

Nursing Management and Healing of Pressure Ulcers among Older Adults in Residential Care Homes: A Case Study

Wong Yuet-ying*

School of Nursing & Health Studies, The Open University of Hong Kong, Hong Kong.

*Correspondence:

Moon WONG Yuet Ying, Assistant Professor, School of Nursing & Health studies, The Open University of Hong Kong, Hong Kong, Tel: (852) 27686881; Fax: (852) 27891170; E-mail: yywong@ouhk.edu.hk.

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Keywords

Pressure ulcers, Healthcare resources, Nursing care.

Background

Older adults are prompt to develop pressure ulcer because of several risk factors, including malnutrition, incontinence, physical restraints, prolonged bed rest, and nursing home residents [1]. Moreover, both advanced age and immobility are shown to be related strongly to the development of pressure ulcers. Impairments in skin integrity occur commonly because of pressure, shear, and friction. However, abrasions, rubbing of limbs and blisters have additional effects on fragile skin among older adults. The presence of pressure ulcer doubles the mortality rate of older adults [2]. This case study aims to describe a successful wound management by using multidisciplinary approach, comprehensive assessment, and nursing education toward caregivers and appropriate dressing materials.

Case Description

Mr. Chan is an 83-year-old married man who lives in a residential care home (RCH). He is 165cm tall and weighs 59.8kg (Body Mass Index: 21.97). He is chair bound and his daily activities are dependent on other people. Mr. Chan has a history of old pulmonary tuberculosis, hypertension, and old fractured hip for which he had previously undergone operation. He was recently diagnosed with dementia and the Mini-Mental State Examination scored 14/30. The geriatric outreach team followed up on his condition. Prescribed medications include Senna 15 mg noctepn, Lactulose 10mg bd prn, Panadol 1g QID prn, and Aqueous cream tds prn.

Mr. Chan was admitted to a hospital due to a urinary tract infection on January 6. During hospitalization, dopamine and neomycin

were given to him. Upon discharge on January 20, Cravit 500mg daily and Seprin 960mg BD were prescribed to him. Nursing consultation was performed when Mr. Chan arrived at an RCH. His general condition was stable, but a pressure ulcer was found on his left greater trochanter. The wound was 4cm x4 cm, stage 3 with slough tissue, and had a PUSH tool score of 13/17. In addition, an undermining around 4cm at 12-2o'clock area was noticed. Wound infection was found, and Mr. Chan was admitted to the orthopedic ward, where an excisional debridement was performed during the three-week hospitalization. His case was referred to the geriatric outreach team to follow up on his medical and wound condition in the RCH.

Case Analysis and Management Plan

Mr. Chan was assessed by a community nurse on February 23, a day after being discharged from the hospital. A stage 3 wound was located on his left greater trochanter, which had a heavy purulent discharge and a PUSH tool score of 13/17. Wound dressing using chlorhexidine gluconate disinfectant solution 0.05% and normal saline gauze packing with burn pad was prescribed to be applied afterwards.

One week later, PolyMem QuadraFoam was applied on Mr. Chan's wound after wound dressing. After using the new dressing material for one week, the wound size reduced from 4cm x 3cm to 3cm x 2.4cm (Figure 1) on March 09; the exudate amount was still heavy, with the discharge turning from greenish to light yellowish; and the PUSH tool score became 12/17. On March 16, the wound size decreased to 2.7cm x 2.2cm (Figure 2), the exudate amount was moderately heavy with light yellowish discharge and the PUSH tool score decreased to 11/17. The application of PolyMem QuadraFoam and burn pad was also continued. Another wound assessment was performed on March 29, wherein the wound size



Figure 1 (3 x 2.4cm)



Figure 2 (2.7 x 2.2cm)



Figure 3 (2.2 x 1.4cm)

decreased further from 2.7cm x 2.2cm to 2.2cm x 1.4cm (Figure 3), with undermining of 2cm deep at 12-2 o'clock area, exudate heaviness becoming much lesser than before, and a push tool score of 10/17.

In addition to medical follow-up and using appropriate dressing materials, other nursing care was advised to the RCH staff, including frequent turning of the patient's body and encouraging oral intake of high protein diet. In addition, Mr. Chan's son was advised to purchase pressure-relieving devices, such as ripple air mattress and heel protectors. These devices prevent further deterioration of the wound and avoid formation of new pressure ulcers. Mr. Chan's pressure ulcer was finally healed on April 25, after comprehensive interventions were provided for him in the past three months.

Discussion

The prevalence of pressure ulcers in long term care settings ranges from 3.6% to 59%, and the costs for pressure ulcer management reaches up to 11.6 billion in the U.S. [3]. In the past 10 years, the number of patients who had developed pressure ulcers during hospitalization has risen by 63% [4]. Pressure ulcers were found to be associated with a fourfold increase in mortality rates in both acute and long-term care settings [2]. Pressure ulcers consume a large amount of healthcare resources, including nutritional support, nursing care, length of stays in a hospital, and so on.

