

Use of Heberprot P in Severe Hand Injuries and Bipediculate Graft to the Abdomen. A Case Presentation

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Abstract

Background: Heberprot P (HP) is a therapy that contributes to the repair of damaged tissues. Its use in orthopedic lesions of the upper limbs is very recent and of little publication.

Objective: To describe the evolution of a patient with severe lesion of the back of the right hand in which the (PH) was used, followed by pedunculated graft.

Case Presentation: Patient suffering accident with injury to right hand. Clinical and radiological diagnosis was made, with loss of skin, subcutaneous cellular tissue and fracture of 4th and 5th metacarpal, surgical procedure was applied. It evolved unfavorably with deep sepsis, loss of extensor tendons and bone exposure, it was decided to start treatment with (HP) to encourage granulation tissue, 21 days later it was possible to cover the bone structures, it was intervened repairing tendons and cutaneous coverage of the back of the hand with bipedicated graft to the abdomen with favorable evolution, the patient returns to her social and work activity at 10 months.

Conclusions: In a case of severe loss of soft tissues, the use of (HP) accelerates the granulation and healing of tissues, facilitating the patient's reincorporation into his life.

Keywords: Granulation; Heberprot P; Severe Injury; Graft

Introduction

The hand is a tool capable of exercising grandiose functions, as Aristotle said it is "the instrument of instruments". For the treatment of serious injuries of the limbs with loss of skin, subcutaneous cellular tissue (TCS) and other structures there is a protocol from the moment of the injury to the appearance of sequelae or complications, having a therapeutic arsenal throughout the process. This protocol delimits the actions to be carried out

from the arrival of the patient to the guard corps in the support measures headed by the ABC of care for polytraumatized patients their subsequent emergency surgical intervention, in which special attention is given to the soft tissues, the bone and its stabilization, in addition to the pharmacological treatment in the room as well as its definitive treatment depending on the evolution depending on each case [1].

Heberprot P (HP) therapy is emerging as one of the most promising techniques in the future medical arsenal for repairing destroyed or damaged tissues. In the last decade in Cuba a true regenerative revolution takes place where I(HP) is one of them, providing repairing and regenerative properties of damaged tissues [2].

The importance and significance of this case lies in the challenge of saving the patient's hand, due to the importance of this for the adequate development both in the social and work life of any person, for the great loss of soft tissues and the short time available so that the bone and tendon structures do not present irreversible damage and do not have to reach amputation, without other viable surgical alternatives that offer adequate coverage of the bone and an ideal bed for the correct tendon sliding, it is that the decision was made to apply the technique of (HP) to shorten the granulation time of the tissues and have adequate coverage for both bone and tendon structures which allowed a remote flap intervention for the definitive treatment of the injured limb.

In Cuba and in the province of Sancti Spíritus we did not find cases reported in the scientific literature where HP is used in serious injuries of the upper limbs.

Covering skin defects of the hand represents a challenge from an anatomical and functional point of view. True reconstruction begins with surgical procedures that provide adequate skin and soft tissue coverage. Historically, remote flaps were the first to be used in case of large losses of substance from the hand. The repair and coverage of traumatic injuries of the upper extremities with the use of flaps is important to rescue the compromised structures and recover the previous functional capacity to be able to carry out their activities. In addition, the choice of reconstruction modality must take into account several components, including the origin of the defect and location, level of contamination, availability of donor tissue and the experience of the surgeon. Despite the use of microsurgery for the repair of this type of injury, currently developing countries are still forced to use therapeutic alternatives (flaps) due to the lack of adequate microsurgical instruments and expert professionals in the area [3].

A clinical case is presented with the objective of describing the clinical evolution of a patient with a severe injury of the right hand

due to crushing with loss of skin, SCD and metacarpal fractures in which HP was used for its treatment together with surgical repair by remote flaps. For the publication of the details of the case, the consent of the patient was obtained, which respects the recommendations of the Declaration of Helsinki for research carried out on human beings.

Case Presentation

We present a 50-year-old female patient with a history of a traffic accident from which she suffered a serious injury to the right upper limb by crushing with loss of skin and subcutaneous cellular tissue (TCS) of the entire back of the hand with great contamination of foreign material and fracture of the fourth and fifth metacarpal. She is treated in the guard corps of the Camilo Cienfuegos Provincial Hospital in the province of Sancti Spíritus. The injury was accompanied by a large area of devitalized tissues with friction burns. Complementary examinations and X-ray were performed, it was decided to undergo emergency surgery to stabilize the fractures and attend to the soft tissues figure 1.

