

## Case Presentation

# Traumatic Amputation of Fingertip in 53-Year-Old Male: A Case Report

Heidari SF\*

Department of Emergency Medicine, Emam Khomeini Hospital, Medical Faculty, Ilam University of Medical Sciences, Ilam, Iran

\*Corresponding author: Seyed Farshad Heidari, Department of Emergency Medicine, Emam Khomeini Hospital, Medical Faculty, Ilam University of Medical Sciences, Ilam, Iran

Received: July 20, 2018; Accepted: August 16, 2018;

Published: August 23, 2018

## Abstract

**Background:** Traumatic finger amputations are common with a potentially exterminator event in every person's life

**Case Presentation:** A 53-year-old man was admitted to the emergency department with a chief complaint of traumatic amputation of IV<sup>th</sup> fingertip of left hand during the entering of left hand into the large meat grinder while working with it. Also, severe injury to the flexor digitorum profundus tendon of IV<sup>th</sup> finger occurred. As regards replantation of amputated fingertip was not practical, the patient was transferred to the operating room after orthopedic consultation for stanch of bleeding and suture of the distal part of the finger. Then, the patient was discharged from hospital with oral medication and recommendation for returning to follow up in the future.

**Conclusion:** Appropriate injury prevention mechanisms based on the observed patterns are needed. There should be educational programs for farmers about safe techniques in use of agricultural tools and keep up caution in using these tools.

**Keywords:** Fingertip; Amputation; Flexor tendon injury

## Introduction

Trauma-related amputation is the second most usual cause of extremity loss and occurs mostly at the age of less than 50 years. Extremity traumatic amputation is a potentially ruinous event in every person's life and often resulting in profound physical, psychological, and functional consequences. Traumatic amputation usually results directly from work-related (occupational) injury includes industrial, agricultural or power tool accidents. It may also be caused from non-work-related injury from motor-vehicle accidents (MVA), housework and crush injuries. Also, war and terrorist attacks and natural disaster can cause traumatic amputation [1–3]. Road traffic accidents, occupational injuries and natural disasters are all possible causes of extremity amputation [4]. Half of all trauma-related amputation occurred in the upper extremity and three quarter of all upper extremity traumatic amputation occurred in the lower part of upper extremity (finger) [2] and distal phalanx was amputated most usually [5]. Traumatic finger amputations are common and often debilitating with annually 45,000 cases in the United States [4,5]. Up to 90% of these injuries are treated with revision amputations and other non-replantation techniques [6]. The aim of this study was presentation of a case with IV<sup>th</sup> fingertip amputation of left hand in a farmer with severe injury to deep flexor tendon.

## Case Presentation

A 53-year-old man presented to the emergency department complaining of traumatic amputation of distal part of IV<sup>th</sup> finger of left hand. The occupation of patient was agriculture. He had a history of psychiatric illness from 20 years ago that was taking clonazepam and maprotiline tablets for it. Mechanism of trauma was the entering of left hand into the large meat grinder while working with it. Given

that the patient could not afford to turn off the device, he pulls his hand back with a high force. This force applied by patient led to amputation of distal strap of the fourth finger. Vital sign was stable. On the physical examination in the emergency department, there was a circumferential wound located at the distal strap of the fourth finger of the left hand. The patient was able to flex the proximal and middle straps of the fourth finger. Amputated fingertip together with removal of flexor digitorum profundus tendon of IV<sup>th</sup> finger is visible in the Figure (A and B). Plain film radiograph of left hand was taken from the patient (Figure C), which indicates the detachment of the distal strap of the fourth finger without fracture. The orthopedic consultation was performed in the emergency department. The wound was irrigated and dressed. Antipyretics and intravenous antibiotics were prescribed for the patient. Primary laboratory investigations were requested for the patient. As regards replantation of amputated fingertip was not practical, the patient was transferred to the operating room for stanch of bleeding and suture of the distal part of the finger. The patient was treated conservatively, then was discharged from the hospital with oral medication and recommendation to return for follow up within the next 48 hours for possible side effects such as infection.

## Discussion

The most common causes of limb amputation include vascular disease, trauma, cancer, and congenital deformities. Vascular disease and trauma display the majority of individuals with amputation respectively. Amputation secondary to cancer or congenital deformities occurs with much less frequency in the total population of individuals with limb loss [7]. It is estimated that approximately 7.3% of individuals with trauma-related amputation have multiple limb amputation. As mentioned, trauma remains the second most common cause of amputation despite the decline in amputations



**Figure 1:** Amputated fingertip together with removal of flexor digitorum profundus tendon of IV<sup>th</sup> finger is visible (A and B). Plain film radiograph of left hand was taken from the patient (C), which indicates the detachment of the distal strap of the fourth finger without fracture.

due to trauma [8]. Traumatic amputation is seen with increasing frequency from the 2<sup>th</sup> to 5<sup>th</sup> decades of life [1-3]. The mechanism of injury is predominantly blunt trauma, although penetrating trauma can also lead to amputation and typically results in a more severe injury overall [8]. Traumatic extremity amputation is a component of trauma morbidity with vast physical and psychological challenges worldwide. The sudden and unexpected loss of part of the extremity to trauma without a pre-loss adaptation phase is a destroyer condition.

