OLGU SUNUMU

BİRİNCİ DORSAL WEB ARALIĞINDA TRAVMATİK YARALANMA SONRASI GREFT ONARIMI VE YARA BAKIMI: OLGU SUNUMU

Özet

Travmaların neden olduğu üst ekstremite yaraları sık görülmektedir. Eldeki küçük bir yara bile büyük fonksiyonel kayıplara yol açabilmektedir. Greft veya flep ile opere edilen hastaların en kısa zamanda değerlendirilmesi ve yara bakımının sağlanması gerekir. Bu çalışmada, sık görülmeyen bir pediatrik vakanın birinci web aralığında travmatik bir yaralanmadan sonra gerçekleştirilen greft onarımı, yara bakımı ve fizyoterapi uygulamalarını sunduk. Bildiğimiz kadarıyla, daha önceki çalışmalarda birinci web aralığında yaraya yol açan vaka sunulmamıştır.

Anahtar Kelimeler: Yara bakımı, el yaralanması, birinci web aralığı

CASE REPORT

A GRAFT REPAIR AND WOUND CARE FOLLOWING BY TRAUMATIC INJURY ON THE FIRST DORSAL WEB: A CASE REPORT

Abstract

Upper limb wounds caused by traumas are common. Even a small wound in hand can lead to large functional losses. Patients who have been operated with grafts or flaps are required to be assessed as soon as possible and managed for wound care. We presented a graft repair and wound care of an unusual pediatric case after a traumatic injury on the first web. To the best of our knowledge, the traumatic hand wound of the first web has not been previously presented.

Keywords: Wound care, hand injury, first web

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1. Introduction

Upper limb wounds are the most common wounds encountered in emergency departments. Injuries in the joint area where the skin is in high tension and caused by open fractures may require extra care during the follow-up process (1). Grafts, flap coverage, and vacuum-assisted closure technique are used to accelerate wound healing, reduce scar tissue formation and increase the functionality of anatomical structures after traumatic injuries (2). In hand wounds with significant tissue loss, skin grafts or flaps are generally used for adequate wound closure (3). The prognosis for wound healing should be well known. In addition, a comprehensive assessment and rehabilitation process is important immediately after surgery (4). Because, even a small wound can greatly reduce the functionality of the upper extremity, especially in hand wounds (2).

Hand injuries can occur for many reasons, especially traumatic accidents, and burns (5-8) . In a study, wound cases occurring after the trauma of iron and other hard and sharp objects were discussed, epidemiologically. The results showed that most wounds are superficial and patients are followed up with similar protocols with other wound treatments (9). We report a graft repair and wound care of an unusual pediatric case following by traumatic injury on the first dorsal web. To our knowledge, the traumatic hand wound of the first web was not presented before. The baseline and second evaluation results are presented to show the effectiveness of rehabilitation techniques applied in wound care.

2. Case Report

The 9-year-old boy was injured after a hard and sharp iron drop on his hand and applied to the emergency room. A deep wound was observed on the first web of the left hand. Radiographic imaging was recorded against the possibility of a fracture. There were no findings related to the fracture (Figure 1).

After the initial evaluation and treatment in the emergency room, he was referred to the plastic and reconstructive surgery. In the comprehensive evaluation, there were tissue loss involving the palmar area, first web and 2nd metacarpal area of the left hand. Neurovascular and tendinous structures were not explored. Motor and sensory examination were normal. There was perfusion in all fingers.

The case was operated under local and laryngeal mask anesthesia. The open wound in the palmar area of the left-hand was irrigated with saline. Necrotic areas were debrided. The defect was fixed with suture to the solid skin. The surgery was terminated with dressing and plaster splint. The case was re-operated approximately 1 week later. Under general anesthesia, the full-thickness skin graft tissue taken from the left inguinal area was sutured to the defect site. The operation was terminated with appropriate graft dressing and plaster splint application. On control examination performed 2 weeks later, the graft tissue was healed and wound debridement was performed. The patient was referred to physical therapy and rehabilitation. There was no motor or sensory loss in the evaluation in the physiotherapy unit. Opposition and abduction of the 1st finger of the left hand was restricted (Figure 2, 3).

