In Practice

Occupational therapy for people with ventricular assist devices

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Introduction

Ventricular assist devices (VADs) are a form of medical technology that are used to support the failing blood circulation of patients, and thus keep patients alive while they await heart transplant surgery (Levin et al., 1994). Savage (2003) reports that the number of patients needing this technology is increasing because the number of patients with end-stage heart failure is rising. Within Victoria, The Alfred Hospital in Melbourne is the only place where VAD implantation surgery is currently conducted. As this is a state-wide service, there is only one occupational therapist in Victoria who works with this particular group of patients. However, it is likely that the number of patients needing VADs will increase (Kennedy, Haykowsky & Humphrey, 2003), and therefore, it is anticipated that occupational therapists might be interested in the role of occupational therapy for this unique group of patients. Thus, the purpose of this article is to briefly explain the VAD and how it can affect the lives and occupations of patients, and in doing so, the role that occupational therapy plays within this specialised area of practice will be illustrated.

What is a VAD?

A VAD is a mechanical device that does not take over the heart’s electrical activity, as a pacemaker does, but instead it takes over the work of a failing left ventricle (Griffin, 1998). As the heart reaches the end of its systolic phase, blood flows from the left ventricle, through the VAD’s inflow conduit into the pump, which pushes it through the outflow conduit into the patient’s aorta and then follows the normal circulatory pattern (Griffin). More details about the VAD can be found at www.thoratec.com/news/imagecatalog.htm. The pump is attached to a controller and power pack, which is wheeled or carried by the patient. The pack looks similar to a small suitcase, pulled along on wheels.

A VAD is needed because while patients are waiting for a transplant they can become critically ill and may sometimes die before a suitable organ is found (Orford, 2004). Experience in Boston, USA, shows that a substantial number of patients experiencing ventricular failure will benefit from the use of mechanical support (Dekkers, Fitzgerald & Couper, 2001). Implantable VADs have evolved to the point where it is now possible to reliably support adults with end-stage heart failure while they await heart transplantation (Helman et al., 2000). As a result there has been an increased interest in the potential therapeutic application of VADs.

Role of occupational therapy with VAD patients

Within the occupational therapy service provided at The Alfred Hospital there are four main activities that the occupational therapist undertakes:

1. The occupational therapist manufactures an individualised belt to secure the VAD.
2. Through the use of meaningful occupation, the therapist aims to prevent deconditioning of the patient, which can result from long periods of inactivity.
3. The occupational therapist encourages and assists patients to perform their normal self-care occupations.
4. The occupational therapist provides education and advice to assist the patient in managing to
live with VAD and to assist them in preparation for discharge from hospital.

Securing the VAD
The occupational therapist manufactures a small waist belt made from Velfoam® and is secured by Velcro® (Velco USA Inc., Manchester, NH, USA). The belt offers support to the VAD device, and provides the patient with a sense of confidence and security when moving around and engaging in occupational roles. The use of Velcro® allows for weight changes and secure closure of the belt, and it also allows flexibility of easy donning and removal of the belt as necessary (e.g. during dressing and showering). Because of the differences in body dimensions, the occupational therapist adapts the VAD belt for each patient, and thus each patient receives an individually tailored belt. More details of the belt can be found at www.thoratec.com/news/imagecatalogue.htm.

As the VAD conduits protrude through the belt, they are susceptible to becoming wet when bathing. Thus, wetsuit material is used to make a small, secure and removable cover to ensure waterproofing during wet activities. This allows the patient to feel comfortable and confident with showering and washing occupations.

Preventing deconditioning through engaging in occupation
Because of the many medical complications that can accompany a patient’s illness, it is not uncommon for patients to spend most of their hospital stay in bed. Kennedy et al. (2003) report that VAD patients may become severely deconditioned after their VAD is implanted. Thus, the occupational therapist engages patients in occupations for the purpose of maintaining patients’ physical, emotional, social and cognitive functioning. Use of activities in occupational therapy is widely used as a tool in the intervention process to help clients meet specific therapeutic goals (Pedretti & Early, 2001). The occupational therapist is able to offer patients a limited selection of occupations to engage in, including table-top games, bedside cooking, and using a portable computer. Only a limited choice of occupations are possible because the patients might be confined to the hospital ward environment, and there is a lack of resources to obtain all objects needed for various occupations.

