

# The Lived Experience of the Soft Heel Cast, Management of Heel Pressure Ulcerations in the Acute Setting, an Interpretative Phenomenological Study

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## Abstract

**Background:** Prevention of pressure ulceration is a key quality indicator throughout both acute and community settings however, good quality evidence and national guidance on how to prevent heel pressure is limited [1]. An alternative offloading device a soft heel cast has been introduced into Podiatric practise. This qualitative research study aims to seek the patient perspective of the soft heel cast.

**Methods:** Patients who had been provided with the soft heel cast were purposively sampled via a recruitment letter. The aim was to recruit between six and eight participants. All participants opted in and provided their written consent to take part in the study. The data was collected using the exemplary method for an Interpretative phenomenological approach (IPA) [2]. All interviews were transcribed and the six stages of analysis appropriate to IPA followed meticulously.

**Results:** The analysis identified three inter-related Superordinate themes. It revealed the intimate relationship between the most complex and powerful theme of pain alongside, 'ergonomics of the optimal offloading device' and the participant's 'ability to cope'. Five sub-themes were identified and discussed; suffering, comfort, size, identity and ulceration duration.

**Conclusion:** Pain is a complex and subjective phenomenon which cannot be measured directly rather established by the person experiencing it [3]. Pain is unique and often difficult to describe, as a consequence it remains poorly understood and inadequately managed. Quality of life should be considered an equal factor alongside the well-known triad of 'how to heal a wound'. This research clearly highlights how patients often suffer in silence.

**Keywords:** Heel ulceration, Offloading, Soft heel cast, Interpretative phenomenological analysis, Pressure ulceration and Pain

## Background

Hospital acquired heel pressure ulcerations can affect between 5 and 32 percent (%) of all service users admitted to acute care, with subsequent treatment costing the National Health Service (NHS) up 3 million pound per annum [1]. There are potential devastating consequences for the Diabetic service user with an estimated 70% chance of the ulceration deteriorating or the resultant loss of a limb [4]. Prevention of pressure ulcerations is a key quality indicator throughout NHS organisations. Unfortunately evidence for the prevention of heel pressure ulcerations remains limited [1]; with subsequent limited national guidance to health care professionals. An alternative offloading device, a soft heel cast has been introduced into Podiatric practise.

It is targeted at those individuals with a high risk or ulcerated site on the calcaneus. If ulceration is present this should be dressed following a suitable care plan, a thin layer of soft ban is wrapped around the foot to prevent the casting tape from irritating the skin and a tubifast applied over the top. Delta cast-soft tape is moistened, starting at the dorsum of the mid-foot overlapping the tape around the heel and finishing at the ankle joint to create a small cup. Four layer of the delta-cast soft are added to the pre-identified high risk/ulcerated site into a size overlapping the vulnerable area and the cast is allowed to dry. The soft cast is trimmed to be free from the medial and lateral malleolus and the Achilles tendon to prevent the risk of rubbing, creating a bespoke soft heel cast, which is secured underneath a bandage. There is currently no robust good quality evidence to support the use of this device. Hutchinson, 2010 [5] published an audit of 12 participants all whom benefited from the use of this device with a reduction in ulcer size.

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It is widely accepted that the Total Contact Cast is regarded as the gold standard to offload plantar foot ulcerations; one of the key attributes is 'forced' compliance owing to the fact it is made to be non-removable by the service user in-between appointments. Similarly a soft heel cast can be made non-removable applied and secured underneath a bandage. Service users can also mobilise whilst wearing the heel cup. This differs to current heel offloading devices available in clinical practise.

This research is focused particularly on the personal experience and the lifestyle impact of the soft heel cast to the participants. It also aims to gain new knowledge on different acquired heel ulcerations. To date there has been no published qualitative evidence to support the use of the soft heel cast and therefore, it is unknown what the impact of this device is to the patient. Secondary; this research study may aid health-care professionals with their decisions when selecting an appropriate offloading heel device.

## Methods

This is an interpretive phenomenological analysis (IPA) study with a focus on personal meaning and sense making. This is appropriate for people who share a particular experience.

