Amputation Technique for a phalanx or a finger

Thierry Dubert

General Principles

- Decrease functional sequelae
  - Fine pinch
  - Global force
- Decrease esthetic sequelae
- Facilitate prosthesis use

Cerebral adaptation is noted after 10 days

(Weiss 2000) (Somatosensory-Evoked magnetic Fields)

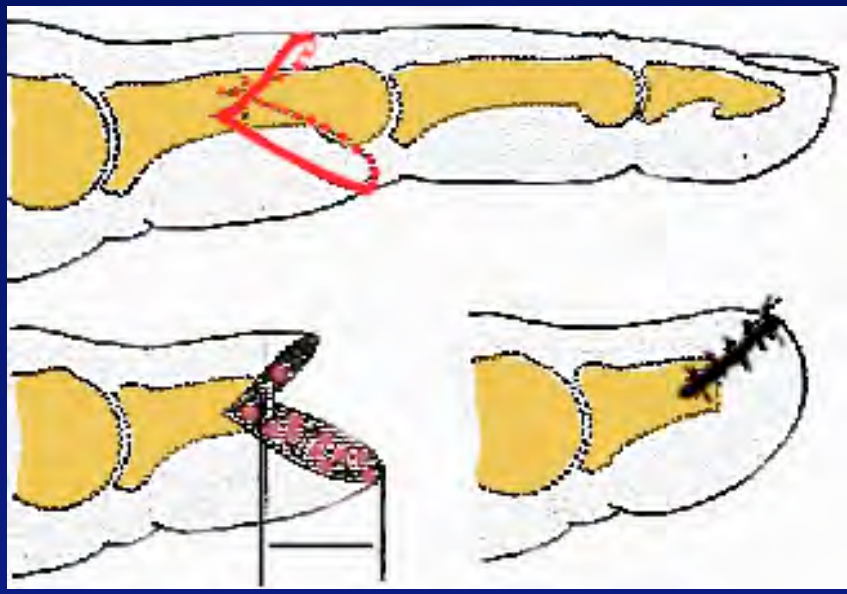
Contents

- Main techniques

- Considerations according to level
- Considerations according to finger
- Operative strategy

Skin Drawing

- Short dorsal flap
- Longer palmar flap



Operative considerations

- Ligation of 2 arteries
- Nerve division
  - Dissection for 1,5 cm
  - Proximal section in healthy zone
  - Coverage by healthy tissues
- Division of flexor tendon
  - Never suture extensors

    quadrige effect Neu 1985

Skin Closure

- Without tension
- Single layer
- Good distal padding

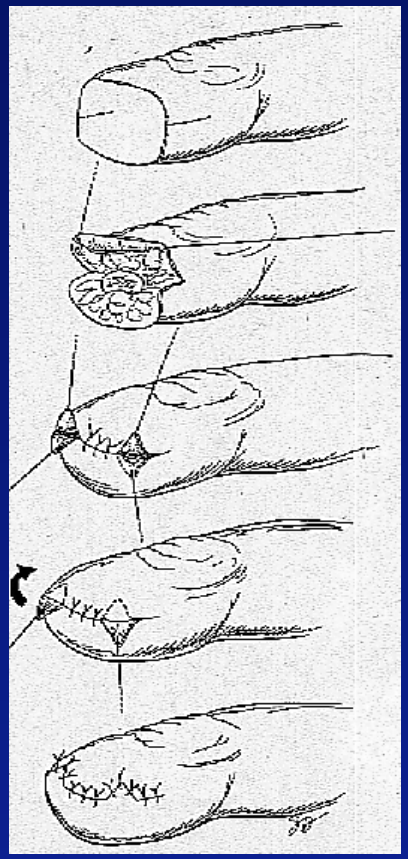
Two difficulties :

