e-ISSN:2582-7219

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH IN SCIENCE, ENGINEERING AND TECHNOLOGY

Volume 7, Issue 8, August 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.521

© 2024 IJMRSET | Volume 7, Issue 8, August 2024| DOI: 10.15680/IJMRSET.2024.0708022

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Challenges in Prosthetic Rehabilitation for an Elderly Man in South Gujarat's Semi-Rural Areas

Sneha Hiren Bhalala

Assistant Professor, SPB Physiotherapy College, Surat, India

ABSTRACT: My case is about an elderly man from a semi-rural community in India and the challenges faced during the rehabilitation process. In India, there are limited finances for prosthetics. Prosthetics are only measured and fitted in the bigger cities and there is a waiting period of about 18 months from measurement to fitting. During this case I learnt to listen carefully to my patient's needs, the importance of education as well as setting realistic goals with your patient. This is important for your patient to be satisfied with their rehabilitation outcome.

KEY WORDS: Transtibial, elderly, contracture

I. CLIENT CHARACTERISTICS

Mr. X is an 88-year-old male who lives in Surat. His mind is still sharp and he has a positive outlook on life. He is currently receiving a government pension but previously worked as a carpenter. He is known for peripheral artery disease and COAD. He underwent a right trans-tibial amputation on 15/01/2022 at a tertiary institution. He was re-admitted in hospital on the 27/06/2022 as the end of his tibia was exposed through the skin. His wound site had become infected and a revised trans-femoral amputation was suggested by the surgeons.

The patient refused another surgery and his wound was treated at a Primary Health Care Clinic over a year until his wound was healed. Unfortunately, he now has a big scar on his stump. The skin is also very thin over the prosthesis with the bones felt prominently as there is only skin covering the bones. During this period of wound healing he was not referred to physiotherapy and never received rehabilitation.

Unfortunately the patient developed a 35 degree knee flexion contracture. He is able to walk short distances with a walking frame he received at the tertiary institution, but he is limited by shortness of breath. He has osteo-arthritis of his left knee which causes him some pain. His left foot is in good condition. He was referred to physiotherapy by the clinic doctor as the patient expressed a need to be fitted with a prosthesis.

II. EXAMINATION FINDINGS

- The patient lives with his daughter and her three children in a three-bedroom house with 3 stairs at the front and none at the back. He spends most of the day in the garage doing small woodwork projects.
- His main concern and reason for wanting a prosthesis is that he is not able to prepare himself something to eat during the day when he is alone as he struggles to stand and use his upper limbs freely.
- He has poor cardiovascular endurance and becomes short of breath quickly. He perceives himself to be a 3 on the Modified Borg Scale at rest.

On examination I found that he has:

- A 35 degree right knee flexion contracture. He does not present with any other limitations in range.

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

- The muscle power in his right leg according to the Oxford scale: hip flexor 3+/5; Gluteus maximus 3-/5; Gluteus medius 3/5; Hamstring 3/5.
- The muscle power in his left leg: hip flexor 3+/5; Gluteus maximus 3-/5; Gluteus medius 3/5; Hamstring 3+/5; Quadriceps 3+/5; Gastrocnemius 3+/5; Tibialis anterior 4-/5.
- The muscle power in his upper limbs: Lattisimus Dorsi 4/5; Triceps 4/5. His Rectus Abdominus and Obliques are both 3-/5.
- He is able to maintain his balance on his left leg for 3 seconds.
- He completed the Timed-up-and-go Test with his walking frame in 32 seconds. He can perform a standing transfer and comes into standing with help of a walking frame. He completed the Timed-up-and-go Test with his walking frame in 32 seconds.

III. CLINICAL HYPOTHESIS

According to my evaluation the patient's main problem or activity limitation is that he is not able to walk confidently with his walking frame, stand independently and move out of his base of support to make himself food to eat during the day. This prevents him from participating in activities of daily living as well as everyday family life. I hypothesize that the body functions and structures contributing to this are his weak Quadriceps, Glutei and abdominals. His poor static and dynamic standing balance, as well as his poor cardiovascular endurance also greatly contributes to his main problem.

IV. INTERVENTION

He was motivated in the sessions and had a positive attitude. He was determined to receive a prosthesis even after education regarding the likelihood of receiving a prosthesis with his contracture and poor quality of the skin over his stump. I explained the added energy expenditure of using a prosthesis and that his age and COAD might negatively impact his rehabilitation with a prosthesis [1].