## Ethics

Ethical approval was obtained from the University of Brighton, Faculty of Health Research Ethics and Governance Committee (FHREGC), the NHS ethics committee Integrated Research Application System (IRAS) and approved by the Royal Free London research and development department.

## Inclusion and Exclusion Criteria

Any patient that had been provided with a soft heel cast as part of their heel ulceration treatment at the Royal Free Podiatry department was included, if they were over the age of 18 and able to provide written consent to take part in the study.

## Recruitment

All patients who had been provided with the soft heel cast offloading device at the London based hospital were identified via the internal podiatry database. All potential participants identified that met the inclusion criteria were purposively sampled (this is theoretically consistent with the qualitative paradigm) and contacted via a recruitment booklet. A total of 20 booklets were posted out to potential participants. To opt in and be included in the study the participants were required to telephone or email the principal researcher with the contact details provided in the recruitment booklet. Access and contact was only permitted through professional work credential. Once the participant volunteered to take part in the study an interview date and location was agreed. The aim was to recruit between six and eight participants [6]. This is deemed as an appropriate number of participants for this type of research [6].

## Consent

The principal researcher orally reiterated the significant points on the 'recruitment booklet' to ensure the participant was aware

what they were embarking on, and all outstanding questions were answered. The participant signed two copies of a consent form, one for the participant and one for the researcher's records. It was explained to each participant that pseudonyms would be used to replace their original name. It was also explained to the participant that the data will be used for research publications and conference presentations.

## Interviews and Research Questions

The data was collected using the exemplary method for IPA; individual semi-structured interview and all were digitally recorded [2]. This method was chosen to allow the interview schedule to help facilitate the participants to tell their own story [7]. All interviews lasted approximately one hour and were undertaken in the library at the Royal Free Hospital site [6].

To unpick the relationship between lifestyle, heel ulcerations and the soft heel cast with a focus on answering the research question, the research schedule included questions:

- Could you give me a brief history of when you started with heel ulcerations?
- Can you describe how it occurred in your own words?
- How does your lifestyle change when you have heel ulceration?
- How does the diagnosis of heel ulceration make you feel?
- What does the soft heel cast mean to you?
- Thinking about other offloading devices you have been prescribed, what do they mean to you?

## Data Storage

All signed consent forms will be stored in a locked cabinet at the University of Brighton research supervisor's office, and will be kept for up to 10 years post completion. The storage of the digital interview recorders and the transcripts of those recording will be stored on an external hard drive, password protected with access only to the researcher and research supervisor. The transcription was undertaken by the primary researcher. Participant's names will not occur on the file name [8].

## Analysis

There are six main stages to analysis within an IPA study, as highlighted by Smith, Flowers and Larkin, 2009 pp82-105, [6]:

- Reading and Re-Reading.
- Initial Noting.
- Developing emergent themes.
- Connections across emergent themes.
- Repeating the process for the next case on its own terms.
- Looking for patterns across the cases.

All of these stages were meticulously followed during the analysis period.

## Results/ Discussion

The analysis identified three inter-related themes. It revealed the intimate relationship between the most complex and powerful Superordinate theme of pain and the remaining Superordinate themes; ergonomics of the optimal offloading device (+pain) and

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coping (+pain).

I will explore the experiences of 6 participants all linked by their diagnosed heel ulceration and prescribed a soft heel cast as part of their wound care plan. In detail it will describe the group's similar experiences, but at times also specifically focus on individual experiences.

### **Pain 1:0**

Pain is a complex and subjective phenomenon which cannot be measured directly rather established by the person experiencing it [9]. Pain is unique and often difficult to describe as a consequence it remains poorly understood and inadequately managed in most health care settings. Participants differed with their explanation of pain and its overall significance to their suffering with heel ulceration.

### **Suffering**

When pain was a constant presence it was described in a graphical manner with multiple metaphors. At times reference was made to a previous painful experience which helped to provide a direct comparison, establish its severity and, highlight its overall importance to the participant's heel ulcer experience [9].