Distal enlargement of the stump

Skin closure

Dog ear plasty

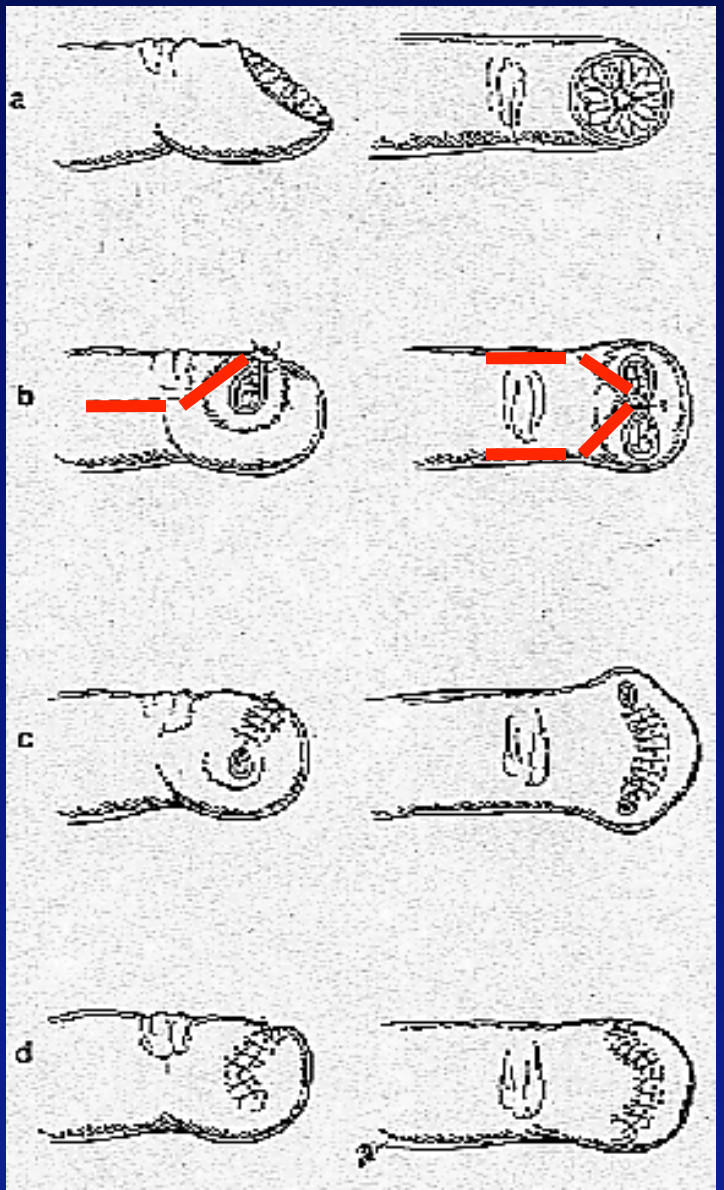
Buck-Gramcko



Skin closure

Dorsal skin plasty

Voche, Merle



P3 Level

- Do we keep the base of P3?

  - Risk of nail remnants

  - Excise a stump if less than 5mm
    (joint pain)

Gross & Watson

Do we keep base of P3?

Length
Force

Stump formation - MCQ 1

Which of the following is your favorite method to avoid nail remnants

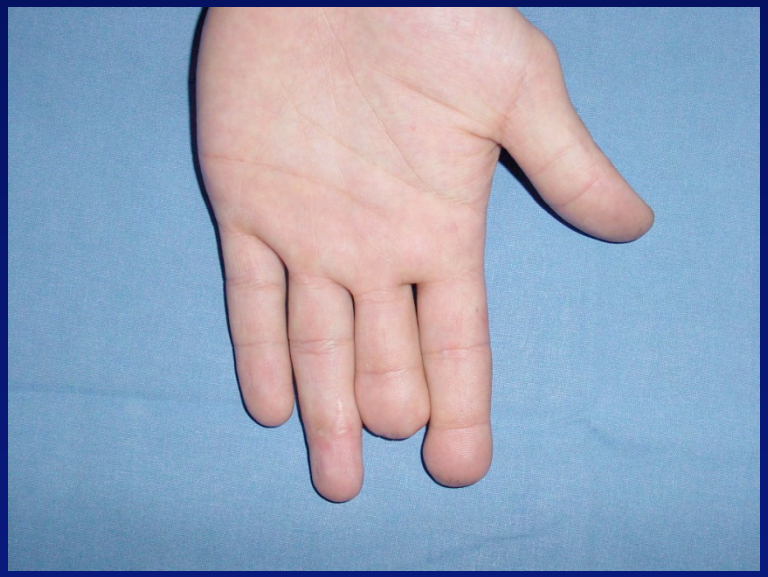
- Complete removal of the nail bed
- Abrasion of the dorsal cortex of the distal phalanx
- Complete excision of the germinal matrix up to the distal extensor tendon insertion
- Full thickness skin graft on the nail bed
- Covering of the dorsal distal phalanx with a