Mr. Chan developed pressure ulcer during hospitalization in which the wound condition deteriorated further. Pressure ulcers can develop easily, which contributes to more than 70% of the cases among older adults who are over 70 years old. The physiological changes happened among older adults make them prone to have pressure ulcers. In the aging process, the skin undergoes a number of changes, such as decreased local blood supply and reduced nutrient supply delivered to skin, which causes the skin to become thinner and more fragile [5]. In addition, photo-aging leads to flattened and thinner epithelial layers. The decrease in subcutaneous fat deposit and reduction of sebaceous gland activity lower the natural moisturizing factors, which result in skin dryness and water loss. Because of the above mentioned conditions, older adults have a higher risk for pressure ulcer development [2]. In addition to the aging process, several contributing factors are related significantly to pressure ulcer development, including poor nutritional status, dehydration, incontinence, unfitted furniture, and underweight [6].

Among several preventive methods of pressure ulcer among older adults, the most important is the maintenance of skin integrity. The level and duration of pressure and shearing force should be decreased, which is also regarded as the most effective preventive method of pressure ulcers. By repositioning the patient regularly, oxygen shortage in the tissue for a long period can be prevented, which can limit the chances of developing pressure ulcer [1]. Pressure-relieving devices play an important therapeutic role in treating pressure ulcers, such as ripple air mattress, the Propad mattress overlay, low-air-loss systems, and sitting cushions. These devices can decrease the pressure level over the bone prominent areas to prevent ulcer formation and promote wound healing. In Mr. Chan's case, he used ripple air mattress, heel protectors, and sitting cushion to improve wound healing.

Wound dressing materials provide a moist wound healing environment; such environment can speed up wound healing up to 40% compared to air-exposed wounds [2]. Occlusive dressing materials have the function of reducing wound pain, enhancing autolytic debridement, and preventing bacterial contamination. These occlusive dressing materials can be classified into broad categories of polymer films, polymer foams, alginates, hydrogels, hydrocolloids, and bio membranes. In Mr. Chan's case, PolyMem was used as dressing material. PolyMem, belongs to quadrafoam, is designed to cleanse, fill, absorb, and moisturize the wound throughout the healing process. A mild, non-toxic cleansing agent, F-68 surfactant, is included to facilitate wound healing. This cleansing agent is activated by moisture and gradually released into the wound bed. The cleansing agent's built-in cleansing capabilities reduce the need to clean the wound during dressing changes; hence, any disruption to the growth of healthy tissue can be avoided. The cleansing agent also expands to fill and conforms to the wound and absorbs exudate up to ten times of the cleansing agent's weight. By keeping the wound bed moist, the cleansing agent soothes and reduces traumatized newly grown tissues and reduces wound pain, which provides comfort from the wound. After using PolyMem on Mr. Chan's pressure ulcer located on his left greater trochanter, the wound size decreased significantly. This dressing material was proven to be suitable for this wound with good healing process.

Furthermore, necrotic debris increases the possibility of bacterial infection and delays wound healing. Several methods can remove necrotic debris, such as mechanical debridement with gauze dressings, surgical debridement, and autolytic debridement with

occlusive dressing or application of exogenous enzymes. Among these methods, surgical excisional debridement is the most rapid method in removing necrotic debris and is indicated in the infected wound [2]. Keeping the necrotic or infected tissues in an elderly person is dangerous; hence, the risk is greater than that of the anesthesia process during an operation [7]. In Mr. Chan's case, he was admitted to the orthopedic ward and underwent excisional debridement of infected tissue thrice. As a result, prompt medical treatment or operation can prevent further deterioration of wound condition and reduces the risk of sepsis and death.

Moreover, multidisciplinary team approach was implemented in managing Mr. Chan's pressure ulcer, which included a medical officer, a gerontological nurse, a social worker, an occupational therapist, and a dietitian. The medical social worker was referred for financial support, especially for waiving pressure-relieving devices. The occupational therapist was referred for comprehensive sitting assessment and professional advices on choosing the appropriate pressure-relieving devices, proper sitting posture, and duration provided to Mr. Chan's caregiver. Nutritional status is one of the most important reversible host factors that contribute to wound healing; several studies suggested dietary intake, especially protein, is important in pressure ulcer healing [2]. In Mr. Chan's case, his albumin level was only 26g/L, which indicates his nutritional status was not sufficient for him to cope with the extra nutritional needs in wound healing. After consulting the dietitian, Mr. Chan was suggested to take a high protein diet, comprising two cups of milk supplement per day with steamed egg at lunch time, to facilitate wound healing.

Conclusion

Pressure ulcer formation can be prevented by alleviating the risk factors, such as protecting pressure points with padding

and frequently changing the older adults' position. However, after identifying a pressure ulcer, detailed wound assessment and documentation is essential. A comprehensive gerontological assessment including nutritional, functional, and cognitive assessment should be done to identify the risk factors. Appropriate referrals should also be made for multidisciplinary support. By providing all-inclusive interventions, including adequate nutritional support, removal of necrotic debris, appropriate dressing materials, pressure-relieving devices, and the effort of a multidisciplinary approach, a successful pressure ulcer management becomes achievable.

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