CASE STUDY

BMI Contracture Knee

Contracture Management in the long term patient

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A description of the physical therapy intervention of a long term medically complex resident with bilateral knee flexion contractures and the use of the application of BMI Contracture Knee splints as an intervention tool.

Background & Purpose

Treatment of bilateral knee contractures in a long term care Skilled Nursing. Facility (SNF) rehab patient with underlying dementia, decline in mobility s/p hospitalization, with anxiety toward standing, transfers and weight bearing activities. Patient name to be abbreviated FC.

Case Description

FC is an 85 year old female who was evaluated upon admission to the SNF, s/p hospitalization of 10 days with dx of congestive heart failure, advanced age, progressive dementia. According to FC's son, she was previously undergoing rehab at another SNF prior to hospitalization, and was able to ambulate approximately 100 feet per day with a rolling walker and minimal assistance. Upon evaluation, the following objective measures were demonstrated:

Bed mobility = Max assistance x 1
Sitting Balance = Poor +
Standing Balance = Poor
Sit <-> Stand Transfer = Total Assistance
Bed <-> W/C Transfer = Total Assistance
Lower Extremity Range of Motion (LE ROM) = Ankles are within functional limits (WFL), hips are WFL, R knee lacks 35 degrees of full extension (-35) and L knee lacks 30 degrees from full extension (-30)
Gait = Unable

Goals focused on improving LE ROM in knees, overall strength, sitting and standing balance, to allow for improved independence with functional bed mobility, transfers and gait tasks. Resident attended Physical Therapy sessions 5x/week for 1 hour each session.

Progress toward goals was complicated by a high level of anxiety demonstrated during standing balance, transfer and gait activities, leading to increased time sitting in wheelchair. FC was positioned with elevating leg rests, but tended to remove LEs from leg rests and sit with knees flexed at 90 degrees or beyond. This positioning further complicated progress toward improving bilateral knee extension ROM. Patient began to show a 5-10 degree improvement in bilateral knee extension ROM though Continued P.T. treatment and through efforts to improve positioning on leg rests. Patient/Staff training was also incorporated to improve follow up. After 5 weeks of treatment, FC required maximum assistance with transfers and still was unable to ambulate, despite being managed for her medical conditions, including anxiety. At this point, she qualified for orthotic coverage through Medicare Part B. BMI Contracture Knee splints were ordered for both LEs to aid in management of knee flexion contractures.

The goals for use of the orthotics were to aid in continued improvement of B knee extension ROM by an additional >5-10 degrees, be able to tolerate comfortably in seated for up to 6-8 hours, and to be donned accurately and easily by nursing staff

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for follow up. FC first used bilateral BMI Contracture Knee splints toward the end of week 5 and immediately was able to comfortably tolerate donning them for >3-4 hours while seated in wheelchair with elevating leg rests. FC also tolerated use of splints during transfer and standing balance training.

Outcome

FC was on skilled P.T. treatment for a total of 12 weeks and demonstrated the following status at discharge:

Bed mobility = Minimal assistance x 1
Sitting Balance = Good
Standing Balance = Fair Sit <-> Stand Transfer = Moderate Assistance
Bed <-> W/C Transfer = Moderate Assistance
Lower Extremity Range of Mation (LE ROM) = Anklose

Lower Extremity Range of Motion (LE ROM) = Ankles are within functional limits (WFL), hips are WFL, R knee lacks 15 degrees of full extension (-15) and L knee lacks 10 degrees from full extension (-10).

Gait = 20 feet with rolling walker, Moderate assistance on even surfaces.

Staff consistently donned bilateral BMI Contracture Knee splints accurately while FC sat in wheelchair, typically between 4-6 hours a day during day shift. After splints were in place, she was able to move LEs actively but did not flex her knees under wheelchair as she had previously, allowing for improved joint alignment of both knees for more prolonged periods of time. FC had no complaints of pain but occasionally she would release the Velcro straps to given herself "a break" from the splints when seated out of bed for longer periods during the day. No evidence of redness or skin breakdown was exhibited on any part of the LEs in contact with the splints.

FC was able to meet her goals established for both LE knee ROM improvements, splint tolerance and for staff follow up on splint donning. Multiple medical and cognitive factors limited her improvement in functional mobility, and she was ultimately unable to restore her previous level of function fully. She was transitioned to a Restorative Nursing Program for continued exercises and ambulation for follow up in facility.

Discussion

The BMI Contracture Knee splints proved to be a very effective, easily applied, well tolerated and a safe for the skin orthotic, which was used to treat and manage knee flexion contracture in a long term care patient with multiple medical problems. The splints proved very easy to apply for the staff involved, as well as safe and comfortable to wear for the patient on a consistent basis.

Conclusion

As a tool in treating knee contractures in a medically complex patient, the BMI Contracture knee splints proved to be effective in this case for not only aiding in improvement of knee extension ROM, but also in the long term management of the patient's contractures through effective follow up with the nursing staff.