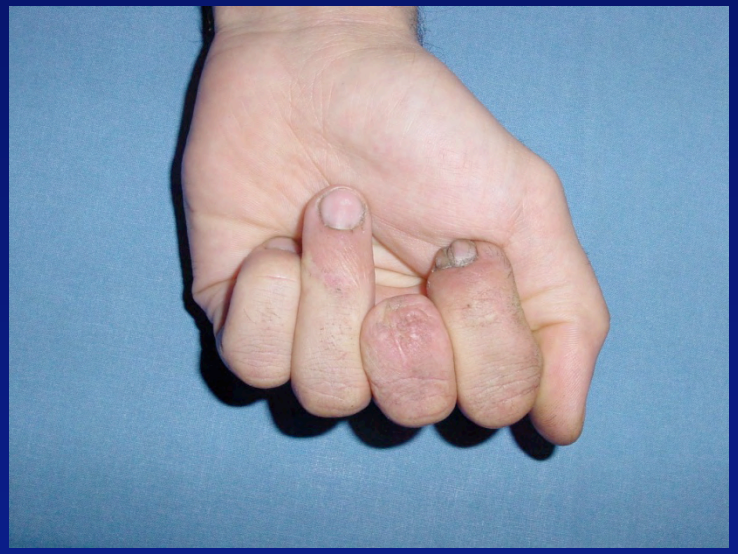
Level P2 (long fingers)

- Distal to the distal insertion of FDS
  - Conserve maximum length

- Proximal to the distal insertion of FDS
  - NO active PIP flexion

P2 level (long fingers)





Stump formation - MCQ 2

In your own practice, when you perform a trans PIP or DIP disarticulation, what do you do with the cartilage ?

A. I always excise the cartilage
B. I always leave the cartilage
C. I only excise the cartilage if it is injured
D. I only excise the cartilage if it is severely contaminated
E. I dont know

PIP level

- Trimming of lateral bone
- Excision of distal cartilage ?
  - Pros :
    - Prone to infection
    - Skin vulnerability
  - Cons :
    - Less hematoma
    - Less infection
    - No distal bony spur/spicule

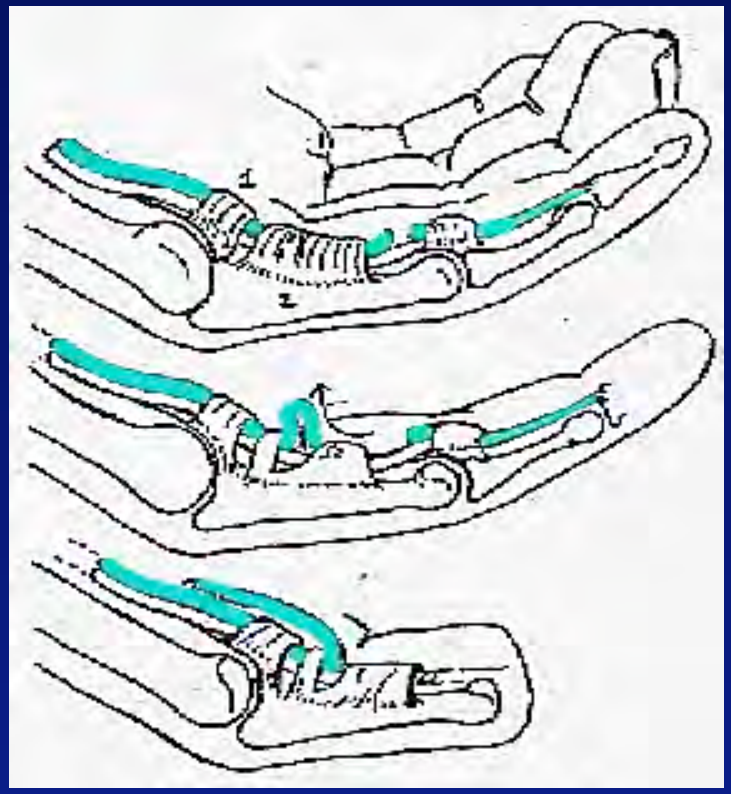
P1 Level (long fingers)

