

Healing a Stage IV Pressure Ulcer on the Elbow Using a Static Air Boot

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INTRODUCTION

The purpose of this article is to discuss the use and benefits of a static air support device used to treat an unusual Stage IV pressure ulcer on the elbow in a spinal cord injured adult (EHOB, 2009).

Pressure ulcers are a complex condition and can often times be life-threatening if left untreated. Pressure ulcers are caused by multiple intrinsic and extrinsic factors, but are typically initiated by unrelenting pressure and repeated exposure to shearing forces. Common risk factors for pressure ulcer development can be closely associated with age, impaired mobility, incontinence, poor nutrition, and chronic illness. (Cannon, 2004)

For the spinal cord injured patient, pressure ulcers can be a life-long complication that can often have significant effects on general health and quality of life. For the spinal cord injured patient, additional risk factors for the development of pressure ulcers include inadequate assistive personal, lack of financial resources, severe immobility, and noncompliance with acknowledged preventative behaviors (Garber, 2003) Studies show that approximately one-third of persons with spinal cord injury residing in the community are reported to have pressure ulcers (Fuhrer, 1993).

PATIENT

The client, Mr. D, is a pleasant, overweight, alert, and oriented 48 year old African American male who suffered a neurological injury to the cervical spine. His injury has left him paralyzed from the neck down for greater than ten years.

In addition to his paralysis, he also has a history of hypertension, pneumonia, sepsis, anemia, urethral stricture disease, multiple kidney stones, multiple surgical procedures for rod placement to the spine and fracture repairs, and multiple previous pressure ulcers. He is an occasional cigarette smoker.

Mr. D requires around the clock care, and services from nursing aides to assist with activities of daily living, transfers, wound care, meal preparation, and personal care. His caregivers are very inconsistent, which adds difficulty to caring for his medical needs. He has two teenage sons living with him who provide minimal basic care assistance.

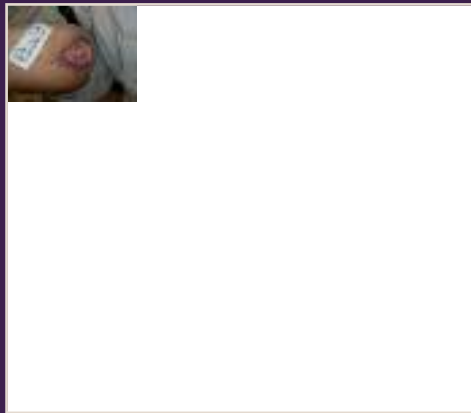
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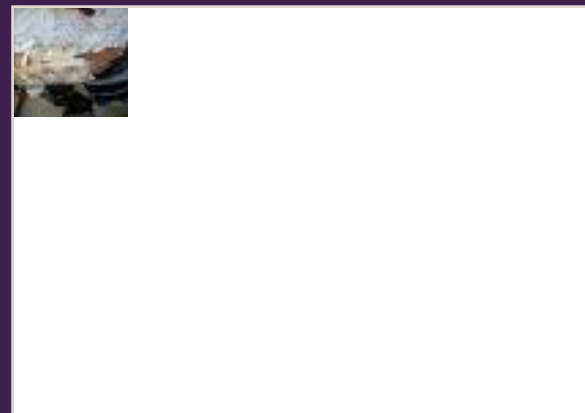
TREATMENT

Mr. D is a very familiar patient to the outpatient wound healing center and has had multiple pressure ulcers on various bony prominences throughout his course of treatment. He developed a new pressure ulcer on his right elbow, from constant pressure forced on his elbows while they are against the armrests of his powered wheelchair. The lack of repositioning his arms throughout the day contributed to the development of the pressure ulcers. At the initial presentation of the new pressure ulcer, it was a small and very superficial stage II, measuring 2.0 x 1.3 x 0.1 cm. His current caregiver was educated on the importance of repositioning at least every two hours and proper wound care. Silver sulfadiazine cream, a non-stick bandage, and paper tape was ordered to treat the wound in conjunction with thick layers of synthetic sheep-skin padding attached to his armrests to off-load his elbows from the armrests.

