

# Proximal application of PENS for treating neuropathic thigh and knee pain following radical trachelectomy and laproscopic pelvic lymph node dissection

A. Bhaskar, H Chatha (arun.bhaskar@christie.nhs.uk)

Department of Anaesthesia & Critical Care, The Christie NHS Foundation Trust, Manchester, M20 4BX, United Kingdom

We Care, We Discover, We Teach

## Introduction

Post-operative scar pain of neuropathic origin is not an uncommon occurrence and it is usually around the area of the scar. We are reporting a case of neuropathic pain distal to the actual surgical scar site, which was successfully treated with PENS. Percutaneous Electrical Nerve Stimulation (PENS) is such a therapy that is technically suited to treat localized areas of hyperalgesia and allodynia because the surface skin is not directly touched during stimulation. With PENS, unlike TENS, the stimulating probes are percutaneously introduced and advanced subcutaneously, in order to stimulate peripheral nerve fibres that supply the specific area of neuropathic pain. The probe is normally placed into the fatty layer directly beneath the area of pain identified by the patient, thus being in close proximity to the affected nerve endings.

## Aim & Objectives

Our aim was to stimulate the peripheral nerve at the scar site to see whether there was effective pain relief at the distal site.

## Method

The 27 year old female patient, a full-time post-woman underwent radical trachelectomy and laparoscopic pelvic lymph node dissection surgery for carcinoma of the cervix. Her post-operative recovery was unremarkable. Three months later she presented with painful groin scars and also pain in the left lower thigh and knee joint, which was neuropathic in nature. On examination, she had allodynia and hyperpathia of her groins, but this was absent around the left lower thigh or the knee.

The pain was described as a constant burning pain with episodes of unpleasant tingling sensation whilst walking. She was already on Paracetamol, Tramadol, Amitriptyline and Pregabalin. She underwent an Ilioinguinal block and was also started on 5% Lidocaine plasters both for the groin and the thigh and knee area. In four weeks, she had excellent benefits for her groin pains, but the left thigh and knee pains were getting progressively worse. We decided to try PENS just below the groin scar to see whether proximal stimulation may help with her pain control.

## Result

Patient underwent a standard 25 minute stimulation as per protocol using a 21G 100 mm probe. The following day, she reported that her knee swelled up to about twice the size and the oedema was soft and pitting. However, she did not have any pain or any restriction of movement. She had an excellent response to treatment and described a 99% improvement in her pain control after five days. She went back to her job as post-woman after two weeks; she was continued on Pregabalin for her maintenance



## Conclusion

PENS is a new analgesic therapy that combines the advantages of both electro-acupuncture and transcutaneous electrical nerve stimulation (TENS). PENS is preferable to TENS in that it bypasses the resistance of the cutaneous barrier and delivers the electrical stimulus within closer proximity to the nerve endings located in the affected area. Compared to implantable peripheral nerve stimulation, PENS is minimally invasive, considerably cheaper and carries minimal risk.

PENS is also a very useful non-pharmacological adjuvant to neuropathic pain medications and opioids thus avoiding the problem of tolerance and physical dependence that is associated with long-term opioid use. The excessive sedation and gastrointestinal side effects that are often experienced with conventional analgesics are also avoided with PENS therapy (Ahmed, Craig, White, & Huber). PENS is totally reversible, non-destructive and is tolerated well by patients as an outpatient procedure. It can be used in areas of allodynia where the patient cannot tolerate TENS application directly onto the skin.

Further studies are needed in multiple patients to see the effect of proximal stimulation using PENS to treat the pain at a distal site.

## References

Ahmed, H.E., Craig, W.F., White, P.F., & Huber, P. (1998). Percutaneous electrical nerve stimulation (PENS): A complementary therapy for the management of pain secondary to bone metastasis. *The Clinical Journal of Pain*, 14, 320-323.