Using Plasma Technology in a modern foot care practice

Working with Plasma technology on plantar verruca and warts by Brenda Griffin owner of Only Footcare Ltd. UK Distributor of The Verruca Pen PE II (VPPEII®) June 2019

Introduction

The use of plasma technology in surgical application was first explored in the 1990s by Professor of Plasma Physics, Nikolay Suslov. He started to explore the use of this technology from the aerospace industry, for use in a minimally invasive surgical application. He explored the safe removal of tissue, with simultaneous coagulation and minimal damage to underlying tissue and structures using a plasma device. Today surgical plasma (plasma scalpels) is commonplace in theatres across the globe. *(ref1)*

Treating Verruca, what's the problem?

The UK Government N.I.C.E Guidelines for the treatment of plantar warts, warts and verrucae (2014) is quite clear. *(ref 2)* The recommendation is generally to do nothing, and the lesion will resolve itself in time (2 years for children and 5-10 years for adults). Certainly, the NHS at primary care level has no budget for treatment, unless there is a suspected underlying autoimmune issue. There are a variety of treatments that are recommended if treatment is deemed desirable, including Cryotherapy, topical Salicylic Acids and OTC treatments as available.

However, from the patients' perspective they often present themselves in private practice, having been turned away by the NHS, seeking treatment for their verrucae (VP). *(Ref 4)* Patients often find the VP to be painful: it affects their gait as due to the discomfort of the build-up of hard skin around it. They are often embarrassed to show their feet in public. Minors are particularly embarrassed as they can be teased by their peers. Parents are often anxious to get their children treated. Moreover, adult patients are reluctant to tolerate the VP for 5-10 years while it self-heals. Warts on the hands are of particular embarrassment. In today's aesthetic and beauty conscious society, patients expect a treatment for all their imperfections and are willing to explore their options and pay for the privilege in the private sector.

Clinicians employed in the private sector are keen to explore treatments that will treat VP with 100% guaranteed results. They are motivated by their patients' desire for a 'cure'. They must of course,

carefully consider the most appropriate type of treatment for the patient and inform them of the likely outcomes and their role in the success of the treatment before commencing any intervention. This could quite possibly include doing nothing.

However, research shows that no treatment exists that can guarantee 100% success. Many treatments do show good results and are well established in practice. Generally, when a new treatment is introduced, the results are inevitably anecdotal in evidence. Clinical trials are complex to organise. A clinical trial organised by a company with a vested interest in selling a treatment is often, and rightly so, approached with cynicism. Even in a well organised trial each patient has their own story, may have used several OTC treatments, and have a variety of underlying health conditions etc. In order to conduct a good trial, the subjects must all start from the same baseline. This is neither feasible nor practical on any grand scale. If any other treatment has already been tried, it will automatically discount the subject from the trial.

What is plasma?

Plasma is often described as the fourth state of matter after solid, liquid and gas. When electrical energy is applied to gas it ionizes to become high-energy plasma. In the case of the VPPEII® the gas is oxygen and nitrogen in the atmosphere . This plasma is delivered in a concentrated dose using a sterile micro-probe. The high level dose is a visible spark that effectively sublimates the tissue of the epidermis. It can safely tighten tissue, while simultaneously cauterising any bleed and causing minimal damage to the surrounding tissue. Heat caused by the spark is dissipated quickly without damaging other tissues and is rarely felt by the patient. Thermal Plasma technology has been successfully used in surgical techniques for several years now (www.plasmasurgical.com).

Why choose the Verruca Pen PE II VPPEII®?

The VPPEII® offers clinicians a guaranteed safe device which is designed according to the low voltage directive. The British factory that manufactures the device follows the standards IEC60601-1 and ES60601-1. It is 100% manufactured in the UK. It delivers a consistent and measured electrical charge for the purpose of triggering an inflammatory response so that the body's immune system destroys the verruca and warts. It will only operate at the level set by the manufacturer, so that it is not possible to increase the charge manually and cause unnecessary tissue damage. It should not be used for any other purpose other than to treat verruca and warts. It has an AC power supply and is wireless for ease of use. It charges in its own cradle and when fully charged it is operable for up to 3 hours. Each treatment probe is sealed, packed and guaranteed sterilised for single use. Carbon build up on the probe should be removed during treatment to ensure consistent application. A small circular light

operates at the same time as the charge button is depressed, ensuring a clear view of the treatment in progress. Once the unit is purchased the only consumable items required are the probes, making it easy to use and maintain. The VPPEII® is very light weight and portable for moving between clinics. All clinicians who are trained to Level 4 in Foot health or above can use the VPPEII® with the correct training, which is supplied by Only Footcare Ltd. The use of the VPPEII® for the support of treatment of verruca and warts by qualified practitioners, is fully insurable as a recognised foot care service.

