Custom Made Occupational Therapy Adaptive Devices Designed for Patients with Cancer

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ABSTRACT

Occupational therapists play an important role in providing patients with adaptive devices to improve function and quality of life. The occupational therapy department at Memorial Sloan Kettering Cancer Center has created several custom made devices that improve the functional independence of patients with cancer. The purpose of this paper is to describe the design and use of 3 custom made devices: a tailored scrotal support, a pediatric chest guard, and a four-quarter amputation prosthesis.

The occupational therapist plays an important role in the care and treatment of individuals with cancer and therefore, their presence has expanded in the oncology rehabilitation process. Occupational therapy interventions include education on the use of energy conservation techniques, assistive technology, and activity adaptation to resume functional daily routines. The use of custom made devices and orthoses helps minimize dysfunction, maintain functional positions, and provide protection to various body parts. As a result, patients are able to resume normal daily activities and achieve independent mastery of life functions.

The occupational therapy department at Memorial Sloan Kettering Cancer Center has created several adaptive devices to enhance patients' abilities to participate in their daily routines, as well as to improve their physical appearance and body image. Three examples of custom made devices designed for patients with cancer are a tailored scrotal support, a pediatric chest guard, and a four-quarter amputation prosthesis.

TAILORED SCROTAL SUPPORT

The tailored scrotal support is designed specifically for male patients with lymphedematous genitals and lower extremities resulting from various forms of cancer and cancer-related treatments. These patients often have difficulty with functional mobility due to increased genital swelling and discomfort. Each patient is measured and then fit with individually fabricated supports that function as a jock strap, providing compression and elevation to the genital area. The material used to fabricate the support includes a waist strap made from doubled stockinette and a genital support made from wide Tubigrip that forms a pouch for the enlarged scrotum and genitals. Velcro is sewn into the stockinette waist strap so patients can don and doff the support independently. Patients who have used the tailored scrotal support have shown an improved ability to complete functional mobility and out of bed activities with less discomfort (Figure 1).

PEDIATRIC CHEST GUARD

The pediatric chest guard is designed for children who have had surgery in the thoracic region or who have had a mediport placed in their upper chest wall. As these children...
resume school and play activities, they require protection to prevent trauma to their chest, trunk, or mediport site. The first step to making the chest guard involves taking individual measurements and creating a pattern. Splinting material is molded to the patient's chest and back so that the end product contours to the patient's body and allows the upper extremities freedom of movement. An anterior chest piece and a posterior back piece are held in place using riveted straps made from stockinette and Velcro strips. The chest guard allows children to safely return to their normal daily activities, such as participation in gym classes, playing with friends, or engaging in extracurricular sports. The use of the chest guard reassures parents that their children can safely resume active lives, while their children regain confidence and a sense of normalcy in their lives (Figure 2A and 2B).

FOUR QUARTER AMPUTATION PROSTHESIS

The four quarter amputation prosthesis is designed for patients following the surgical removal of an upper extremity that may include the humerus and portions of the clavicle. This type of surgery alters a patient's physical appearance, symmetry, and body image. The first step in the fabrication of the prosthesis involves measuring the patient's noninvolved shoulder. The prosthesis is then fabricated using stockinette filled with cotton batting and foam to create the appearance of a normal shoulder when worn under clothing. Patients who have worn the four-quarter amputation prosthesis following surgery have demonstrated an improved sense of body image and are less self conscious when returning to work and social activities (Figure 3A and 3B).

CONCLUSION

Occupational therapists play an important role in the rehabilitation of individuals following surgery and treatment for cancer. Patients who undergo various cancer treatments may require specialized protection and adaptation in order to resume normal daily activities. Occupational therapists have the skills to design a variety of custom made adaptive devices to improve function, provide protection, and enhance body image for this patient population. Descriptions of 3 adaptive devices were presented in this article. There continues to be a need for further development and study of the use and efficacy of this equipment to add to the clinical knowledge base of therapists who treat patients with cancer.

REFERENCES


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