'It is something unknown I was in terrible pain it was unbelievably bad. It was worse than childbirth. If you haven't got pain then life is wonderful. If you are out of pain then you are happy.'  
[Shelley Interview Transcript]

'If the pain gets too bad I go to bed and eat pain killers like sweets'  
[Allen Interview Transcript]

'It starts with a little cut- and its chaos. Especially on the heel it kills you the pain. Would you believe it if you scale it to 10 it was a 9. Yeah, I suffered a lot with my heel.'  
[Vincent Interview Transcript]

Pain was such a significance in some of the participants lives it became a beacon as to whether they trusted a particular external offloading device.

When referring to the soft heel cast;

'It doesn't add any pain, it works- no brainer.'  
[Allen Interview Transcript]

'It helps with the relief I can't praise it high enough. If you put your foot up on a pillow at dialysis one way or another you are going to slide and rub it. I don't feel anything now, before you could feel it through the dressing.'  
[Sue Interview Transcript]

'Well it didn't hurt my foot; it must have been a plus. I was not in any pain so it was obviously a help.'  
[Shelley Interview Transcript]

It was noted that all participants were not experiencing the same

level of pain. Diabetic foot ulcer pain is associated with neuropathy, peripheral vascular disease and multiple infectious processes. Kunan et al 2010 reported that there is no definite evidence why some suffer from pain whilst others do not [10].

The participants who were free from pain throughout their treatment did not view pain levels as a significant negative experience; Does it cause you any pain?  
'Now and again not alot.'  
[Roy Interview Transcript]

Did you have a lot of pain with your heel?  
'No, I have no feeling in my feet- completely safe'  
[Abdul Interview Transcript]

What was indirectly highlighted is that the participants who were suffering at the time did not highlight their extreme pain to any health care professional. In addition to this they did not receive a thorough assessment of all components of psycho-social distress. Ideally when considering individualised care plans for any patient all aspects of their treatment should be meticulously evaluated. Unfortunately the time available to undertake this assessment is not always available.

It can be questioned whose specific role this is as part of the Multi-Disciplinary Team (MDT)?

The reduction of pain and suffering within the daily lives of all patients should be paramount; however as noted, extreme pain levels are not always voluntarily communicated to the health care professional involved with patient care. It would be beneficial to both the patient and health-care professional if pain pathways were readily available to all with direct access to experienced expert pain clinicians.

### **Ergonomics of the optimal offloading device + pain**

Pain and discomfort individually affected the overall participant opinion with regard to different offloading devices. Gold standard offloading devices are often found to be favourable by health care professionals based solely on their ability to offload. Although the offloading device may be of benefit to the patient and the treatment of their heel ulceration, it should be unacceptable to increase pain and discomfort to achieve pure 'clinical' results. It is clear how clinical and real worlds can collide so easily with compliance and patient discomfort in the centre. Siersma, agreed with this and found that the determinants of health related quality of life (HRQOL) may be different from the factors which have been noted to improve healing rates [11].

### **Comfort**

Suffering and discomfort were separated as two different experiences. They do remain distinctly intertwined but with different parameters as to what each experience meant to each participant. Participants alluded to suffering when referring directly to their heel ulceration or associated long term condition. Discomfort was described when considering their prescribed external offloading device.

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The participants were very specific about what offloading devices they found to be acceptable for use. The soft heel cast was viewed as favourable;

‘It hasn’t changed my balance, how do I put it, it’s changed me, I walk better with it. Because of the heel cup it’s healed up quicker, it’s healed up big time’

[Vincent Interview Transcript]

‘I would recommend it (the heel cast), it’s better than them boots. It’s more comfortable. Overall this one has been the best so far’

[Roy Interview Transcript]

‘The heel cup, you don’t even know you have got it on. It doesn’t dig in anywhere- it is really comfortable. If it was rubbing anywhere I would let you know, I really do think this (heel cup) has helped. It has been marvellous, especially when my foot has been really bad. It was comfortable very, very comfortable.’