- Preserve maximum length

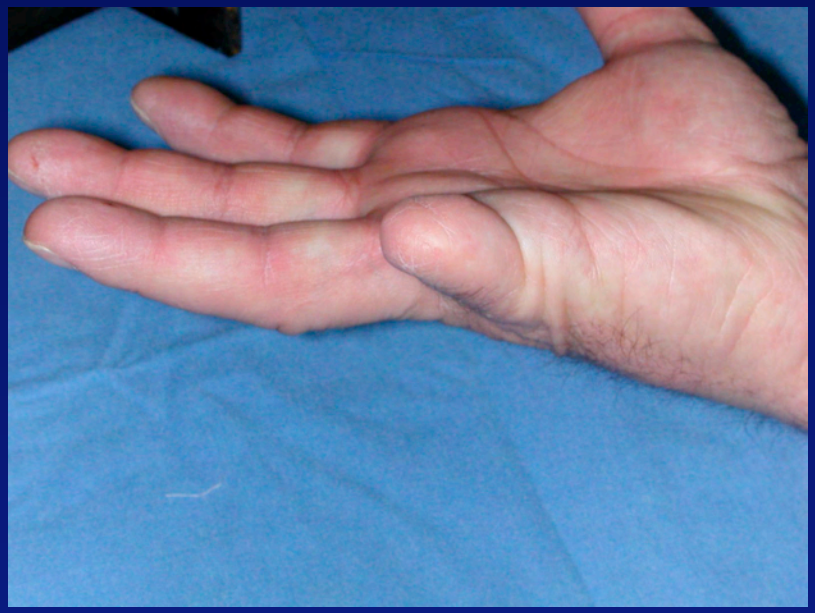
- MP Flexion partially preserved

Reinforced by a lasso around P2

(Saffar)



P1 Level (long fingers)



Complications

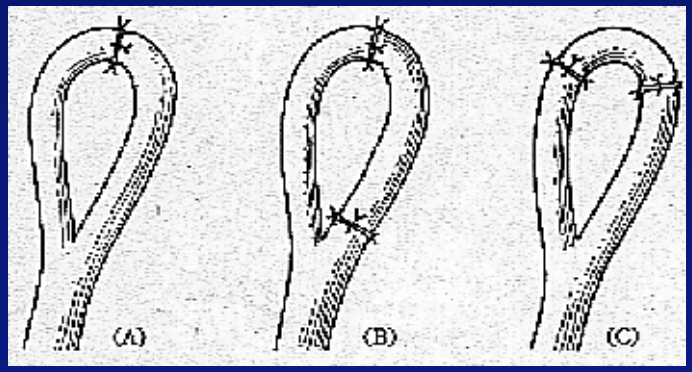
- Painful neuromas
- Phantom finger

Chu 2000

- Lumbrical plus effect
- Quadrige Effect

Prevention of painful neuromas

- Bury nerve stump
  - dorsal to back of P1
  - distal
  - intra-osseous
    - Oblique tunnel
    - medullary canal



- Distal Auto-sutures

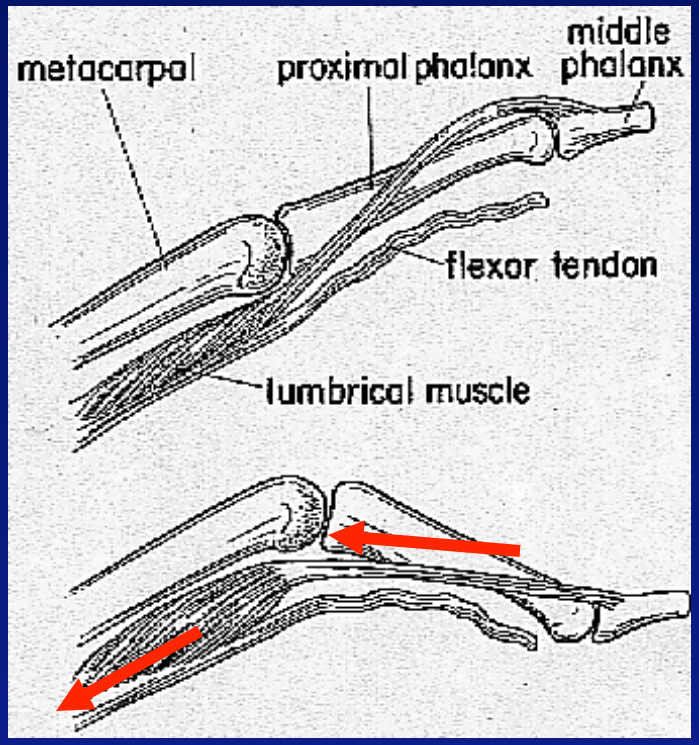
Stump formation - MCQ 3

Following finger amputation, the "lumbrical +"syndrome

A. Is frequent in trans distal phalanx amputation
B. Is secondary to lumbrical contracture
C. Is secondary to FDP kickback ("withdrawal")
D. Is responsible for PIP flexion when MP is extended