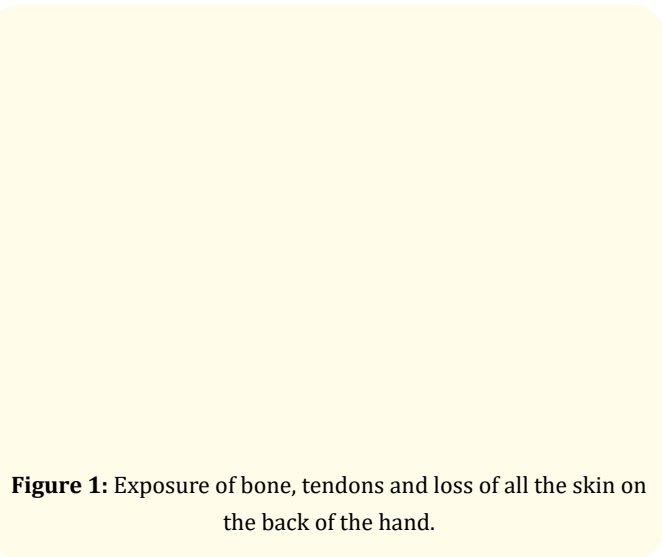


Figure 1: Exposure of bone, tendons and loss of all the skin on the back of the hand.

A conventional orthopedic ward was admitted to triple antimicrobial therapy, penicillin, gentamicin and metronidazole, all parenterally and healing of lesions. The evolution of the patient was unfavorable presenting a deep sepsis of the entire back of the hand that was accompanied by necrosis of the skin and TCS with exposure and loss of all extensor tendons except the first finger; is changed to third-generation cephalosporins and continued

with local cures until the infection is controlled, the decision was made to start therapy with PH and after 21 days an adequate coverage of the bone structures was achieved (Figure 2), which allowed after having negative cultures of the lesion to submit to a second intervention to the patient, placing silicone prostheses in the extensor tendons removed from the second to the fifth finger and subsequent bipedicated graft to the abdomen for a period of three weeks during which time they are protected fingers with dynamic splint in extension to prevent flexion contracture and joint stiffness figure 2 and 3.

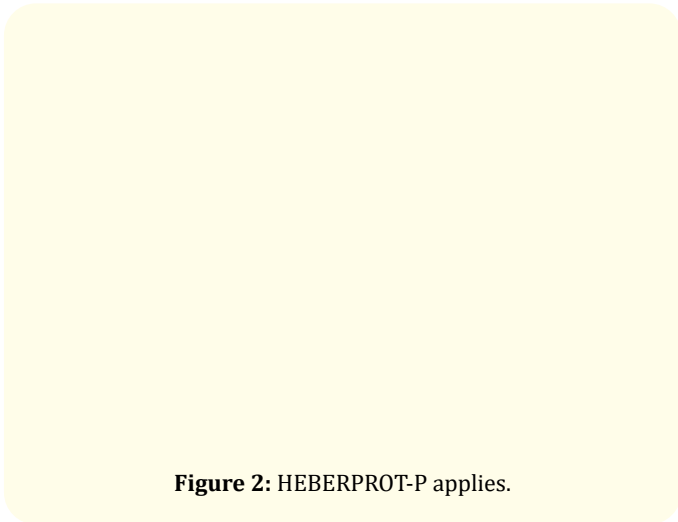


Figure 2: HEBERPROT-P applies.

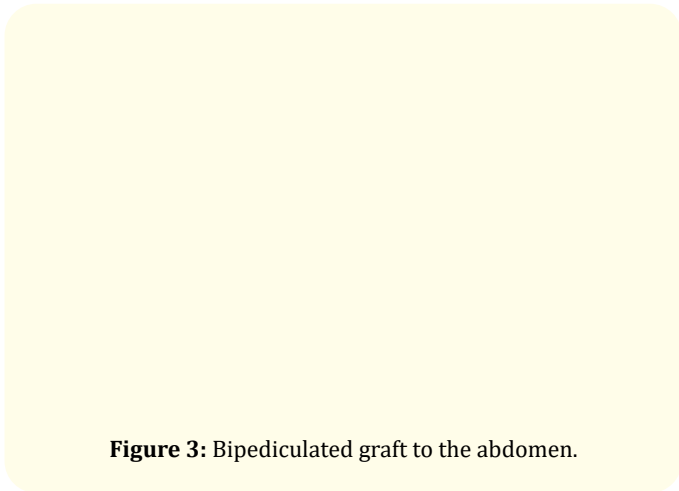
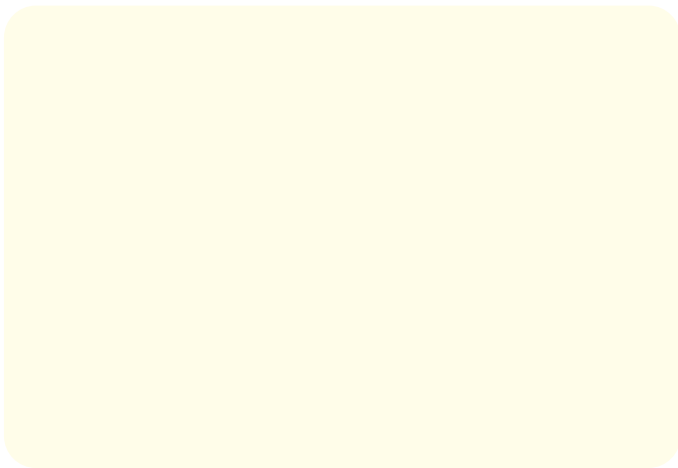