[Sue Interview Transcript]

‘It was very comfortable. I found it very comfortable. I thought it was excellent.’

[Shelly Interview Transcript]

‘If you say you have to wear the heel cup forever it will not be a problem’

[Allen Interview Transcript’]

‘It has protected me, it is a good idea’

[Abdul Interview Transcript]

Other offloading devices were prescribed to some of the participants prior to the soft heel cast and direct comparisons were made.

‘Oh I’ve had that (blue boot) once I had the angioplasty. They told me to wear it in bed and that. It’s not really comfortable to be honest with you. It kept coming off I was uncomfortable with it.’

[Vincent Interview Transcript]

‘No I won’t wear it. I just find it very uncomfortable. I tried it on in clinic, and just felt uncomfortable in it erm, and it seemed a right palaver. I found it very uncomfortable, very clunky and very painful.’

[Allen Interview Transcript]

‘It was terrible. I wasn’t comfy; the leg wasn’t comfy in it. Yeah I wore it but I didn’t like it. I wore it here when I was in the hospital and it’s just too uncomfortable. It makes you sweat. It was terrible, I couldn’t breathe.... well, my legs couldn’t!’

[Roy Interview Transcript]

Siermsa et al, reinforces the participant’s feelings that there can be an overwhelming negative emotional impact on service users when mobility is limited, leading to a negative cascading effect in every HRQOL domain [11]. Interestingly pain and discomfort are individual factors effecting HRQOL when diagnosed with a foot ulcer.

What must be considered when prescribing any removable offloading device is that, if the patient does not like the device quite simply, it will not be worn.

‘When you got your blisters were you wearing your Prevalon Boots?’

‘Nah, they put them on me when I was in hospital, it made my legs sweat so I took them off’

[Roy Interview Transcript]

### Size

The size of an offloading device was a separate complaint made by the participants of this research. It was felt that the a larger sized offloading device can directly increase levels of pain and should be considered to be, an important, individual and confounding factor. The participants had strong opinions on the offloading devices they had received,

‘It was very clunky. They asked me to wear it again and I think I did wear it for a few days erm, and I just found it clumsy. It’s the size.’

[Allen Interview Transcript]

‘It’s too big and plus I can’t sleep lying down on the bed. I sleep in the armchair with my feet up on the chair. Every time I used it my leg used to fall off the chair.’

[Vincent Interview Transcript]

‘You know I would go under the covers and I’ve got this great huge thing. I didn’t really like it very much.’

[Shelley Interview Transcript]

‘This (Heel cup) fits easier; it fits more into your heel init its fits more solid around. It’s like a sandwich, not clumsy like the blue boots- and it just fits in nice.’

[Roy Interview Transcript]

‘My worry when you suggested trying and starting using the heel cup that it was going to be annoying but that isn’t the case at all. I don’t notice it at all.’

[Allen Interview Transcript]

‘It is good for protection, because once it is there you don’t notice it is then, and then there is no problem. I don’t notice it at all.’

[Abdul Interview Transcript]

Some participants noted most discomfort was experienced from their heel ulcerations during the night. Sleep disturbances with or without an external device can be common [12]. Holt agreed and reported any disease that causes or contributes to chronic pain can lead to sleep problems, nocturnal exacerbations of neuropathic pain with an abnormal increase in sensitivity is common [13].

Within the scope of the opinions of the participants of this research it has become clear that any external offloading device must not increase pain or discomfort or be too cumbersome and cause



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further ‘annoyance’ to the participant. This is often a difficult challenge to achieve, whilst still effectively offloading ulceration, compromise is a key factor.

### **Coping + Pain**

Emotional distress can be caused by living continuously with the burden of problematic Diabetic management and has been categorised as a disease specific determinant of HRQOL. Baek, 2014 reported that medical patients with more social support experiences less emotional distress and better adjustment [14]. It has been suggested that health is socially constructed and perspectives vary and alter with age and circumstance [15]. It became apparent during this research that health was compared with immediate peers and is a complex and individual concept. Some viewed health in functional terms with the ultimate aim ‘the ability to cope’.

