contracture  
PCL → Proximal commissural ligament cord → First web space contracture

### -Ulnar aponeurosis

ADM coalescence → Isolated digital cord → PIP joint contracture  
Isolated digital cord components are similar to spiral cord without PTB

### -Central aponeurosis

PTB → PT Cord → MCP joint flexion contracture  
Septa L&J → Vertical cord → Stenosing tenosynovitis

### -Palmodigital fascia

NL → Natatory Cord → Web space contracture  
SB → Spiral Cord → PIP and MCP joint flexion contracture  
Spiral Cord components = PTB + SB + LDS + Grayson's ligament (McFarlane)

### -Digital fascia

2nd layer of split PTB → Central Cord → PIP joint flexion contracture  
LDS → Lateral Cord → PIP joint flexion contracture  
Retrovascular fibers → Retrovascular Cord → PIP joint flexion contracture

## **Clinical Types**

### 1. Typical Dupuytren's disease

Caucasian male, northern European, 57 years of age, has bilateral progressive disease, and more than one digit involved. Family history is often present and genetic factors are important in the pathogenesis. Treatment is often surgical.

### 2. Non-Dupuytren's disease

Ethnic diversity, no gender predilection, lack of family history, non-ectopic, non-progressive or regressive, unilateral, confined to the palm and in line with a single digit. Factors contributing to pathogenesis are: trauma, previous surgery and diabetes. Treatment is non-surgical.

The vast discrepancies in the disease prevalence (2-42%) and treatment outcome ie recurrence (0-71%) are probably related to lack of differentiation between these types. Future epidemiologic and outcome studies should take into account the types of palmar fascial contracture, typical DD and atypical DC.

Rayan G. OKO chapter on Dupuytren's Disease, AAOS web site [www.aaos.org](http://www.aaos.org).

## Dupuytren's Disease Textbooks

1. Stack G. "The Palmar Fascia". (Churchill Livingstone) 1973
2. Hueston J. Tubiana R. "Dupuytren's Disease" (Churchill Livingstone) 1985
3. McFarlane R. McGrouther D. Flint M. "Dupuytren's Disease: Biology and Treatment". (Churchill Livingstone) 1990
4. Berger A. Delbruk A. Brenner P. Hinzmann R. "Dupuytren's Disease: Pathobiochemistry and Clinical Management". (Springer Verlag) 1994
5. Seyfer A. Hueston J. Hand Clinics issue "Dupuytren's Contracture." 1991
6. Rayan G. Hand Clinics issue "Dupuytren's Disease" 1999
7. Tubiana R. LeClercq C. Hurst L. Badalamente M. Mackin E. "Dupuytren's Disease" (Martin Dunitz) 2000
8. Brenner P. Rayan G. "Dupuytren's Disease" (Springer Wien) 2002