



Case report

Effectiveness of physiotherapy in improving range and functional activities in a patient with superficial burns of bilateral upper limbs

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ABSTRACT

Thermal injury is a common upper extremity trauma that often affects young males from the working class. It is notoriously difficult to determine the depth of thermal injury to the upper extremity and requires serial evaluation over time to predict the time of healing most accurately. Early mobilization is the most effective treatment option for restoring function and minimizing any of the many potential complications most commonly associated with superficial burns and prolonged healing periods. In the present case report a 34-year-old working female caught fire accidentally during her office work. Both upper limbs were affected. Initial medical management was given and prevented complications such as infection and necrosis. Physiotherapy was suggested to improve the decreased range of motion. She underwent treatment for 4 weeks concentrating on range and functional activities. There was a tremendous improvement in her active range of shoulder, elbow, wrist and finger movements bilaterally. Thus, we would like to conclude that early physiotherapy an appropriate decision making helps in the rapid recovery of burns patients.

Keywords: Burns, Upper Limbs, Functional Activities, Range of Motion, Early Management.

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INTRODUCTION

Acute hand burns are complex and can have an effect on different aspects of the life of an individual. Rehabilitation of upper limb function by physiotherapy is essential for the independence and reintegration of the patient into society [1]. Hand burn injuries are very common and despite the fact that the hand surface area accounts for less than 3% of the total body surface area (per hand), an isolated hand burn injury may have important consequences for an individual's quality of life [2]. Such an accident can make a person physically impaired and cosmetically disfigured and thus affect success in recovery, conduct and return to community and professional life [3]. Rehabilitation through physiotherapy is an essential component of burn treatment to preserve the range of motion, avoid the growth of contractures, optimize function and encourage psychological well-being and social integration [4]. The present case report is of a 34-year-old female who while working in her shop accidentally caught fire which caused superficial burns over her both upper limbs. The aim of the present study is to evaluate the effectiveness of physiotherapy in preventing contractures and promote early recovery of the patient. Early physiotherapy has been proved to be highly effective in rehabilitation of individuals with various disorders [5][6].

Case presentation

Patient is 34-year-old female who was completely normal till 3 months back. One day while working in her shop she caught up with fire which affected her both upper limbs to suffer superficial burns. She was taken to nearby hospital immediately. There she was treated for 8-10 days conservatively. Then she went to her home where she got dressing for 2 days. After every 3 days she was asked to come for dressing. No surgery was carried out. Once the wound is healed without any oozing, she came for physiotherapy consultation.

Clinical Findings

Superficial burns over both upper limbs, decreased range of motion of bilateral shoulder, elbow and wrist joints. Sensations were intact. Unable to evaluate the strength because of pain. Prehensile functions were affected. Non prehensile functions were present. Rest of the body movements were unaffected. Psychologically patient was Quite depressed because of the cosmetic appearance of her upper limbs.

Bilateral shoulder, elbow, wrist and forearm supination and pronation movements range of motion was evaluated actively and passively. Active range of motion of was diminished in all the joints more predominantly supination and pronation. Details are given in a comparison with post physiotherapy findings in table 1. Strength was

difficult to examine as the patient was having pain while testing individual muscles. Qualitatively the strength of all the group of muscles was expected to be fair. Scars were thick and mobile. There was no oozing of any fluids from both upper limbs. Grips were comparatively easier than prehensions in both the limbs.

Physiotherapy Intervention

Physiotherapy intervention was mainly intended to increase the range of motion of bilateral upper limbs. Re-education of ADL's was another concern as both the upper limbs were affected. Scar mobilisations, Active and passive range of motion training along with ADL training were carried using task-oriented approach. Psychological reassurance was given during every session where her belief on her recovery can be progressed. No electrical modality was used. Home program of basic free exercises of bilateral upper limbs were taught to patient. Treatment protocol was carried for 4 weeks. Pre and post Range of motion measurement, strength evaluations and ADL evaluation were done (The details are depicted in table 1).

Results

As the patient approached physiotherapy with two weeks of the accidental burns it was handy for the physiotherapist to concentrate more on her range easily. As the dressing was appropriate during hospital stay and no complications such as infections were raised made us to handle the patient effectively. In the initial stages pain was the limitation to perform rehabilitation but later on as the scar mobilizations were proved to be effective, pain subsided. After four weeks the patient was able to do complete range of motion of all the joints in bilateral upper limbs.

DISCUSSION

Figure 1 & 2 Depicting Burns of Right and Left upper limbs



This study endeavoured to explore the initial acute rehabilitation while working with patients suffered from acute burns of

the hand. The key goal of care in the acute phase of a burn injury is to maintain life by taking into account physiological criteria critical to the morbidity of patients [7]. Pain has been described as a key factor influencing the success and engagement of patient. As patient was hesitant to comply because of the fear and expectation of pain, therapist thought that pain was an obstacle to physiotherapy treatment, this finding is similar to an in line with international studies conducted in developed countries [8][9]. While patients with burn injuries are aware of the benefits of therapy, due to pain and resulting anxiety, they may be discouraged from complying with the physiotherapist [10]. Our focus on decreasing the pain, increasing range and train her to perform her ADL's with appropriate feedback and counselling in regular intervals was key in achieving success. Early recovery can be mainly attributed to efficient conservative medical management in the early stages and patient's willingness to get better soon and achieve functional independence [11].

Table 1. Physiotherapy Goals and strategies

Problem identified	Probable cause	Goal Framed	Physiotherapy Intervention
Limited ROM	Adherent scar and contracture formation	Regain the joint range of motion and to avoid joint stiffness so as to prevent contractures further.	Active exercises begun at the day of admission. Active assisted and passive exercises were initiated as patient could not achieve full ROM.
Flexion deformity	Adherent scar	Prevent tissue destruction, maintain tissues in elongated state.	Splint was given in extension Dynamic splints were given in order to ensure joint movement.
Muscle weakness	Disuse of muscles resulted in weakness (disuse due to pain and scar)	Retrain the weak muscles, regain the strength,	We began with the strengthening exercises once patient regained the full ROM.
Difficulty in performing ADLs	Due to the adherent scar which was leading to contracture formation.	Scar mobilization was been done	. All the activities for eg: grooming, eating etc were incorporated during the treatment sessions and practiced to train the ADL's

CONCLUSION

Thus, we would like to conclude that early Physiotherapy intervention focussing primarily on pain and range can yield better results in superficial burns patients. Psychological counselling and reassurance are equally important as rehabilitation.

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