Mr. D followed up in the outpatient wound healing center after six weeks of treatment. At this time, there were considerable negative changes in his right elbow pressure ulcer. His pressure ulcer progressed to a stage IV and now measured 3.0 x 2.5 x 0.6 cm with 1.0 cm of undermining from the eleven o'clock to one o'clock positions. (Figure 1) There was slough tissue present in part of the base of the wound, some bone exposure, and a much more significant amount of wound exudate present. Mr. D also developed a new pressure ulcer on his left ischium that was noted at this visit. After careful investigation, it was found that his wheelchair seat cushion had lost air, resulting in increased pressure on his ischium, as well as his elbows because this put less space between his arms and the armrests on his wheelchair. His seating cushion was repaired and new orders for calcium alginate, gauze, and paper tape were ordered to treat his right elbow wound. Because the synthetic sheep-skin had not adequately off-loaded his elbows and did nothing to prevent the further negative progression of his wound, the foot waffle boot was applied to his elbow, placed on so that the "foot" portion of the boot cradled his elbow and the "leg" portion of the boot supported his forearm. (Figure 2) His caregiver was educated on how to provide the new wound care and to keep the waffle boot on at all times.



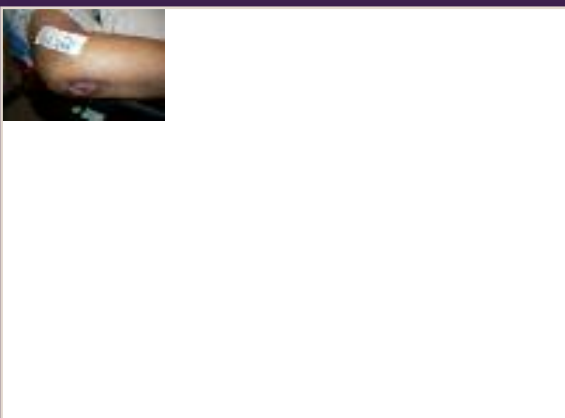
Stage IV pressure ulcer on the right elbow. Measured 3.0 x 2.5 x 0.6 cm with 1.0 cm of undermining from the eleven o'clock to one o'clock positions



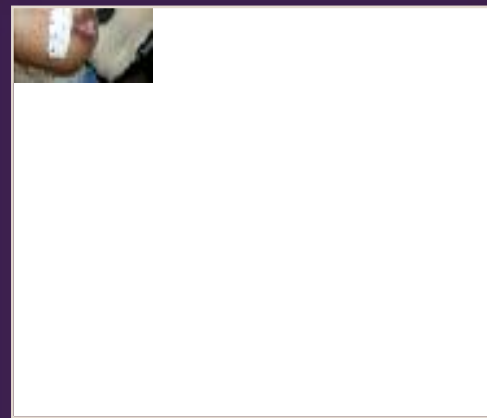
The boot applied to the right elbow/arm

The client returned for follow up in the outpatient wound healing center after four weeks. At this time, there were positive, dramatic results in the appearance of wound. The pressure ulcer on the right elbow now measured 1.7 x 1.1 x 0.3 cm. There was no longer undermining present, no bone exposure, and minimal wound exudate. (Figure 3) The same treatment of calcium alginate, gauze, and paper tape to the wound and the foot waffle boot to the elbow and arm orders were continued.

Approximately one week after his office visit, Mr. D underwent treatment for a very serious case of kidney stones, found to be obstructing the kidney. Due to his illness, he developed significant nausea and vomiting for approximately three weeks. During this time, he suffered from very poor, inadequate nutrition, anemia, and impaired kidney function. He required a short stay hospitalization and surgical procedure to resolve the kidney obstruction. At Mr. D's next office visit three weeks later, there was complete closure of the right elbow pressure ulcer despite his very poor recent health. (Figure 4)



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Complete closure of the right elbow pressure ulcer despite his very poor recent health.

OUTCOMES

This evidenced-based clinical study indicates positive progress in wound healing with the use of the conservative topical wound treatment and the foot waffle boot, used in an unconventional way. This treatment produced rapid rates of healing in a patient with a compromised health status during the time of treatment. This shows a healing rate of 100% over a twelve week period, which is quite outstanding considering his health status, risk factors associated with his spinal cord injury, and severity of the stage IV pressure ulcer.

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