



Skin Irritation Case Study

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Diagnosis and History

MR X is a 77 year old gentleman who had a right CVA in early 2010. He has a left hip replacement. His medications are Aspirin, Lansoprazole, Ramipril, Felodipine, Baclofen and Simvastatin. He lives alone, but is supported by family members. He was fit and healthy prior to the stroke. A relative has attended each appointment due to MR X's communication impairments and to support him in understanding and operating his device.

Objective assessment

Mr X had flickers of active dorsiflexion but no active eversion on his affected side, at his initial assessment. Mr X had an excellent response to stimulation with a strong footlift with an appropriate balance of dorsiflexion and eversion. The compensations of circumduction and hip hitching were however not dramatically improved with stimulation, due partly to a lack of knee and hip flexion but also due to ingrained, habitual movement patterns.

[Click link for video of non-stimulated gait pattern](#)

10 metre walking tests demonstrated at 19% increase in walking speed and a reduced effort of walking of 1 point on a 10 point Borg rate of Perceived Effort Scale, with stimulation. Mr X was noted to have dry skin and was given advice regarding moisturising the skin with E45 cream at the end of each day. Standard advice about hydrating the electrodes after each use with tap water, replacing them on acetate sheets and keeping them in sealed plastic envelope was also discussed.

It was also noted on Day 2 set up that information retention was an issue for this gentleman and he was issued with photographic support for electrode positioning, skin was marked around the electrodes, in addition to the provision of advice leaflets. It was reassuring that he had a very attentive and supportive relative.

Device set up was as follows: ODFS Pace Software V1.2.04

Electrodes	Standard position/polarity
Waveform	Asymmetrical
Current	70 ma
Rising ramp	200 ms
Extension	200 ms
Falling Ramp	50 ms
Frequency	40 Hz
Timing	Adaptive
Exercise 45 mins	On 3 Off 5 Ramp 1

Six week follow up appointment

Mr X reported that he had become independent in the use of the device after 5 days of support. He presented with significant skin irritation which had not stopped him using his device. He had however not used the device for the last week as he had cut through the leads with scissors.



Negative electrode
at Head of Fibula.

Discrete blisters
(approx. 6) with
heads removed.
One healing with
scab



Positive electrode at
Tibialis anterior

A larger area with
skin discoloration,
as well as numerous
mainly healing
(scabbed) blisters

A Skin Irritation Form was completed as standard in this situation. Additional findings were:

- Irritation had been present for approximately 28 days
- Mr X has a history of dry, itchy skin

Action taken at this appointment:

- Changed to symmetrical biphasic waveform
- Stopped exercise stimulation
- Plan to treat affected skin with Eumovate (mild non-prescription steroid) for maximum of one week (then consult GP if ongoing problems)
- Moisturise skin of leg with E45 twice in the evening
- Alternate electrode positions daily (three potential combinations away from irritation).

To see videos click on pictures below



Pop Fossa/Ant HoF



Pop Fossa/Inf HoF



Ant HoF/Peroneal

Analysis

Mr X has risk factors of dry and itchy skin but also all his current medications have potential skin related side effects. His stimulation waveform was not charge balanced, theoretically presenting more stress to the skin.

Plan

Mr X was advised that he should contact the team if the skin problems do not come under control, otherwise his skin would be reviewed at the 3 month follow-up.