MYOELECTRIC PROSTHESIS FOLLOWING TOTAL THUMB AMPUTATION

[1]Vera van Heijningen, [2]Raymon Wijman, [3]Veit Biedermann and [1]Wim Janssen

[1]Rijndam Rehabilitation Institute Location Erasmus Medical Center
[2]Livit
[3]Luttermann

AIM AND OBJECTIVES

In clients with thumb amputation, a passive thumb prosthesis is one possible solution to restore pinch grip and grip to improve hand function. However, the clinical experience of the authors is that this is not routinely a satisfying solution for the client with a total thumb loss.

With the development of Myoelectrically controlled digit prostheses, prosthetic options for partial hand deficits have been widened.

The aim of this study was to investigate the potential benefit of applying a myoelectric controlled thumb in comparison to a passive prosthetic thumb.

This case study presents the process and preliminary results of optimizing the hand function of a client with a total thumb loss.

CASE DESCRIPTION AND METHODS

A 53-year old woman reported impairment in daily activities as her chief complaint.

The thumb of her right hand was amputated at the level of the carpo-metacarpal joint, following a period of severe suffering from Complex Regional Pain Syndrome type II as a result of a cat bite. Her left arm showed severe signs of overuse as a result of the limited capacity of her right hand. This case report describes the process of designing and manufacturing a myoelectric thumb prosthesis. Including the rehabilitation process that followed

FINDINGS AND OUTCOME

This case-report also describes the rehabilitation process which was focused on regaining balanced use and interlimb interaction in daily activities. Experiences, advantages and disadvantages of the three options (no prosthesis, passive prosthesis or myoelectric prosthesis) will be shared and discussed. Patient rated outcome measures show positive results.

IN CONCLUSION

The myoelectric thumb prosthesis restored the hand function beyond the client's expectations. The client has regained the ability to be fully active in her daily life, in the most practical, comfortable and secure way as possible. Furthermore, her self-esteem and self-image have grown.

The results obtained in this case report do not automatically transfer to other cases. Further research is needed

CLINICAL RELEVANCE

No case-report or any literature on this topic was found by the authors. This case report has identified a potential improvement of hand function for clients with total thumb amputation by using a myoelectric thumb component .