Treatment Comparisons

We can compare the VPPEII® with several electrosurgical methods like cryotherapy, microwave, micro-needling, shortwave diathermy and laser. Each of these methods are now well established in treating verruca but all of them are more, or less painful for the patient; often requiring a local anaesthetic. None of them is offering a 100% guarantee of success. Cryotherapy is probably the most established of these treatments. However, it can be very painful and cause blistering in the area treated. This pain can last beyond the 30 seconds of the actual treatment application and a dressing is usually required afterwards. Children don't tolerate cryotherapy well. *(Ref 3)*

Topical applications of medicaments such as Silver Nitrate and Salicylic Acid can damage uninvolved tissue if applied at home. There is a tendency for people to be over enthusiastic with the paint on variety. If applied in the clinic, they can be time consuming to the patient, requiring multiple visits to the clinic, often weekly or fortnightly, and are therefore not cost effective compared to a short Plasma service every 4 weeks. None of the above are deemed as medical treatments.

The VPPEII® offers a virtually painless service option. Lesions are targeted with a very fine micro-probe and only the lesion is sublimated without disturbing any healthy skin around the area. Any minor bleed from capillaries supplying blood to the lesion and exposed during debridement of the overlying hyperkeratosis is automatically cauterised with the plasma pen. There is no need to dress the wound once treated. The verruca wound is self-sealing and will shrink and drop off in 7-10 days.

Service Method:

Once it has been established during the consultation process that the patient is a suitable candidate for a VPPEII® service, and that they understand that more than one service will be required for a successful outcome (perhaps as many as 4 or 5) the session can begin. Patients must be made aware of additional costs involved in their session and that the service doesn't guarantee success.

The verruca is debrided of any overlying hyperkeratosis to expose the whole lesion. The operator will take just a few minutes to treat the prepared area, depending on the size of the lesion. The whole area treated will turn brown/black and a smoke plume will be present during treatment. (face mask

should be worn to avoid inhalation of the plume and it is preferable for an extractor for plume with a HEPA filter is also used). The tissue sublimated will be evaporated at surface level. The operator is in complete control of the pen and there is no risk of a deep burn or heating tissue that is not involved as the probe is 0.4mm and very precise. The resulting micro-trauma will be recognised by the body's immune system and there will be an improved immune response. The number of sessions required will always depend on how long the VP has been established and the age and general health of the patient. Fresh lesions in younger patients will clear quicker than older patients with more established verruca.

Directly following the service there is no discomfort felt by the patient and they can carry on as normal without worrying about dressings etc.

Generally, on each visit the lesion will be visibly smaller. It has been noted that following a plasma session the hyperkeratosis build-up seems to be less. Patients are advised not to pick at the treated area but can use a disposable nail file with a 100 grit to keep the resulting hard skin at bay if this causes them an issue between appointments. They must be warned to dispose of each file and not reuse or share it.

Results:

So far, the results of the VPPEII® have been very promising.

- A complete clearance in only 2 sessions on a woman of 57 who had the VP for more than 18 months
- Huge reductions of the size of lesions in patients who have had large VP for more than 2 or 3 years.
- Persistent warts on the hands of a 10-year-old boy are gone in just 2 treatments.
- Patients report little or no discomfort during service, this includes a 40-year-old man who had previously had a Swift Microwave treatment and found it intolerable.
- A single session removed a wart from a 50-year-old lady who healed within 10 days and no visible scarring on her body.
- No discomfort was reported by anyone.

Discussion:

Clearly, with any new idea on the market, there will be those who have a positive and enthusiastic response and there will be sceptics and critics. There are a variety of so called 'spot pens' or plasma pens available on the internet that are clearly not manufactured to any formal or consistent standards or regulations. There are many more pictures of people who have been scarred by these unregulated devices, using them on facial lines etc. We can't control the internet or peoples desire for cheap imitations of products they aspire to own but can't afford. We can however control our own manufacturing and promise to deliver a verruca pen that works effectively for your clinic .

The VPPE® is the only pen on the market that has been specifically designed for this treatment although other pens are being used by clinicians and aesthetic therapists for this purpose.

There is now an established pathway for a Podiatric clinician to conduct an independent research paper into its use and we would welcome and support this.

References:

Ref 1: From Rocket Science to Surgery by admin_plasma, http://www.plasmasurgical.com/plasma-technology/plasma-surgery/*, September 12, 2014*

Ref 2: National Institute of Clinical Excellence on-line. https://www.nice.org.uk/

Ref 3: The Successful Use of a Novel Microwave Device in the Treatment on a Plantar Wart. I R Bristow, C Webb M R Arden-Jones. Karger. Published July 2017

Ref 4: The Management of plantar warts – a podiatric perspective. Dermatological Nursing, Vol 8, No.3 2009

An Armamentarium of Wart Treatments, Michelle M Lipke, 2006 https://www.ncbi.nlm.nih.gov/