‘I have been in and out for a chest infection. I can’t lie flat at all. My eyes are deteriorating. Most of my week is now taken up by Dialysis and it wipes you and you’re very tired and weary. My health is fine.’

[Roy Interview Transcript]

‘Coping’ is often a word to describe a situation which is less than ideal, and was a word used often by the participants. It must be considered that when prescribing an offloading device that is functionally restrictive, you could be affecting the participants’ perception of their ability to cope and in turn, their feelings on their individual health. The same should be considered when issuing a device which can cause an alteration to the level of pain and comfort.

In order to fully understand why offloading devices and their external influence can cause such an impact on the participant’s life, identity and pre-ulceration lifestyle must be explored.

### **Identity**

When participants were reporting the impact that heel ulceration had on their lifestyle they all adopted a similar method of ‘coping’. Identity was separated into three separate segments; pre-ulceration, current situation and their hopes and aims for the future. The periods of their life did not seem to flow or link together in a smooth transition as one might think it would. Interestingly, it has been found that patients who made a direct comparison with ‘how they were before’ experienced feelings of uselessness [16]. Seemingly by separating their life into smaller segments the direct comparison of pre-ulcer lifestyle and future lifestyle was less daunting to the participants.

An overtly positive tone was portrayed throughout the interviews giving the perception based on this alone that the participants were effectively ‘coping’ with their current diagnosis. The words and phrases used to describe their current situation were in direct opposition of this positive tone. All ‘accepted’ their situation with an air of fatalism. It is not surprising that depression and social isolation have been described to influence feelings of anger and

frustration. The participants of this research described in detail the lifestyle changes which occurred as a result of their ulceration [12]. ‘I used to own my own business. What can do you? Life goes on. I am being strong for my grandchildren; I still have life ahead of me. I don’t let it get to me.’

[Vincent Interview Transcript]

‘I had to pack my job in, I worked at a University. You work all your life to go somewhere- end up going nowhere. I wanted to go here there and everywhere and none of it ever materialised. You have to grin and bear it, everyone has their down days and it doesn’t get you anywhere.’

[Roy Interview Transcript]

‘My lifestyle wouldn’t change, as I am now retired.... I have had to retire because I lost the clients I had. There is no point looking for new ones now, because I can’t get into the city. I haven’t been on the tube for a year; I haven’t been able to drive. I can’t walk fast. I have let my license expire. I think I am alright, I will manage. It does get you down but I am so used to it now, I am over it.’

[Allen Interview Transcript]

‘There is not a lot you can do about it, I am optimistic that the main thing. I would say I have disability which I hope I can cope with, but I haven’t been able to do things; I haven’t been able to go anywhere. I haven’t had a holiday. I couldn’t meet friends. You have to adjust and change your way of thinking, try to do the same things, but do it differently. You have to moderate what you can do. When you can’t move and can’t go out its terrible. It’s not the end of the world.’

[Shelley Interview Transcript]

‘I have done exactly what you’ve said and I haven’t walked on it, I was having physio and walking up and down, corse that’s all stopped.’

[Sue Interview Transcript]

There are many different sub-theories which encompass the ‘coping theory’ some of which can be directly identified to effect ulceration healing. To discuss all in detail is beyond the scope and not the aim of this research project. To provide one example; confrontation coping describes individuals with confrontational styles. Those individuals who are deemed to be controlling and competitive are likely to challenge the advice of health care professionals and be less willing to adhere to treatment recommendations; thus affecting ulcer healing [17]. It would therefore be useful for all health-care professionals to acquire the skills to identify which coping strategy their patient is adopting.

Some participants alluded to their need for external support to help them to cope with their lifestyle alterations. Baek reported that medical patients with more social support reported better adjustment and less emotional distress [14]. Depressive symptoms were lower with those individuals who reported a high social support network.

One participant met her need for support with opposition; interestingly this was when the external support was sourced externally via a carer, rather than a direct family member. For this participant it signified the loss in her ability to cope with daily activities, all of which was directly linked to her heel ulceration. 'We have to rely on assistance now. It is not the end of the world; you just have to accept you have to rely on help.'

