The "three flaps" technique after aponevrectomy in Dupuytren's contracture: a retrospective study about 36 fingers

Yoan-Kim de Almeida1, Hélène Le Gall2, Lionel Athlani1, François Dap1, Gilles Dautel1

1. Department of Hand Surgery, Plastic and Reconstructive Surgery. Centre Chirurgical Emile Gallé CHU de Nancy, Nancy, France
2. Department of Maxillo Facial, Plastic, Reconstructive and Esthetic Surgery. Hôpital Central, CHU de Nancy, Nancy, France
Introduction

- Common disease
- Affecting northern european
- France: prevalence ranging from 2 to 3%

Severity: classification of Tubiana

- Grade I: total ROM < 45°
- Grade II: total ROM 45 – 90°
- Grade III: total ROM 90 – 135°
- Grade IV: total ROM > 135°
Introduction: technique

- Grade I: Brüner approach
- Grade II / III / IV: skin defect after aponevrectomy
  - Multiple coverage solution
- Open palm technique
- Skin graft
- V-Y flap
- Latero digital flap

⇒ No perfect technique

- Jacobsen flap
- Malingue plasty
- Cross finger
- …
Introduction: objective

- New approach
  - Excess of antero posterior skin

- Three flap technique:
  - Quadrangular palmo digital flap
  - Latero digital flap
  - Commissural flap
Material and method

- Retrospective / monocentric study
- Single senior surgeon
- Minimum follow-up: 5 months
Material and method

- Surgical procedure
  - Axillary brachial plexus block
  - Pneumatic tourniquet
  - Loupe magnificence
- Flap design
- Aponevrectomy
Material and method

- Surgical procedure
  - Absorbable suture
  - Suction drain
  - 3 months post operative
  - Night orthosis
Material and method

- Evaluation
  - Independant observer
  - Pre operative, immediate and last combined extension lag (CEL)
  - Subjective evaluation of the scar using the POSAS (Patient and Observer Scar Assessment Scale) and PSAS (Patient Scar Assessment score) scores
  - Additional procedure: check reins section, FDS tenotomy, IPP pinning, skin graft
  - Complications: flap necrosis, infection, paresthesia, recurrence (> 30°), nerve / artery injury
Results

- 29 patients: 3♀ / 26♂
- 36 fingers:
  - Fifth finger: 25
  - Fourth finger: 7
  - Third finger: 4
- Recurrent contracture:
  - 1\textsuperscript{st}: 14 cases
  - 2\textsuperscript{nd}: 1 case
  - 3\textsuperscript{rd}: 1 case
- Mean follow-up: 14.5 months (5-34 months)
Results

- **Pre operative status**
  - Grade I : 4
  - Grade II : 8
  - Grade III : 13
  - Grade IV : 11

Mean combined extension lag (°)
- Pre operative (35 - 170)
- Immediate post operative (0 - 100)
- Last follow-up (0 - 115)
Results

- Associated procedure
  - Skin graft: 4/36 (11%)
    - grade IV contracture in all
    - No graft skin for grade III or less
  - PIP pinning: 6/36 (17%)
  - MCP pinning: 2/36 (6%)
  - FDS tenotomy: 1/36 (3%)
  - Check reins section: 5/36 (14%)
Results

- Complications
  - Flap necrosis : 0
  - Infection : 1 (3%), resolutive with oral antibiotics
  - CRPS : 1/36 (3%)
  - Artery injury : 1 (3%)
  - Nerve injury : 1 (3%)
  - Transient paresthesia : 3/36 (8%)
  - Recurrence : 3/36 (8%) (1 stage III and 2 stage IV)
Results

- Skin evaluation

**POSAS (/10)**

- Vascularity: 2.77
- Pigmentation: 2.31
- Thickness: 2.57
- Relief: 3.17
- Pliability: 2.4

**PSAS (/10)**

- Painful: 1.95
- Irregular: 2.8
- Stiff: 3.2
- Itching: 1.71
- Pigmentation: 3.37

- Overall opinion: 2.63 / 10
- Overall opinion: 2.62 / 10
Discussion

- Many description of flaps
- No ideal technique
- No evaluation of scar in the literature for Dupuytren contracture

- Perfect flap
  - Large and safe exposure
  - No risk of flap necrosis
  - Reproducibles landmarks
  - Avoid additional skin graft in severe contracture
Discussion

- Ideal indication for the « three flaps » technique
  - Grade II / III / IV
  - Large antero posterior diameter
  - Without retractile skin
  - MCP or / and PIP joint contracture
Discussion

- Alternative to limited fasciectomy
  - Needle aponeurotomy (NA)
    - Higher rate of recurrence: 85% at 5 years vs 21%
    - Lower rate of complication
    - Lower cost

- Collagenase Clostridial histolyticum (CCH)
  - High rate of recurrence: 50% at five years
Discussion

- No experience with both procedure (CCH and NA)
- Recurrence in 3/36 (8%) at 14.5 months follow-up
- No major adverse effect
Conclusion

- The "three flaps" technique after aponevrectomy
  - Reliable technique
  - Large and safe exposure
  - MCP and / or PIP joint contracture
THANK FOR YOUR ATTENTION