Once the patient has learned how to safely move about with their VAD and their medical condition/s have stabilised, they are encouraged to venture out of the ward. At this stage, occupational therapy sessions can take the form of cooking, computer usage, watering and care of potted plants within the occupational therapy department, and other social activities within the public spaces of the hospital. Patients are encouraged to dine at the hospital cafeteria, and in some cases, patients have gone shopping with the occupational therapist to the local shopping area, or enjoyed a leisurely stroll around the park opposite the hospital.

Encouraging engagement in self-care occupations
The occupational therapist aims to assist patients to become as independent as possible in their self-care occupations. Through successful experiences of doing those occupations, which they want and need to do, patients gain a stronger sense of self-esteem, sense of control and self-confidence. Hasselkus (2002) asserts that engaging in occupation is central to health and well-being and provides people with a sense of meaning and personal identity.

Patients are encouraged to actively participate as much as possible in all their daily self-care occupations, including eating, showering and dressing. Independence is assisted where necessary by the provision of assistive equipment, such as shower stools and temporary adaptive toileting devices. Patients are also involved in coordinating and choosing their daily activities, for example, through completing a timetable of activities and appointments.

Providing education and advice
Orford (2004) cites several studies (Deng et al., 2000; Jalowiec, 1994; Porter, 1995, as cited in Orford), which illustrate that waiting for a transplant can be a time of great stress and disruption to an individual’s physical, psychological and social well-being. While patients who have a VAD are aware that with proper care their chances of surviving to transplantation are now improved (Kennedy et al., 2003), they can still experience considerable anxiety. Results from a questionnaire given to patients with VADs revealed that patients’ most common concerns were infection, sleep difficulties, pain, noise of the device and the possibility of VAD malfunction (King, 2002).

The occupational therapist plays an important role in helping patients to use occupation to manage their anxiety. Patients are assisted to develop ways to reduce stress through encouraging them to engage in relaxing occupations, such as listening to music. The occupational therapist has also found that when patients are absorbed in meaningful occupation, they are less bothered by the considerable noise that the VAD produces.

Patients are encouraged to leave hospital after their VAD has been inserted because quality of life for outpatients is considered to be much higher than for a prolonged in-patient stay, despite the increased risk of developing infection and other medical complications that is experienced by outpatients (Levin et al., 1994;
Savage, 2003). However, it is recognised that many patients feel overwhelmed at the thought of leaving the security of the hospital (Buda & Kendall, 2001). The occupational therapist has a role to play in preparing the patient and his/her family for discharge from hospital.

Once the patient is medically stable, and is confident with the VAD use, the occupational therapist conducts a home visit to ensure that the patient can gain safe and easy access to all areas of the home. Specific concerns associated with ensuring the VAD can be operated safely at all times are investigated. For example, ready access to power points needs to be ensured, and the machine needs to be positioned carefully during showering to make certain it does not come into contact with water.

**Conclusion**

The use of long-term mechanical cardiac assistance is likely to become a vital alternative as the incidence of heart failure continues to increase, and the corresponding lack of donor hearts adds to lengthy waiting time until cardiac transplantation (Kennedy et al., 2003). While VADs have to date been used only as a bridge to transplantation, some authors (e.g. Deng et al., 2000; Levin et al., 1994) caution that these devices may need to be developed as an alternative to cardiac transplantation.

Occupational therapy has an important role in assisting patients with VADs to have a meaningful and satisfying occupational life. As the number of patients with VADs is likely to increase, working with this group of patients may also need to become an area in which more occupational therapists are employed.

**References**


