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CASE REPORT

"Bilateral Thumb Replantation - A Case Report"

KHANDELWAL S

ABSTRACT

Management of hand injuriesincluding those on the fingers and thumb is a common practice, but isolated bilateral thumb amputation is a very rare occurrence. Only few cases of bilateral thumb amputation have been reported in the literature. We are herein reporting a 30 years old male in whom an accidental bilateral thumb amputation occurred while working on a thresher machine. Clinical examination revealed that the amputation was at the level of the proximal phalange of both thumbs. Microvascular anastomosis of the arteries and veins and the repair of nerves and tendons along with bony fixation, were done. Postoperatively; satisfactory appearance and excellent function of the replanted right thumb was noted, while the left thumb needed re do operations. The reason for reporting the case is the rarity of bilateral thumb amputation.

Key Words: Amputation of thumb,Microsurgical replantation,Replantation

MS (Gen Surg), M. Ch. (Plastic Surgery) (Asst. Prof.of General Surgery) Department(s) and institutions:Department of General Surgery
Sri Aurobindo Institute of Medical Sciences
Indore, Madhya Pradesh 453 111 (INDIA)
Corresponding Author:
Dr Sharad Khandelwal, MS (Gen Surg), M. Ch. (Plastic Surgery) Assistant Professor,
Department of General SurgerySri Aurobindo Institute of Medical Sciences, Indore,Sanwer Road, Indore, Madhya Pradesh 453 111 (INDIA)
Phone No: + 91-731 -2591131(R), 0-9755880888(M)
E-mail: **drskhandelwal@sify.com**

Introduction

Bilateral thumb amputation is a very rare, serious and disabling injury. The literature has revealed only a few cases of bilateral thumb amputation [1], [2]. Because of the importance of the thumb, as well as the possibility of achieving very high survival rate and best functional recovery, microsurgical replantation efforts of detached thumbs must be made [2], [5]. The present report describes a case of bilateral thumb replantation with a brief review of literature.

Case Report

A thirty years old male was admitted to the hospital 4 hrs after the accidental amputation of both of his thumbs while working on a thresher machine. There were no associated injuries to other parts of the body, hands or fingers. He brought both of his amputated thumbs to the hospital, but they were not in an ideal condition. Local examination revealed that the amputation of both of his thumbs had occurred at the level of the base of the proximal phalange. Crushing effects could also be seen over the local soft tissues and they were more on the left hand. Both of his amputated thumbs showed avulsion injury along with avulsed tendons as well [Table/Fig 1] (Table / Fig 1a and 1b). After proper counseling and explanation about the prognosis and the outcome of the operation, bilateral thumb replantation using a microvascular surgical technique was done. First of all, bony fixation using K - wire was done, followed by microvascular repair of the digital arteries, veins, nerve and tendons and these were done using 8-0 and 10-0 sutures. Lastly, other soft tissues and skin were approximated in place. A similar procedure was done on the other thumb as well [Table/Fig 2](Table / Fig 2a, and 2b). I preferred to replant the right thumb first as he was a right handed person. The total time taken for both thumb replantations was 8 hrs. The right thumb was replanted about 6 hrs after amputation and the left one was replanted 10 hrs after amputation.

(Table / Fig - 1a)

(Table / Fig 1b)

(Table / Fig 1a & 1b) Clinical photographs of patient Showing - Bilateral amputation of thumbs at proximal phalange, and detached thumbs containing avulsed tendons

(Table / Fig 2 a) (Left thumb) (Table / Fig 2 b) (Right thumb)

(Table / Fig 2 a & 2 b) Immediate Post operative photographs showing Bilateral replanted thumbs

His left thumb (replanted 10 hrs after amputation) developed signs of vascular compromise within 48 hrs of operation and needed re-exploration but it was a futile attempt and finally, on the 5th postoperative day, the left thumb was partially reconstructed over the viable bony stump using a groin flap. After 3 weeks, the groin flap was divided and the left thumb was reconstructed [Table/Fig 3] (Table / Fig 3a, 3b and 3c). Follow up done 3 months after the oper showed that the patient was able to perform about 80 percent of his work with his right thumb, namely; he was able to hold a pen, was able to drive a two wheeler, etc. The left thumb was also partially cosmetically acceptable to the patient.

(Table / Fig 3a) (Supine view)

(Table /Fig 3 b) (Prone view)

(Table / Fig 3c)

(Table / Fig 3 a, 3b & 3 c) Photographs of both hands with replanted thumbs taken in follow up period in different positions

Photographs: All Photographs displayed in this article were obtained after informed consent by the patient.

Discussion

Bilateral thumb amputation is very rare, without involving other digits or hand [1], [2]. Literature showed that there were only few reported cases of bilateral thumb amputation. Hou SM et al (1992) reported 2 cases of bilateral severance of thumbs as a case report [1]. Soucacos PN, et al (1994) reported 3 cases of bilateral thumb amputation from a series of 71 patients with thumb amputations [2].

Replantation aims to restore the amputated part to its anatomical site, while preserving its function and appearance. In the past 200 years, successful the replantation of amputated digits has gradually moved from fantasy to reality. William Balfour performed the first successful fingertip reattachment in 1814 and Thomas Hunter ha got the credit for the first thumb replantation which he performed in the following year. With the development of the operating microscope by Julius Jacobson and Ernesto Suarez in the early 1960s, replantation became easier [3].

Replantation of digits and thumbs are a common practice [4], [5]. Replantation has become the state of the art reconstruction for an amputated thumb with more than 90% chances of survival of the replant. Thumb

replantation is associated with a very high survival rate regardless of the mechanism of injury or the level of amputation and should be attempted in all cases [5], [6]. Re-explration for vascular compromise may be needed and in such conditions, an early re-exploration for vascular problems yields a high salvage rate and should be performed in all cases as and when needed [5] Even though replantation surgery has now become a routine procedure, it remains a delicate and demanding surgery which requires adequate training and expertise in microsurgical techniques. Well-defined selection criteria for replantation procedures have evolved over the past few years, including definitive guidelines for thumb, single digit, multiple digit and mid-palm amputations. For more complex cases, other techniques including transpositional microsurgery and various secondary reconstructive procedures such as toe-to-hand transfer are now available [7].

Most of the times, replantation of an injured / amputated thumb is not feasible in such conditions; toe / great toe / big toe - to hand transfer / thumb transfer may be considered as a reconstruction option in appropriately selected patients; this may be done immediately as one stage transfer or a delayed procedure with its own merits and demerits [7], [8], [9], [10]. Another way to salvage an amputated thumb / digits is by temporary implanting the amputated part at an ectopic location (forearm, groin, axilla, foot, etc), followed by its replantation to its anatomic site as a second stage replantation procedure [11], [12]. Temporary ectopic implantation of amputated parts provides an alternative procedure for the salvage of the amputated thumbs when associated with extensive soft tissue damage in which immediate replantation is not feasible [11], [12].

Because of the importance of the thumb, and also as thumb replantation is associated with a very high survival rate regardless of the mechanism of the injury or the level of the amputation and the possibility of achieving the best functional recovery; microsurgical replantation efforts of the detached thumbs should be attempted in all cases [1], [2], [5], [6]. The present case showed the best results of right thumb replantation, while the left thumb which was replanted later, had longer ischaemia time which might havebeen the cause of the failure of the replant and needed re do operations.

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