Rehabilitation focused on stretching techniques of his right hamstring in the hopes of gaining more knee extension range. This was part of his home exercises along with other positioning advice. I focussed on strengthening his left leg with body weight exercises e.g. bridging and squats, and active exercises against a resistance band. We progressively strengthened his right leg using free active exercises, exercises against a resistance band and later progresses to pelvic motion exercises. In therapy, we worked on improving his static balance, shifting his weight over his base-of-support and moving out of base-of-support.

Furthermore, we worked on increasing his cardiovascular endurance with his walking frame by increasing the distance walked safely. We walked through obstacle courses and over different terrains that are present in his community. The OT&I incorporated all of the components into a functional task, which for him was standing and being able to reach for different objects while preparing food.

V. OUTCOME

Mr. X attended 5 months of rehabilitation with a session every 2 weeks due to the heavy patient load at our institution as well as limited finances for transport to rehabilitation. At the end of the rehabilitation process he was able to mobilise confidently with a walking frame.

His TUG test had improved to 23 seconds and his one-leg balance test had improved to 14 seconds. Unfortunately, no improvement was seen in his knee flexion range as his contracture remained fixed at 35 degrees even with rigorous efforts to improve this.

The most important outcome of his rehabilitation was the change in his functional abilities. He was now able to mobilise confidently with a walking frame inside his house. He was able to safely make himself something to eat in the kitchen by gathering all the ingredients and standing to do tasks when necessary. He could now walk 15

ISSN: 2582-7219 | www.ijmrset.com | Impact Factor: 7.521| ESTD Year: 2018|

International Journal of Multidisciplinary Research in Science, Engineering and Technology (IJMRSET)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

meters to the garage to do his woodwork hobby where he previously had to use a wheelchair for this. He was no longer a burden to his family and was more integrated into the family activities.

At the end of the rehabilitation process, he had not been assessed for a prosthesis due to his knee flexion contracture as well as the poor chance for elderly patients to be fitted with a prosthesis. By listening to the patient and setting goals that were realistic and important to him i was able to reach a rehabilitation outcome that was satisfactory to the patient.

VI. DISCUSSION

A patients chances of being successfully fitted with a prosthesis over the age of 85 years is very low[1]. I think that his chances would have improved if he had received physiotherapy rehabilitation directly after his initial surgery. His contracture would have been avoided and his general condition would have been better if he had been following a rehabilitation program from the start.

Furthermore trans-tibial amputees are 3 times more likely to be successfully fitted with a prosthesis than trans-femoral amputees[1]. In retrospect I should have used an outcome measure that was more specifically designed for amputation patients like the Amputee Mobility Predictor Questionnaire[2]. I think this would have given me a better insight into other areas of functioning that would have benefitted from therapy as well as a more accurate measure of the improvements made during the rehabilitation process.

In my experience listening to the patient's needs and what they would like to achieve out of therapy as well as working together as an interdisciplinary team to holistically manage your patient is the best approach to rehabilitating a patient back into his home and community.

Practising functional tasks in an interdisciplinary setting[3] after each of the missing components have been addressed is the best way for your patient to achieve functional independence in everyday activities.

REFERENCES

1. Fletcher, DD; Andrews, KL; Hallett, JW Jr; Butters, MA; Rowland, CM; Jacobsen, SJ, 2002, Trends in rehabilitation after amputation for geriatric patients with vascular disease: implications for future health resource allocation, Archives of Physical Medicine and Rehabilitation, 83,1389-1393.
2. Gailey, RS; Roach, KE; Applegate, EB; Cho, B; Cunniffe, B; Licht, S; Maguire, M; Nash, MS, 2002, The Amputee Mobility Predictor: an instrument to assess determinants of the lower-limb amputee ability to ambulate. Archive of Physical Medicine and Rehabilitation, 83,613-627.
3. Esquenazi, A, 2004, Amputation rehabilitation and prosthetic restoration. From surgery to community reintegration, Disability and Rehabilitation, 26, 831-836.

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY RESEARCH

IN SCIENCE, ENGINEERING AND TECHNOLOGY

| Mobile No: +91-6381907438 | Whatsapp: +91-6381907438 | ijmrset@gmail.com |

www.ijmrset.com