Figure 3: Bipedicated graft to the abdomen.

After three weeks the flap with closure of the abdominal wound was released, in a fourth operative time the extraction of the silicone prostheses and the free graft of the extensor tendons from the second to the fifth fingers were performed, taking both thin plantar tendons of the patient as donors, the patient is discharged and followed by external consultation, Three weeks after the grafts were performed, vigorous physiotherapeutic treatment was started to achieve adequate mobility of the entire hand. Six months after the trauma, a fifth intervention was performed with liposuction of the flap on the back of the hand to reduce the volume of TCS and thus have a better aesthetic in the hand, returning to their work and social life ten months after the accident (Figure 4 and 5).

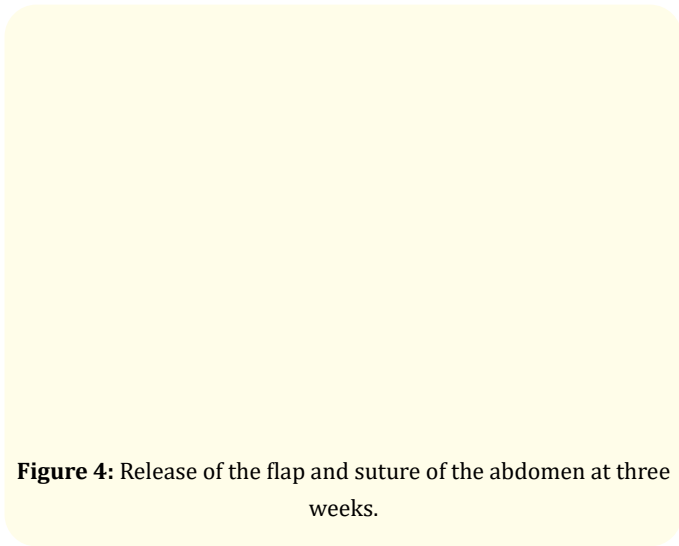


Figure 4: Release of the flap and suture of the abdomen at three weeks.

Figure 5: Flap after tendon grafts and performed liposuction of the flap.

Discussion

The loss of integuments in the hand is a strong challenge for the orthopedic surgeon, due to the importance of this autonomic area in the functioning of the organism. The HEBERPROT-P compound, unique of its kind in the world, for the treatment of diabetic foot, has multiple advantages, since it stimulates accelerated granulation and re-epithelialization in ulcers, reduces the healing time of these lesions, thus reducing the number of debridements and the risk of amputation [2,4]. The use of this Cuban drug not only in diabetic foot ulcers but in serious injuries where there are significant losses of soft tissues that compromise the coverage of tendon and bone structures represents a novelty that greatly helps to reduce healing time for subsequent surgical procedures [5,6].

Of the tissues available for skin coverage, the most frequent solutions used in these cases include the performance of grafts of medium thickness, in the case that the underlying noble structures and pedunculated flaps are represented. The bipediculated flap to the abdomen is the most relevant within this group [7].

One of the criteria for amputation of the fingers and hand is the irreversible loss of vascularization [8], but in this patient with the application of HP and the abdominal bipediculated flap the revascularization of the entire back of the hand and its functional character, thus avoiding an amputation of the injured limb.

Conclusion

The results achieved show the effectiveness of the use of HP in the treatment of bloody injuries with loss of soft tissues of the limbs, and not only in the lower extremities as until now there are the main evidences, but also in the upper limbs especially the hand, as a simple alternative to conventional treatment. The use of this treatment is beneficial, because in a case with serious injury to the back of the hand the combined use of HP accelerates the process of healing and granulation of tissues, together with the use of flaps at a distance facilitates the satisfactory evolution of the patient, in addition to greatly reducing the risk of amputation and everything that this would entail for the patient and society, It contributes to raising their quality of life and also provides significant savings in resources, by reducing the hospital stay due to this condition, facilitating the patient's reincorporation into their social and work life.

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