



# **TOE TO HAND TRANSFER: NINE CASES REPORT**

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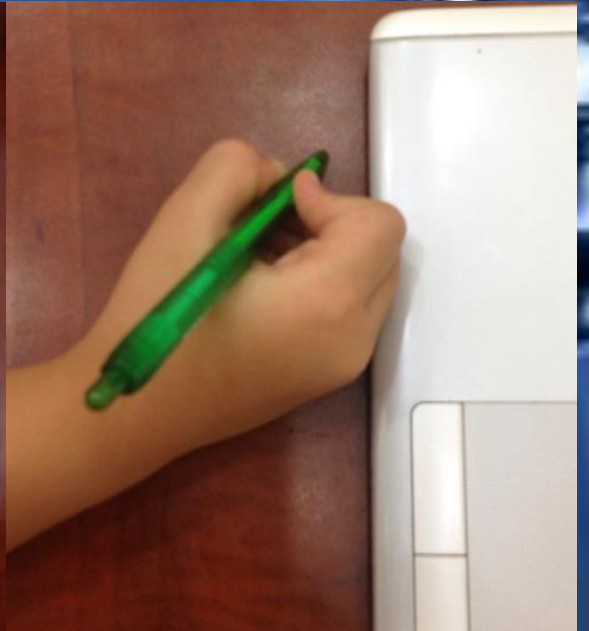
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# INTRODUCTIONS

- Development of science and technology
- The use of heavy machines, manufacture equipments
- Awareness and skills of workers
- Nowaday, more and more crush injuries of hand and fingers: causing loss functions of hand that created heavy burdens on individual themselves, their families and community. Thumb amputation losing 40-50% hand functions

# FUNCTIONS OF FINGERS





# INTRODUCTIONS

There are many procedures depend on

- Finger length remaining
- The OR's equipments
- Surgeons backgrounds



# INTRODUCTIONS

We can use some techniques:

- Phalangization of index metacarpal(Littler) to make thumb
- Staged, pedicled toe to thumb transfer(Nicoladoni)
- Thumb metacarpal lengthening (Matev )
- Osteocutaneous Chinese flap
- Toe to hand transfer

# INTRODUCTIONS

Big and the others toe to hand transfer is a popular procedure because of advantages:

- **Big toe to hand is strong**
- **There is no natural hump back as the others**
- **Lost cosmetic and functions of foot**
- **The others toe: Foucher G, Lister G, Mitz V, Leung P.C**
- **Wedge dissection gives a cosmetic appearance**
- **A bad natural hump back**

# INTRODUCTIONS

- 2/1967 a carpenter was hospitalized to Department of plastic surgery, Queen Victoria hospital, 4/1968 the first case of toe to hand transfer was performed by J. R. Cobbett
- In HCM city the first case of this was performed by Vo Van Chau. MD in 1995 at HTO
- From 4/2015 We have performed this procedure with 9 cases

# MATERIAL AND METHODS

- Amputated finger or crush injury but was not replanted or fail replanted
- Other factors: age, sex, occupational demands, hand dominance, finger length remaining.
- OR with microsurgical equipment: microscope, magnifier, microsurgical tools and sutures...
- The skills and knowledge of surgeons

# MATERIAL AND METHODS

We performed the operations with two or three surgeons team

Patient was on general anesthesia

Tourniquet was placed on the donor foot and injured hand

Stage 1: dissect vessel, nerve and tendon of the hand

Stage 2: dissect the toe with vessel, nerve and tendon included

# MATERIAL AND METHODS

- + Toe to hand transfer
- . Quick internal fixation of bone.
- . Flexor and extensor tenorrhaphy.
- . Phleborrhaphy first, then arteriorrhaphy and nerve anastomose,
- . Loose skin closure, if much tension do skin graft is better

# MATERIAL AND METHODS

Post-op:

- Keep hand raise, no compress on vessel site, keep warm to stimulate peripheral circulation
- Antibiotics, anti-spasm, anti-coagulator and pain killers
- Toe – finger follow up: color, temperature.