Figure 1. Radiographic image of the case in the emergency room

Figure 2. Wound of the case (palmar of the hand)

Figure 3. Wound of the case (first web of the hand)

The range of motion (ROM) was evaluated with universal goniometer. Both ROM and manual muscle strength of the baseline and second assessment of the case in the physiotherapy unit are presented in Table 1. First of all, splint was presented to protect the patient's web range. Rehabilitation program of the case was started with scar tissue massage around the wound. Joint movement was limited due to immobilization. Active-assistive and active ROM exercises were performed to increase abduction and extension. Strengthening exercises were performed to strengthen the thenar and hypothenar muscles and upper extremities, in general. Block exercises were performed for isolated strengthening on the fingers.

Approximately 2 months later, hot-pack was started to be applied. In addition, friction massage was added to the treatment program. Approximately 1 week later, forearm strengthening exercises were started with sandbag. Resistance reinforcement was done with Digi-flex®. After the rehabilitation program, the web interval was synchronized with the right extremity and muscle strength increased noticeably (Figure 4, Table 1). Physiotherapy practices were started with five days a week, then reduced to 3 and 2 days a week, respectively. The physiotherapy program took about 30 minutes daily. The intensity of the exercises was increased according to patient tolerance.

Figure 4. First web of the patient after the rehabilitation

Table 1: Active ROM and MMT results performed at 1st day and 3rd month

	1st day		3rd month	
	ROM	**MMT**	**ROM**	**MMT**
1st CMC Flexion	40°	3+	45°	5
1st CMC Extension	0°	3	0°	4+
1st CMC Abduction	30°	3	70°	4+
2th MCP Flexion	60°	3+	80°	5
2th MCP Extension	0°	3+	15°	5

ROM: *Range of Motion,* ***MMT:*** *Manual Muscle Test,* ***CMC:*** *Carpometacarpal,* ***MCP:*** *Metacarpophalangeal*

In the plastic and reconstructive surgery consultation of the case, a decrease in hypertrophy tendency was observed. Intralesional steroid injection was done, followed for 45 minutes after the procedure, and the perfusion of the fingers was naturally observed at the end of the follow-up. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

3. Discussion

The skin plays a very important role as a barrier against exogenous substances, pathogens and mechanical stresses. Wounds on skin leads to loss of water and protein, stiffness and bacterial infestation into the underlying tissue. For this reason, wound follow-up is important, along with repair and rapid regeneration (10). This study is the first to case presentation of a traumatic wound on the first web of the hand. Wound care follow-up was presented after the case was operated with graft. With the preservation of the patient's first web, it was aimed to prevent the limitation of abduction, extension and opposition in the first finger, increase the range of motion, strengthen the upper extremity, and specifically provide the functionality of the fingers. With these exercises, the patient was followed up with recommendations and precautions to maintain the usual course of wound healing. Scar tissue massage has been reported to be effective in wound healing through its ability to affect matrix remodeling and fibroblast apoptosis (11). Taking into account the importance of a small wound in terms of functional losses and the phases of healing, healing was accelerated with scar tissue massage. An increase in the range of motion and muscle strength of the patient was observed. The first web has reached an equal level with a solid limb. Hypertrophy in the wound area visibly increased. The absence of similar studies on this subject reveals the free side of the study. Hand injuries are generally expected to be rehabilitated in three phases. Preventive practices to provide wound care in the first phase are recommended. In the second phase, it should be aimed to increase the patient's joint mobilization level. In the third phase, the importance of strengthening exercises to return to functionality is emphasized (12). In our study, we adhered to these accepted exercise recommendations. However, since the first web is a section that requires extra importance to protect the functionality of the hand and where injuries occur rarely, the progression of rehabilitation has been increased in a more controlled way and has been carried out with emphasis on the importance of wound care even in the chronic period.

In conclusion, an unusual case of traumatic injury caused wound on the first web and palmar surface is also a rarer condition that should be followed up cautiously with surgical and conservative treatment. In conservative treatment, treatment should be planned according to the improve ROM and strength of the upper extremity. Physiotherapy and rehabilitation applications should be started as soon as possible after the operation in order to increase the functionality by protecting the wound healing and the first web during the follow-up of the patient.

4. References

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