



Case Study

This is a clinical case study about a female patient who attended the Dorset Orthopaedic London Clinic for prosthetic rehabilitation following a traumatic amputation. During treatment, we explored the acute onset of phantom limb pain and embarked on a phantom limb pain management programme

The Individual

Mrs X was an independent and active 62 year old lady who enjoyed going to the gym, socialising with friends, walking her dog and travelling. She was a full-time carer for her adult son and regularly took him swimming or for long coastal walks. She also enjoyed visiting her other two adult children, shopping and attending spin classes.

Cause of Amputation and Phantom Limb Pain

Mrs X was involved in a road traffic accident which resulted in the loss of her leg above the knee (transfemoral amputation).

A few months after her amputation, Mrs X started her rehabilitation at the Dorset Orthopaedic London Clinic. She learnt how to walk using a Genium X3 prosthesis, improved her balance, safety and core strength and started to return to outdoor walks and social activities.

However, she remained very anxious and limited by ongoing phantom limb pain. Mrs X had reported phantom limb immediately after her amputation; describing it as a stabbing and crushing pain in her phantom foot. She initially wanted to focus on her physical rehabilitation but kept a pain diary which showed that she was experiencing phantom limb pain five times a day for varying durations (sometimes 20 minutes, sometimes an hour). Once Mrs X became more mobile, we discussed her phantom limb pain in more detail and concluded that this pain was having a negative impact on her mood, quality of life and function, and was not improving with analgesia (pain relief). Mrs X now felt ready to explore treatment options and embarked on a phantom limb pain management programme with Dorset Orthopaedic.

Initial Assessment of Pain

Mrs X had been asked to keep a pain diary prior to the initial assessment. This showed that the intensity of Mrs X's phantom limb pain varied; sometimes she described it as pins and needles on the sole of her phantom foot and at other times she described it as a stabbing pain in her phantom foot.

The duration of her phantom limb pain also varied; sometimes it lasted a couple of minutes and at other times could last half an hour. On average, Mrs X was experiencing phantom limb pain up to five times an hour and she scored her pain as 7/10 on the Visual Analogue Scale (0 being no pain and 10 being the worst pain you could imagine).

Despite taking 600mg Gabapentin (a neuropathic painkiller – targets nerve pain) and other analgesia (including paracetamol and ibuprofen), Mrs X had no relief in her pain levels. There was no obvious trigger for her phantom limb pain and no correlation with her residual limb pain. Mrs X described her residual limb pain as a constant dull ache that worsened overnight and kept her awake. She scored this residual limb pain as 6/10 on the Visual Analogue Scale.

Mrs X reported that when she experienced phantom limb pain, there was nothing she could do to relieve it. She explained that she would have to sit and wait until the pain eased off which meant that she could not continue with her activities of daily living. She described the pain as “miserable”; leaving her tired, snappy and unable to function independently.

Pain Management Goals

Following an in-depth assessment and discussion, the following goals were identified in conjunction with Mrs X:

- To reduce phantom limb pain to a maximum of 3/10 on the Visual Analogue Scale
- To reduce residual limb pain to a maximum of 2/10 on the Visual Analogue Scale
- To reduce anxiety and depression scores on the Hospital Anxiety and Depression Scale
- To wean off Gabapentin and other analgesia (working in conjunction with Mrs X's GP)
- To develop coping strategies to independently manage phantom limb pain

Progress

At Dorset Orthopaedic, every phantom limb pain management programme is tailored to the individual's needs. It is a collaborative process that depends on patient engagement and a willingness to practice specialist techniques at home in between clinic sessions. The programme lasts on average, for 6 weeks and focuses on educating individuals about the principles of pain and phantom limb pain, developing coping strategies and practicing evidence-based techniques.

Mrs X initially engaged with several education sessions; designed to improve her understanding of pain, our understanding of phantom limb pain to date and how a graded approach to pain management can help reduce an individual's pain experience.

The treatment programme was tailored to her specific needs and was designed to reduce hypersensitivity in her residual limb, reduce her anxiety levels and gradually expose her to techniques which helped embody her phantom limb as her own.

Mrs X engaged with a programme based on the principles of Graded Motor Imagery. Her treatment comprised of left/right discrimination training, imagery, Neuromotus and other adjuncts such as acupuncture, relaxation and mindfulness. Mrs X was given activities and techniques to practice in between sessions and supported throughout the process.

We also worked in conjunction with other members of the multi-disciplinary team; liaising with Mrs X's case manager about a referral to a trauma counsellor and working closely with her GP when we felt Mrs X was ready to reduce her analgesia requirements.

Outcome Measures

During Mrs X's phantom limb pain management programme, we undertook a range of outcome measures designed to monitor changes in Mrs X's pain experience, mood and functional ability. We also regularly reviewed Mrs X's goals and her general wellbeing. Outcome measures were repeated at the start, middle and end of her personalised phantom limb pain programme and again at 6 months post treatment. The results were as follows:

Brief Pain Inventory

This valid and reliable outcome measure is used to assess the severity of pain and its impact on daily functions. It can be used for both acute and chronic pain states and provides an objective measure of pain.

