

## **Preventing Heel Ulcers in Hip Fracture Patients**

By Theda Bordner, MSN, RN

Immobility is the primary cause of sacral and heel pressure ulcers occurring in hip fracture patients. In a nursing study conducted in a Northwest community hospital, the Heelift® device was tested as an intervention to prevent heel ulcers in fractured hip patients. Twenty-two patients using Heelifts® were compared to thirty patients who had not worn Heelifts®. Seventeen percent of the control patient group developed a Stage I or II heel ulcer during hospitalization, while none of the patients wearing Heelifts® developed heel ulcers.

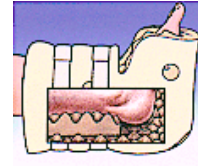
The incidence of heel pressure ulcers has been increasing. In six bi-yearly National Pressure Ulcer Prevalence surveys from 1989 to 2001, heels were found to be the only pressure ulcer site with an increasing prevalence rate (Ayello & Braden, 2001; Hil-Rom, 2001). In a study of postoperative heel ulcer prevention, Cheney (1993) reported heel breakdown could begin within one to two hours after surgery if pressure was not relieved.

When unrelieved vertical heel pressure is sustained, heel pressure ulcers are likely to develop in susceptible patients. These ulcers complicate the recovery of hip fracture patients by hindering or preventing progressive ambulation and by causing pain. Heel ulcers can lead to cellulitis and or osteomyelitis, both of which have the potential to cause sepsis and death. The development of pressure ulcers is considered by many to be a nursing-sensitive quality indicator of the outcome of care.

A review of evidence-based, best care practices reveals that patients at risk for pressure ulcers should have their heels suspended above the bed to prevent all pressure

from touching the mattress (AHCPR, 1992; Tilus, 2001).

Placing a pillow under each leg to elevate the heels is the usually recommended practice, but in a busy Emergency



Department or nursing unit, however, it is often difficult to locate two “extra” pillows and time-consuming to regularly reposition the pillows to maintain correct alignment. The pillow must not be too thin, which would allow the heels to touch the bed. The pillow must be thick and just firm enough to allow the heels to “float” over the edge without touching the bed or hyper-extending the knee. A product that elevates heels effectively without hyper-extending the knee or placing undue pressure on the tibia, and which does not require continual repositioning, would be an easier and more practical pressure relief solution. The researcher selected the Heelift® heel suspension boot for this study after an extensive search for a practical, effective, easy to use, reasonably priced, pressure-relief device. The product elevates the heel off of the bed using a foam elevation block inside of a foam suspension boot. This heel elevation prevents all pressure on the heel and if used properly, should theoretically prevent heel ulcers.

Study patients were admitted with a hip fracture during April, May and June 2002 and were asked to wear Heelifts. The patients wore the Heelifts® for the majority of the time that they were in bed both before and after their hip repair surgery. The intervention group was compared to a historical control group treated with the standard preventative care of pillows under the calf for heel elevation. The control group consisted of fractured hip patients admitted to the same hospital during April, May and June of 2001. The same three spring months were selected to increase the similarities in the two patient groups and control for extraneous factors.

The results: As expected, the study sample patients were elderly and primarily female. The control group (n=30) was mostly female (77%) with a mean age of 82 and an age range of 60 to 96. The intervention group (n=22) was predominantly female (79%) with a mean age of 79 and an age range of 50 to 99. The mean age of the males in the control group was 87.8, whereas the mean control group age was 82. Most of the sample group (72%) had an admission Braden of 18 or less, indicating that they were at risk for pressure ulcer development. More of the intervention group patients had “at risk” Braden scores than did control group patients (82% vs. 59%). The average admission Braden in the control group was 17.2 and, in the intervention group, 15.7. Length of stay for the control group tended to be shorter than for the intervention group, with 60% of the control group staying 1 to 4 days and 77% of the intervention group staying 5 to 10 days. The average length of stay for the control group was 4.9 days and for the intervention group, 5.63 days.

The co-morbidities found were those expected among elderly patients. Half (50%) of the sample had a history of anemia, and 56% received a transfusion during their hospital stay. Almost half (48%) of the sample patients had a cardiac history, 48% suffered from hypertension, 25% had a history of atrial fibrillation, and 17% had suffered a stroke. Over one-third (36.5 %) of the sample had a history of dementia, with 33% of the control group and 41% of the intervention group suffering from the disease. Surprisingly, only 9.6% of the patients had a history of peripheral vascular disease, only 11.5% of the patients had diabetes, and only 25% had osteoporosis listed in their history and physical, although the presence of the hip fracture would suggest that more patients

actually had osteoporosis than indicated. (A table is included that could be substituted for this discussion—to save space, or for ease reading).

At the study hospital, the pre and postoperative use of Heelifts® have been added to the Care Pathways for Hip Fracture patients. The Orthopedic surgeons were pleased with the results of the study and have stressed that they want the suspected hip fracture patients to continue to receive Heelifts® in the Emergency Department. The nurses from the local nursing homes appreciate having the Heelifts® sent with patients who are transferred to them. The pressure ulcer prevention and treatment patient care plans call for the use of Heelifts® to prevent heel ulcers. Nursing staff has reported that they find the Heelifts® much easier and more effective to use than pillows for heel elevation.

#### References:

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(The following table could be used to substitute for paragraph seven on comorbidities to save space)

<b><i>Criteria</i></b>	<b><i>Control</i></b> April, May and June 2001	<b><i>Intervention</i></b> April, May and June 2002
Group Size	30	22
Average Age	82	79
Gender	77% Female	79% Female
Average LOS	4.9 days	5.63 days
Average ER Time	2.6 hrs	2.7 hrs
Transfusions	47%	41%
At Risk Admission Braden (18 or below)	59%	82%
Cancer History	13%	32%
Diabetes	7%	8%
Dementia	32%	37.5%
Hypertension	57%	36%
History of CVA	23%	12.5%
Cardiac History	50%	46%
Osteoporosis	20%	33%
PVD	7%	17%
% Partial Total Hip Repair vs ORIF Repair	29%	52%
Pressure Relief Support Surface Used	26%	33%
Heel Pressure Ulcer	17%	0%