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Skin Irritation Case Study

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Following on from Part 1 we continue the story of Mr X.

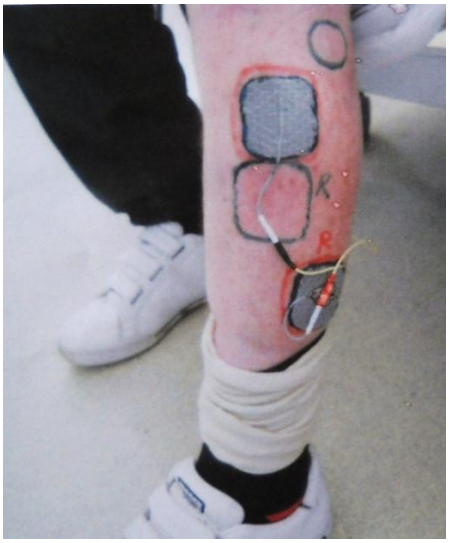
Summary of Part 1 (click the Link to Part 1)

MR X is a 77 year old gentleman who had a right CVA in early 2010, prior to which he was fit and healthy. He lives alone, but a relative has attended each appointment due to his communication impairments and to support him in understanding and operating his device. Mr X gained a very good initial response to stimulation, but quickly developed skin irritation.

Standard practice for skin irritation was commenced at his 6 week follow up appointment which involved:

- The identification of three new electrode positions which would allow Mr. X to provide rest to areas of skin without stopping use of the stimulator.
- Changing device output to symmetrical waveform
- Decreasing exposure of skin to the electrical current, by stopping exercise stimulation
- Regular moisturising of skin with E45 cream
- Short term use of Eumovate cream (mild steroid)

3 Month Appointment



At this appointment skin condition was found to be only slightly improved, following using alternative electrode positions. Mr X's sister has been unwell recently and unable to visit and provide support.

She believes Mr X has not been confident to rotate electrode positions to all 3 positions, having lost the pictures he was given at the last appointment.

Mr X has been using his device all day, every day. Patient reported benefits were: increased foot clearance, decreased effort and increased speed of walking.

Used stick at Set Up appointment. Now not using a stick indoors.

Mr X achieved an excellent orthotic effect from stimulation. The deterioration in un-stimulated walking speed in the table below relates to the fact that he was not using a walking stick, which he did at his Initial Set-Up.

Skin care issues were reviewed with Mr X . To simplify set up, two electrode combinations only provided to allow resting of skin. Skin was marked and photographic documentation issued as a reference for electrode placement.

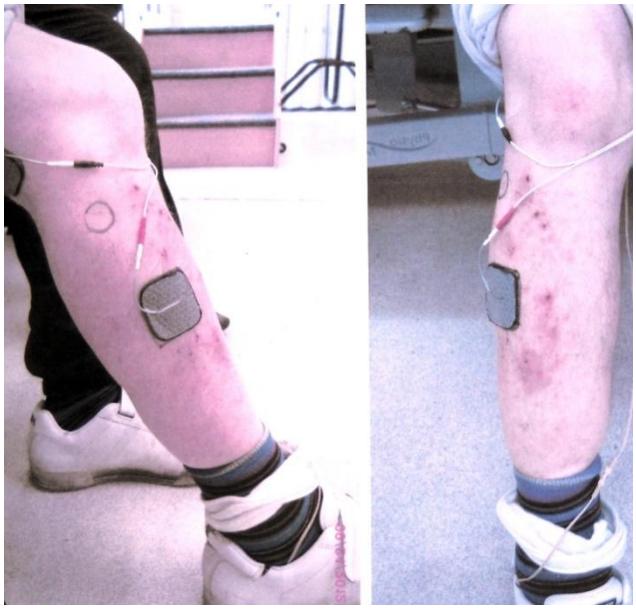
3 Month Appointment

Outcome Score	Result	Comments
Walking speed with FES 10M (orthotic effect)	0.34 m/sec	
Borg 10 point effort score with FES 10M (orthotic effect)	2	
Non-stimulated walking speed 10M (carry over effect)	0.26 m/sec	Slower as now not using stick
Non stimulated Borg 10 point effort score 10M (carry over effect)	7	Slower as now not using stick