[Shelley Interview Transcript]

Participants who received support from a close family member seemed to accept this support, however at the same time did not want to lose their personal identity.

'I feel I have good support, I am reliant on my wife. I don't want to be too reliant, which I have been at times.'

[Allen Interview Transcript]

'My wife does all the running about'

[Vincent Interview Transcript]

My son is 1 and half miles away both of them they are working. But they send me the dinner and I warm it up and eat it.

[Abdul Interview Transcript]

### Ulceration duration

The participants of this research considered the time scale for the ulceration to heal to be an important independent factor to their overall emotional health and well-being.

'This little bloody thing turned into a nasty ulcer and is taking a long time, from stubbornness this ulcer is one of the worst, time wise. All the other times the toes have been amputated which isn't nice at the time, but you get over that quicker. It's the most dangerous because of where it was, and when I was getting infection in it the risk of losing the leg is high.'

[Allen Interview Transcript]

'It's taken such a long time for it to heal up. They have just literally put me on the transplant list because I saw the vascular surgeon last week, she wrote to the doctors. So that's one good thing.'

[Vincent Interview Transcript]

'Oh I haven't had one last as long as this. It has gone on the longest, but I am thankful. With the others they haven't gone on as long as this, before they have taken it off, with the little wound they took the bone off.'

[Sue Interview Transcript]

Ultimately the longer the wound takes to heal the longer the participant is suffering from a restricted and sub-optimal lifestyle. Participants had also previously experienced minor and major amputations and were acutely aware of the possible risks when ulceration is not healing. Uncertainty with ulcer healing rates has been noted to be an influence toward the feelings of frustration which was mirrored in the words of the participants. Depression can also be associated with an increased healing time [12].

### Conclusion

Participants in this research could be considered to be 'expert patients'. They have highlighted the well know gaps in the health care system:

- Effective pain management pathways.
- Access to psychological support for the assessment of sleep patterns, coping mechanisms and symptoms of depression.

Areas which currently are critically under-funded and therefore the teams placed within acute and community settings are limited with access only for those in crisis.

The participants described the huge lifestyle alterations they have to make when suffering from heel ulceration. As health-care practitioners we should aim to;

- Not increase the baseline pain via offloading devices.
- Do not provide cumbersome offloading devices which unnecessarily restrict the patient lifestyle.

Within a single appointment is it often difficult to focus entirely on the patient and their individual requirements whilst still assessing their medical needs. Support from psychological teams would be of benefit to those patients suffering from long-term ulcerations and restricted lifestyle to gain a full picture on how they are coping. Joint decisions could then be made and, if necessary cumbersome restrictive offloading devices provided to the patient when they are effectively coping with their diagnosis. This may increase compliance levels, improve patient practitioner-relationships and enable a more appropriate use of NHS restricted time.

### Limitations

All participants have eluded that the soft heel cast had been comfortable and some advised that the pain reduced as a result of its application. What must be considered that the participants had also received other medical interventions which could have reduced their baseline levels of pain such as, vascular surgery (angioplasty/bi-pass) and/or an alteration to their pain medication? The results of this study alone cannot advise that the soft heel cast directly reduces pain in heel ulceration.

As Podiatric practise continues to strive for excellence and with the increasing demand to work with high risk patients only, heel pressure ulceration both prevention and treatment is highly topical. Further research is clearly necessary to allow health-care professionals to establish an agreed care pathway to both prevent ulceration from occurring and aid with offloading once one is present. The soft heel cup, within the restrictions of this research is clearly viewed to be favourable by the participants. This is mainly due to comfort and the size of this device. It is not unreasonable, taking into account the advances in medicine to provide a non-restrictive, pain-free offloading device to patients. Without further research into this area of practise, patients will continue to be non-compliant with expensive cumbersome devices and continue to suffer from slow healing wounds.

### List of Abbreviations

‰: Percent, IPA: Interpretative phenomenological approach,

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