# RESULTS

There were 9 cases who were operated

<b>Number of case</b>	<b>9</b>		
<b>Gender</b>	male	female	
	6	3	
<b>Age</b>	Min	Mean	Max
	16	35,88 ±9,75	47
<b>Causes</b>	Labour accident	Normal life accident	
	8	1	

# RESULTS

Amputated finger	No			
<b>Thumb</b>	3			
	Male	Female	left	right
	3	0	1	2
<b>Long finger</b>	6			
	Male	female		
	3	3		
• <b>Index</b>	2 ( males)			
• <b>Middle</b>	0			
• <b>Ring</b>	0			
• <b>Little</b>	1 ( female)			
• <b>Total long fingers</b>	2 ( male : female = 1:1)			
• <b>Ring and little</b>	1( female)			

# RESULTS

<b>Time of surgery</b>		
• Min	370 mins	
• Mean	503,33 ± 151,3 mins	
• Max	865 mins	
<b>Foot wound close</b>	Primary	Secondary
	9	0
<b>Toe to hand transfer</b>		
<b>Bone fixation method</b>	Kirschner	Plate and screws
	8	1
<b>Vascular anastomosis</b>	1 artery + 2 veins	1 artery graft + 2 veins
	8	1
<b>Neuroanastomosis</b>	2 palmar nerves	1 dorsal nerve
	7	2
<b>Hand skin graft</b>	Yes	No
	9	0

# RESULTS

<b>Toe survival</b>		
• <b>During surgery</b>	Normal color (cases)	Pale ( cases)
	8	1
• <b>Hospital discharge</b>	Toe survive ( cases)	Toe necrosis ( cases)
	8	1
<b>Functional recovery</b>		
• <b>Grip</b>	Small and thin objects	Bigger objects 6-10cm
	6/9 cases	8/10 cases
• <b>Thumb opposition</b>	There were 3 cases with thumb reconstruction with Kapandji > 7	

# RESULTS

<b>Dorsal foot keloid</b>	<b>Yes</b>	<b>No</b>
	6	3
<b>Foot sensory disturbance</b>		
<b>Dorsal</b>	yes	no
	0	9
<b>Plantar</b>	yes	no
	0	9
<b>Toes remaining movement</b>	Normal	Abnormal
	9	0
<b>Walk</b>	Normal	Abnormal
	9	0
<b>Slip road walking</b>	Normal	abnormal
	7	2

# DISCUSSION

- Finger lengthening is not a cosmetic surgery and not much improvement in hand functions.
- Pollicization by long fingers, one finger will be lost that cause decrease the functions of hand
- Toe to hand is a widespread acceptable surgery because it give more cosmetic and function for amputated fingers, give a good opposition and grasp function

# DISCUSSION

- Choose the big or second toe has been involved in controversies
- For office workers who often wear the shoes, the lost of big toe is not important
- For manual workers, farmers who have to use the big toe to keep balance on slippery road, if lose the big toe is the big problem

# DISCUSSION

- Because these were 9 cases were done in my practice, so it is very difficult to evaluate the motor and sensory function of the toe after operation
- We need more time and more cases to have a honest conclusion

# CONCLUSION

- Toe to hand transfer is a complex procedure need meticulous surgeon, good microsurgical equipments and take lot of time
- These 9 cases of toe to hand transfer in my practice, marked a great point to create more opportunities for the patient with hand crush injury and amputated thumb

# CASE I REPORT



## **Patient's informations:**

Fullname: B. D. Đ male DOB 1997

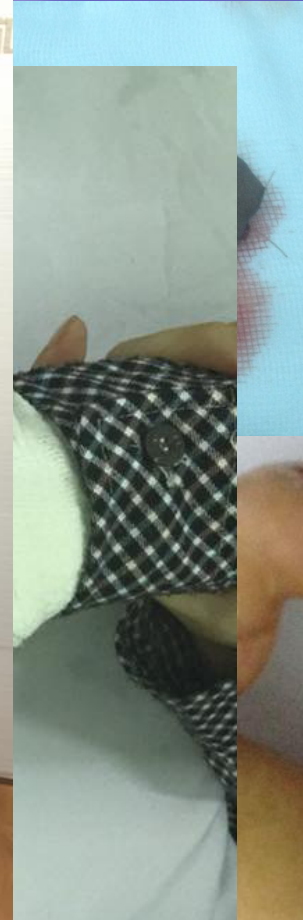
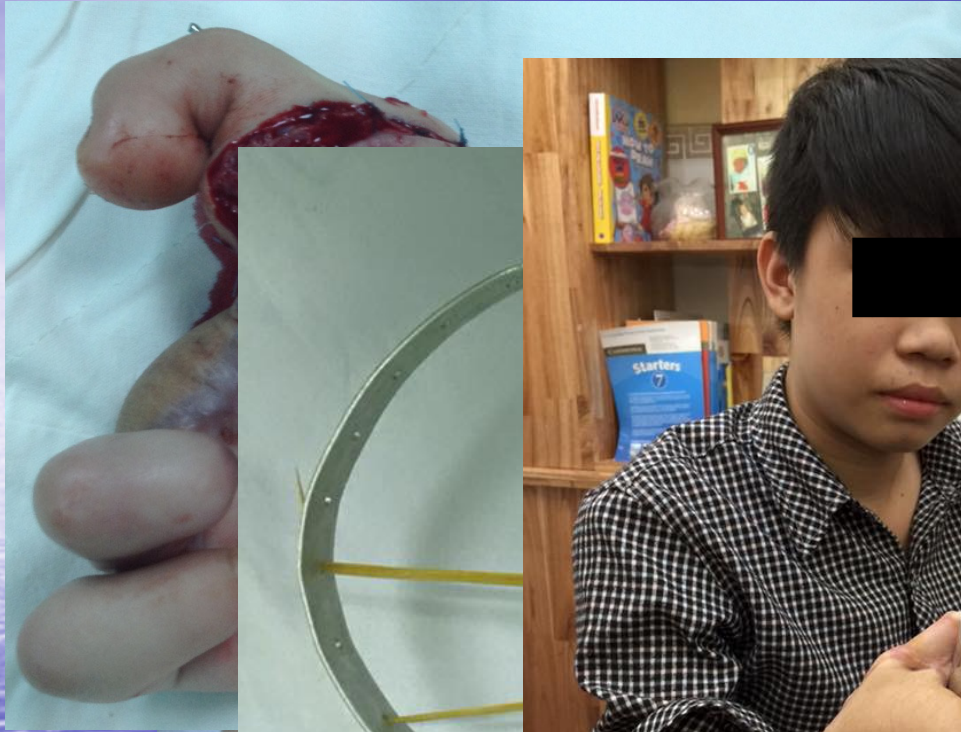
Address: zone 5, Tan Thoi Thuong ward, Cu Chi district