The etiological factors and mechanism of extremity amputation injuries vary depending on dominant cultural and geo-political conditions of different societies. In developing countries, machetes are available in many homes for domestic and farming purposes. Accidental or premeditated machete injuries can cause extremity amputation [9]. Gunshots, landmines, fireworks and other forms of explosives used in war or terrorist attacks could cause amputation [10]. Occupation-related injury was seen with high frequency in industrial and agricultural works in more than 60% of cases [4]. In the non-occupational group, motor-vehicle accident (MVA) is the most common cause of amputation [1,5]. Traumatic extremity amputation may be sharp, crushed, avulsion type or a combination of types depending on the mechanism of injury [11]. Effective development in microsurgical techniques, prosthetic designs and rehabilitation have significantly improved long-term outcome for amputations [12].

Hansen and Carstensen [13] demonstrated that in agricultural machinery injury, upper extremity was the most usual site of injury. The hand and its distal part (finger) sustained the most common traumatic amputation. Finger amputation injuries, whether treated with revision amputation or replantation, have great impact on function and quality of life. For some injury patterns, such as thumb amputation, multiple finger amputations and amputations in children, replantation has clearly become established as the standard of care. However, there is continued debate as to whether other injury patterns are best treated with replantation or revision amputation treatment, such as in the case of single digit and distal amputation

injuries [14,15].

In this case who was introduced here, the patient was a farmer who had suffered from amputation of distal part of the fourth finger of the left hand during working. As regards severe injury to deep flexor tendon, replantation of amputated fingertip was not practical. I recommend that in order to avoid such incapacitating injuries, there should be educational programs for farmers, which may be implemented by the ministry of agriculture, about safe techniques in use of agricultural tools and keep up caution in using these tools.

## Conclusion

Appropriate injury prevention mechanisms based on the observed patterns are needed. There should be educational programs for farmers about safe techniques in use of agricultural tools and keep up caution in using these tools.

## References

- Livingston DH, Keenan D, Kim D and et al. Extent of disability following traumatic extremity amputation. *J Trauma*. 1994; 37: 495–499.
- Dillingham TR, Pezzin LE, Mackenzie EJ. Extremity amputation and limb deficiency. *Southern Med J*. 2002; 95: 875–883.
- Medline plus Medical Encyclopedia: Amputation-traumatic.
- Boyle D, Parker D, Larson C and et al. Nature, incidence, and cause of work-related amputations in Minnesota. *Am J Ind Med*. 2000; 37: 542–550.
- Conn J, Annest J, Ryan G. Non-work-related finger amputations in the United States, 2001–2002. *Ann Emerg Med*. 2005; 45: 636–638.
- Friedrich J, Poppler L, Mack C. Epidemiology of upper extremity replantation surgery in the United States. *J Hand Surg Am*. 2011; 36: 1835–1840.
- Varma P, Stineman MG, Dillingham TR. Epidemiology of limb loss. *Phys Med Rehabil Clin N Am*. 2014; 25: 1–8.
- Barmparas G, Inaba K, Teixeira PG and et al. Epidemiology of posttraumatic limb amputation: a National Trauma Databank analysis. *Am Surg*. 2010; 76: 1214–1222.
- Omoke NI, Madubueze CC. Machete injuries as seen in a Nigerian teaching hospital. *Injury*. 2010; 41: 120–124.

10. Hull JB. Traumatic amputation by explosives blast, pattern of injury in survivors. *Br J Surg.* 1992; 79: 1303–1306.
11. Trautwein LC, Smith DG, Rivara FP. Paediatric amputation injuries: aetiology, cost, and outcome. *J Trauma.* 1996; 41: 831–838.
12. Tukiainen E, Suominen E, Asko-Seljavara S. Replantation revascularization and reconstruction of both legs after amputation. *J Bone Joint Surg Am.* 1994; 76: 1712–1716.
13. Hansen TB, Carstensen O. Hand injuries in agricultural accidents. *J Hand Surg.* 1999; 24: 190–192.
14. Hattori Y, Doi K, Ikeda K and et al. A retrospective study of functional outcomes after successful replantation versus amputation closure for single fingertip amputations. *J Hand Surg Am.* 2006; 31: 811–818.
15. Sebatin SJ, Chung KC. A systematic review of the outcomes of replantation of distal digital amputation. *Plast Reconstr Surg.* 2011; 128: 723–737.