6 Month Review

Continued daily use all day and benefits of FES widened now, allowing consistent walking indoors without stick. Anxiety regarding falling has decreased 5 points on Visual Analogue Scale. Overall Mr X walked slower at today's appointment. The reason for this was not clear, but the Orthotic effect of stimulation was greater than at 3 months.

Outcome Score	Result	Comments
Goal Attainment Scale	68	More than expected positive outcomes
Walking speed with FES 10M (orthotic effect)	0.28 m/sec	Greater orthotic effect than at 3months but slower overall
Borg 10 point effort score with FES 10M (orthotic effect)	2	Less dramatic improvement in effort perceived than at 3 months
Non stimulated walking speed 10M (carry over effect)	0.17 m/sec	Decrease in un stimulated walking speed from 3 month appointment
Non stimulated Borg 10 point effort score 10M (carry over effect)	4	Whilst walking speed deteriorated this was not accompanied by a perception of greater increased effort



Electrode positioning was poor at today's appointment, probably as an attempt to place them on healthy skin.

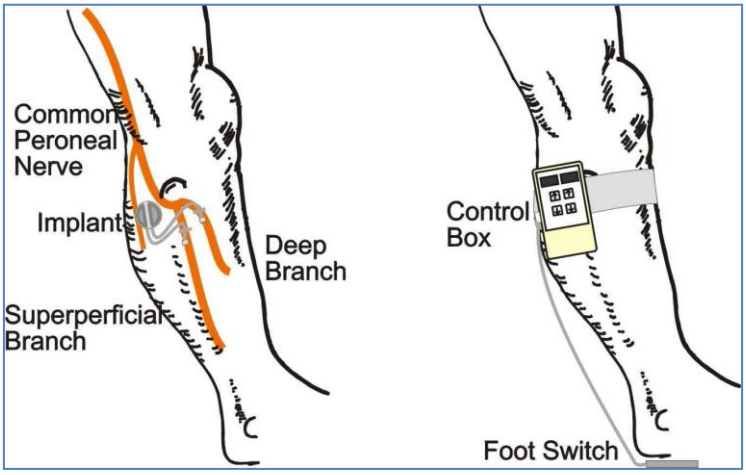
There was no sign of irritation at the popliteal fossa (one of the recommended sites) which probably had not been used.

Significant deterioration in skin condition under electrode sites was apparent.

ODFS Pulse Width was set to 19% as Mr X had been finding increased discomfort with use at home, which would be expected as a result of the irritation.

In view of the ongoing skin irritation and difficulties managing the electrode positioning but excellent response to stimulation Mr X and his sister were provided with information about the STIMuSTEP implanted stimulator.

Schematic Diagram of STIMuSTEP



Click the link for Information about STIMuSTEP

Mr X and his sister agreed to a meeting with the Plastic Surgeon to discuss the procedure. The consultant felt that Mr X was clinically safe to have the operation but an anaesthetic opinion would be needed, if he decided to go ahead with the procedure. Mr X had some concerns regarding undergoing the general anaesthetic required with the operation, as orthopaedic surgery had led to his stroke. Mr X left with information about the surgery to help him decide whether to proceed with a funding application for an implant.

Reflection

Mr X had a very supportive family but needed daily assistance to help manage the complexities presented by skin irritation in relation to his FES use. Without this he became confused and struggled to use stimulation successfully, despite memory aids such as photographs.

A STIMuSTEP implanted presents a good option in this instance, managing both skin irritation and the practical problems, significantly simplifying the set-up procedure and minimising the risk of suboptimal electrode positioning.

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