Occupation: worker

**Hospitalized at:** 18:50, 28<sup>th</sup>, January, 2015

**Chief complaint:** right hand crush injury

# ILLUSTRATIONS



# CASE II REPORT

## **Patient's informations:**

Fullname: T. V. Đ male DOB 1977

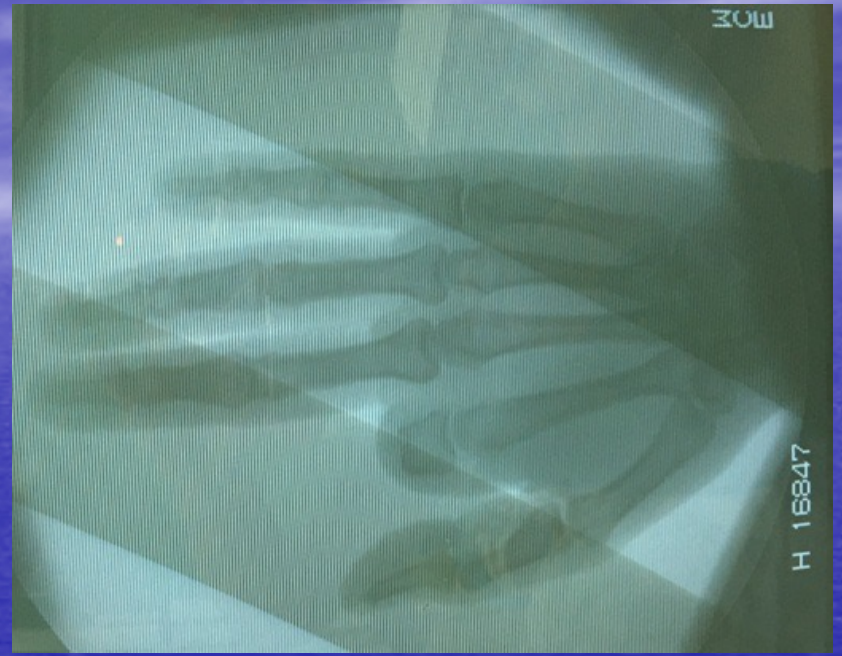
Address: zone 3, Tan Kien ward, Binh Chanh district

Occupation: businessman

**Hospitalized at:** 08:45, 22<sup>nd</sup>, September, 2015

**Chief complaint:** left index amputated

# ILLUSTRATIONS



# ILLUSTRATIONS



# CASE III REPORT

## **Patient's informations:**

Fullname: K. S. Đ male DOB 1973

Address: zone , Dan Quyen ward, Tho Son district, Thanh Hoa

Occupation: businessman

**Hospitalized at:** 08:30, 20<sup>th</sup> , October, 2015

**Chief complaint:** finger amputation

# CASE III REPORT



# CASE IV REPORT



## **Patient's informations:**

Fullname: N. T. T. T male DOB 1987

Address: Vinh Long

Occupation: housewife

**Hospitalized at:** 07:30, 12<sup>th</sup> , October, 2020

**Chief complaint:** ring and little finger amputation

# ILLUSTRATIONS





**Thank you very much**