Brief Pain Inventory	Scores At Start of Programme (/10)	Scores At End of Programme (/10)
Pain at worst in past 24 hours	7	2
Pain at least in past 24 hours	0	0
Pain rating on average	7	0
Pain right now	7	0
Analgesia Requirements	Gabapentin 600mg PRN Paracetamol and Ibuprofen	Nil
How much does pain interfere with activity?	6	1
How much does pain impact on your mood?	2	0
How much does pain impact on your walking ability?	6	0
How much does pain impact on your normal work?	8	4
How much does pain impact on relationships?	4	0
How much does pain impact on sleep?	4	1
How much does pain impact on your enjoyment of life?	6	1

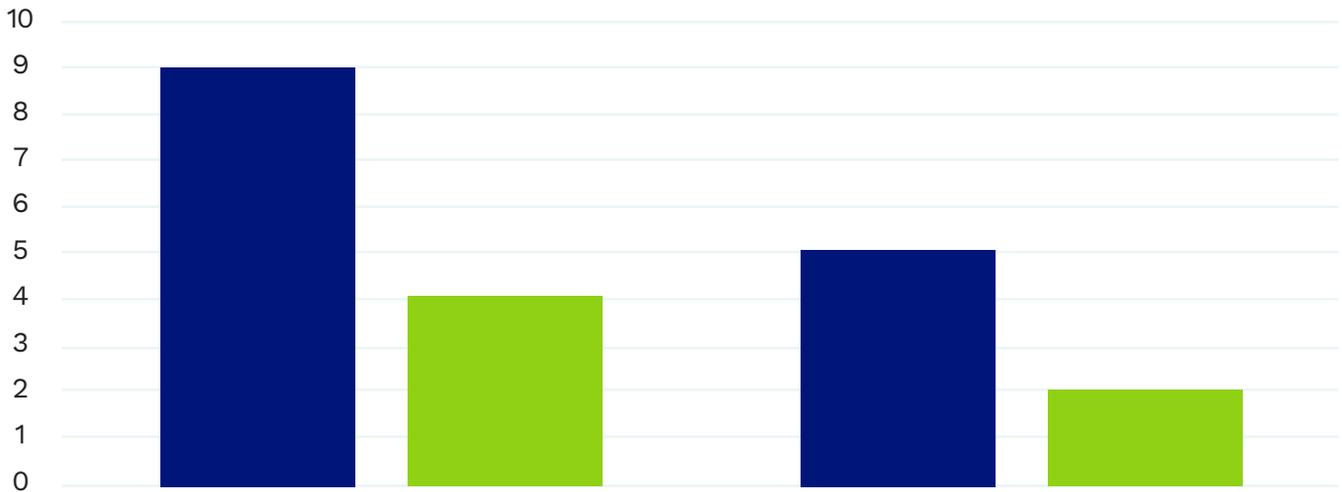
As you can see, over the course of the phantom limb pain management programme, Mrs X was able to wean completely off her analgesia and now rarely experiences any phantom limb pain. Mrs X reported that in the rare event she does experience phantom limb pain, it is at worst 2/10 on the Visual Analogue Scale but now is pain-free "98% of the time". She explained that the coping strategies she was taught now means that she can manage any "flare-up" of pain independently and no longer feels that pain is impacting on her mood, wellbeing and functional activity.

In recent months, Mrs X underwent osseointegration surgery. She explained that post-op she started to experience some phantom limb pain but was immediately able to put into practice the techniques that she had been taught on the programme and stopped her phantom limb pain within days.

Hospital Anxiety and Depression Scale

Major amputation is associated with high rates of anxiety and depression; both of which can exacerbate chronic pain states. Anxiety often precedes depression and is poorly recognised in depression-only questionnaires. The HADS is a valid and reliable outcome measure that detects changes in mood through the measure of non-physical symptoms and manifestations. It is easy and quick to use and can prompt referral to relevant health professionals.

HADS SCORE



The Blue column represents Anxiety and the Orange Column represents Depression.

As you can see, Mrs X's Anxiety and Depression levels have significantly reduced over the course of the phantom limb pain programme. Her scores are now considered to be in "normal" range whereas at the start of the programme, her scores were considered to be "high". The high scores prompted a discussion with her case manager and a referral to a trauma counsellor.

Mrs X reported that the reduction in pain has contributed to a reduction in her anxiety and depression levels and she now feels that she can enjoy her day and return to socialisation.

Pain Self-Efficacy Questionnaire

This is a simple questionnaire that assesses the confidence of individuals with chronic pain in their ability to participate in activity. A lower score (<20) indicates the individual is more focused on pain and this needs to be addressed before increasing activity levels. A higher score (>40) indicates the patient is likely to respond well to a regime that incorporates physical activity.

Score at start of Treatment (/60)	Score at end of Treatment (/60)
19	56

Mrs X's score has significantly increased and now indicates that she has high confidence in managing her pain and can increase her activity levels comfortably.

Summary

Prior to embarking on a phantom limb pain management programme, Mrs X was experiencing phantom limb pain multiple times an hour with varying severity. This pain was impacting on her mood, anxiety, function and quality of life. Mrs X engaged fully with the personalised programme, working on left/right discrimination training and imagery alongside other therapies such as Neuromotus, relaxation and acupuncture. The graded programme allowed Mrs X to wean completely off her analgesia (painkillers) and she now has the confidence and skills to manage any flare-up of pain quickly. Mrs X said "I only have positive things to say about this programme – it has given me back control and made such a difference to my pain. I don't have any!"