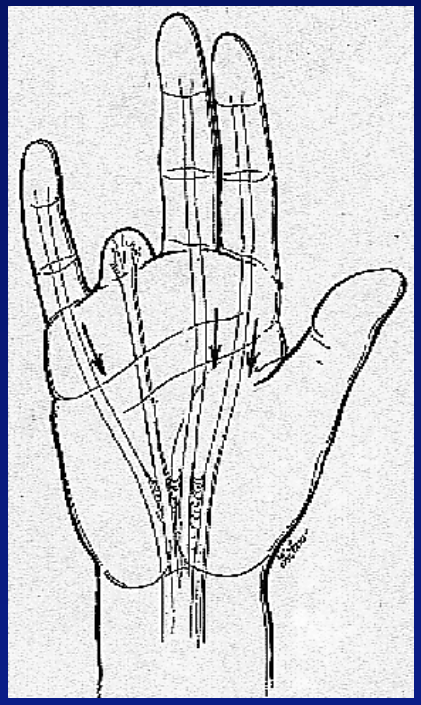
lumbrical plus Effect

- PIP Extension in MP flexion
  - NO systematic prevention
  - division of secondary lumbrical if necessary



Adhesions of FDP Stump

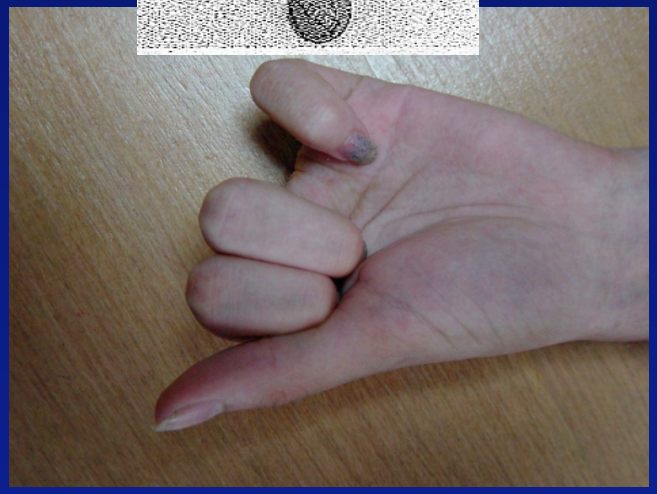
- Limitation of neighboring finger flexion
- Cramp and pain at wrist and forearm
- Loss of global force, especially in MP flexion



Treatement by tenolysi of FDP stump

Considerations according to Ray

- Central Rays:
  incontinent hand



Considerations according to Ray

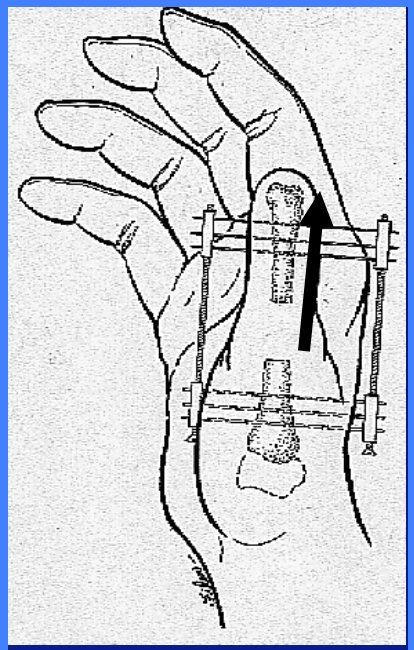
- Lateral Rays: loss of force

Considerations according to Ray

Lateral Rays: loss of force

→ Keep the maximum length

Thumb Amputation : reconstruction often indispensable



Lengthening

Toe Transfer

Pollicisation

Strategy of digital amputation for tumors :

- A single doigt

Which level?

