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Case Report

Toka machine injury: Replantation left arm in a 5 year old[☆]



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ABSTRACT

Replantation is defined as reattachment of a part that has been completely amputated-no connection exists between the severed part and the patient. First Replantation was reported in Boston in 1962 by Malt & McKhann in a 12 year old boy. Replantation of nearly all amputated parts, should be attempted in healthy children. A 5 year old boy presented to the emergency with history of complete amputation by avulsion of left arm by a fodder-cutting machine which was successfully replanted within 6 h of injury in spite of the avulsive nature of the injury. The superior regenerative capacity of children's nerves & soft tissues, along with the potentially favourable psychological ramifications of improved cosmesis, make this technically demanding operation most gratifying.

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1. Introduction

Replantation is defined as reattachment of a part that has been completely amputated-no connection exists between the severed part and the patient. In Boston in 1962, Malt & McKhann successfully replanted the completely amputated arm of a 12 year old boy.¹ Replantation of nearly all amputated parts, should be attempted in healthy children. Epiphyseal growth continues after Replantation, sensibility is usually good and useful function can be anticipated although range of motion is often decreased. The success of surgery depended upon the time interval between injury and arrival to hospital;

Team approach to deciding the plan and sequence of surgery; Resuscitation of the child in Emergency; Intra-operative management of child for smooth intra-operative and post-operative course and Paediatric intensive care for diagnosis and management of reperfusion injury.

2. Case history

A 5 year old boy presented to the emergency with history of complete amputation by avulsion of left arm (Fig. 1) by a fodder-cutting machine (Toka Machine) (Fig. 2). The child

[☆] This is our original work and has not been presented at any meeting or event.

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Fig. 1 – Amputated upper limb.

presented with hypovolemic shock with pressure dressing over the stump in situ. The amputated limb was brought wrapped in a cloth. The limb was washed with saline to remove the dirt and debris and taken to Operation theatre by the plastic surgery team for dissection of the neurovascular pedicles and muscles which was done under loupe magnification ($\times 4$) before the child was to be wheeled into the operation theatre. The Triage team resuscitated the child and



Fig. 2 – Fodder-cutting machine.

the orthopaedic team brought the child to Operation theatre for fixation of the proximal shaft humerus fracture with locking titanium plate. The amputated limb was shortened by 2 cm and fixed to the humerus with locking titanium plate. The radial nerve and triceps repair on the posterior aspect of the arm with skin closure was done. The Brachial artery was repaired with 6-0 prolene intermittent sutures first to reduce the ischaemia time and the veins were allowed to bleed so as to remove the products of anaerobic metabolism. The venous repair was done by anastomosing the vena comitantes of the brachial artery and the anticubital vein with 8-0 ethilon suture intermittent under loupe magnification. The muscle and nerve (median & ulnar) repair was carried out with the elbow in flexion (Fig. 3). The nerve repair was done as a epi-perineural fashion with 8-0 ethilon suture. The child was managed with post-operative heparin for 5 days and shifted to oral warfarin on post-operative day 5 and discharged on 10th post operative day (Fig. 4) with the elbow in flexion. The child had wound dehiscence over the posterior aspect which healed by secondary intention. The bony union was complete over both the fracture sites by the end of 2 months (Fig. 5). The child is on active physiotherapy and back to school, but lost to follow-up.

3. Discussion

The (toka) fodder-cutting machine is an integral part of rural families of Punjab. It has resulted in a large number of amputations in the past. Although chopping fodder is a common rural household activity and many children work with the machine as part of their family chores for making fodder. Many cases of child workers with fodder machine-related amputation have been documented. Fortunately the incidence of this injury is on the decline yet patients still report to the emergency with such catastrophic injuries. In this reported case the child was standing next to the flywheel of the toka machine when his clothes got caught in it causing it to avulse the arm off the child's body.

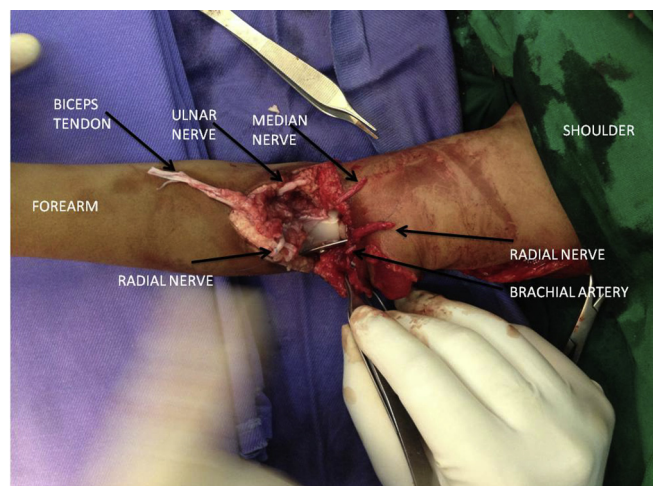


Fig. 3 – Intra-operative view of neurovascular dissection with bony fixation plate in situ.

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