- Palliative (metastasis) ,
  or
- Safety Margin 3 - 5 cm ?

Particular Strategies

- Upper Limb Melanomas (1000 new cases per year in France)

  trans PIP Amputation is enough

  Park 1992, Heaton 1994

But the intervention must be carried out in a multi-disciplinary setting

Steps associated with amputation

- Local Infusion

Baas 1989, Muchmore 1990

- Lymph node dissection

Risk of nodal invasion

- Breslow < 0,76 mm : almost nil
- 0,76 < Breslow < 1,5 mm : 5%
- 1,5 < Breslow < 2,5 mm : 24%
- Breslow > 4 mm : 36%

Joseph 1998

Sentinel Lymph Node detection in stages N0 M0

- Must be done peroperatively
  - 4 - 8 points of injection around the tumor

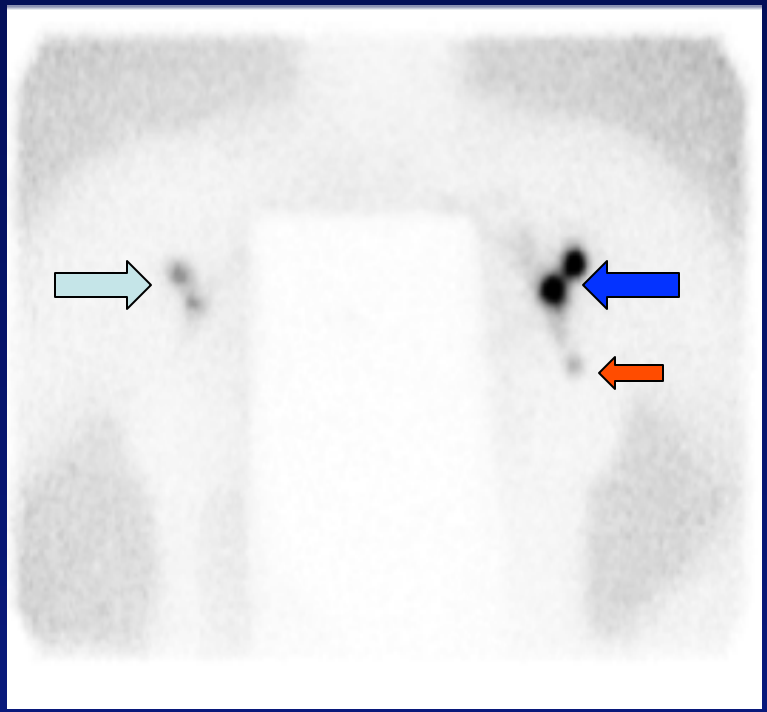
- Detection scintigraphy and/or patent blue (20 - 30 mn portable radio probe)

  Alex 1993

  Albertini 1996

  Gennari 2000

- histological study of identified node

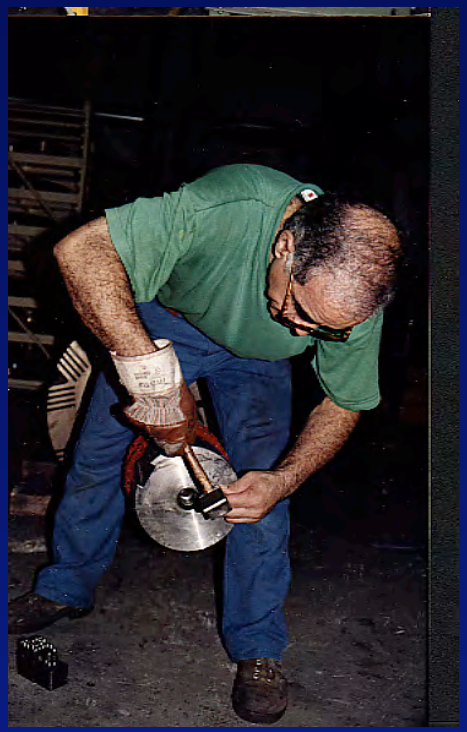


- **Visualisation of 4 axillary sentinel nodes D and G ( ).**
- **2nd order axillary Lymph node D ( )**

R. Genin

After amputation

- Rehabilitation
- Desensibilisation
- Return to daily activities



Fisher GT, Boswick 1983

Thank you

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