TREATMENT SUGGESTIONS IN THE ABSENCE OF STEROID INJECTIONS IN THE MANAGEMENT OF THE COMMON MUSCULOSKELETAL FOOT, ANKLE AND LEG.

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Listed below are some of the common conditions encountered in podiatric practice along with some suggestions for alternative treatments, in view of the current Covid-19 pandemic and potential harm to patients if they were to receive a steroid injection[1,2,3,4]. Clinicians are encouraged to undertake a literature review and wherever possible adhere to evidence based practice. Clinicians are also encouraged to consider other treatment modalities e.g. Extracorporeal Shock Wave Therapy (ESWT), Low Level Laser, Therapeutic Ultrasound etc.

LIST OF COMMON CONDITIONS THAT AFFECT THE FOOT, ANKLE AND LEG THAT MAY REQUIRE AN INJECTION.

Forefoot: Morton's neuroma, stump neuroma, bursitis, synovial cyst, Osteoarthritis of MTPJts, Synovitis of MTPJts, Gout, Frieberg's infraction and Plantar plate tear.
Midfoot: Osteoarthritis of midfoot joints in particular Lisfranc, cuboid-metatarsal and calcaneo-cuboid joints, Cuboid compression syndrome, Crisp Padhiar syndrome, Lisfranc ligament injury and enthesopathy.
Hindfoot: Positional tendon tendinopathy (tibialis posterior, peroneal, long extensors & flexors), Mid-portion achilles tendinopathy, insertional achilles tendinopathy, intra-substance tendon tears, Haglund's deformity, Retro-calcaneal and pre-achilles bursitis, Anterior & posterior impingement syndrome, lateral ligament injury (ATFL, CFL & PTFL), Sinus tarsi syndrome, Plantar fasciopathy, plantar fascia partial tears, Tarsal tunnel syndrome and Medial calcaneal entrapment syndrome.
Leg: Medial tibial stress syndrome, Superficial peroneal nerve entrapment, Sural nerve entrapment syndrome, haematoma following muscle tear and myofascial tears.

ALTERNATIVE TREATMENTS

(1) VISCOSUPPLEMENTATION[5] (Intra-Articular Hyaluronic Acid (HA)

Conditions: (a) Degenerative synovial joints e.g. MTP, Subtalar, Ankle, Knee. (b) Positional tendon tendinopathy e.g. tibialis posterior, peroneal, extensor and flexor tendons. Please check that the product you are using is licensed specifically for tendons. Ostenil Tendon to the best of my knowledge is the only product that appears to have the license.
(c) Mid-portion achilles tendinopathy.

Newly published NHS England guidelines (16 March 2020), regarding the management of trauma and orthopaedic patients during the coronavirus pandemic, highlight the need for a shift towards non-operative care as the system comes under ever-increasing pressure. During this period of heightened burden, MSK patients with degenerative or traumatic changes to articular joints must be

adequately cared for, and while treatment strategies are being revised – with more conservative management and the deferral of orthopaedic elective surgery being recommended – the delivery of appropriate therapeutic options directed to the patient's symptoms remains essential.

Many UK NHS Trusts have enforced a moratorium on intra-articular (IA) corticosteroid (CS) injections due to the associated and well-elucidated post-injection immunosuppressive effects. CS serves to interrupt inflammatory and immune cascades, decreasing capillary permeability and vascularity and binding to glucocorticoid receptors, resulting in complex changes to gene transcription - inhibiting accumulation of inflammatory cells and mediators.
Whilst CS may prove markedly effective in the management of inflammatory and autoimmune disorders, such inhibitory effects on multiple types of immune cells, especially in vulnerable patients, presents clinicians with a quandary during the current COVID-19 pandemic – and the challenge to offer a viable alternative.

Viscosupplementation (Intra-Articular Hyaluronic Acid (HA)) offers patients and clinicians a non-immunosuppressive, physiologic treatment option for joint pain and loss of function; crucially, eliminating any concern over further jeopardising immuno-compromised patients. IAHA negates other risks and contraindications associated with IACS usage including such localised effects as: chondrotoxicity, cartilage damage, post-injection flare, subcutaneous tissue atrophy and systemic effects such as flushing, osteoporosis, and hyperglycaemia - a serious consideration in patients with diabetes mellitus.[3,4] Viscosupplementation offers a safe and effective treatment option for patients suffering degenerative joint pain and loss of function. If conservative treatment and/or pharmacological management has failed to adequately resolve symptoms, and in accord with the current advice whereby corticosteroid injection is proscribed in immunocompromised patients, Viscosupplementation should be considered as the preferred mode of injection therapy.

There are many brand names (Synvisc, Orthovisc, Durolane, Hyalgan, Ostenil etc.) on the market but please use the one you are familiar with or, have had favourable and beneficial outcomes. Ostenil products are particularly useful in small joints e.g. Ostenil Mini for lesser MTPJts and Ostenil Plus for 1st MTPJt.

(2) PLATELET RICH PLASMA

Conditions: (a) Osteoarthritis of 1st MTPJt, Lesser MTPJt, Ankle and the Knee. (b) Plantar fasciitis. (c) OA of the midfoot joints. (d) Intra-substance tears of tendon, plantar fascia and ligaments.

Platelet rich plasma injections (PRP injections) can be used in the treatment of many musculoskeletal injuries including that of tendons, muscles and joints.

Platelet rich plasma (PRP) and autologous blood have been used in the treatment of musculoskeletal injuries since 2003 and have proved very popular in the United States of America and are becoming increasingly popular in Europe and also with elite athletes. Although the use of PRP and autologous blood in sports medicine is a relatively recent development PRP gels have been used in wound healing since the 1980's. Plasma is widely known for its role in haemostasis, however it also has a

key role in tissue healing and regeneration through the release of growth factors from alpha-granules. In basic terms PRP is a high concentration of platelets in plasma with a platelet count higher than the baseline.

The average human platelet count in blood is approximately 200000/ml and platelet levels in PRP have been reported to be between 1 and 6 times greater depending on way the PRP is obtained.

The difference between PRP and whole autologous blood is that PRP is centrifuged to obtain a higher concentration of platelets whereas autologous blood is injected as whole blood.

PRP is obtained by drawing a sample of venous blood and centrifuging the blood to separate into 3 layers, a platelet poor plasma, buffy coat and red blood cells. The buffy coat is isolated and suspended in plasma. Each cubic millimetre of this solution can contain 1.5–2 million platelets. It is then mixed with an activation agent and then the PRP is ready for administration .

The mechanism of action of PRP is not completely understood but platelet proteins are known to have a key role in healing. Platelets synthesise and release proteins that reside in the alpha granules, including platelet-derived growth factor, transforming growth factor B, vascular endothelial growth factor, cytokines and many more. Much emphasis is placed on alpha granules however it is important to remember dense granules have a part in tissue regeneration including adenosine, serotonin, histamine and calcium. Tendon healing occurs through three phases: inflammation, proliferation and remodelling which overlap and are controlled by a variety of growth factors, which are linked with complex signalling cascades.

In tendinopathy, some in vitro studies have shown that PRP can enhance stem cell proliferation however Mishra et al (2012) found that PRP suppresses macrophage proliferation and IL-1 production within the first 72 hours. The results of the use of PRP in muscle healing in vitro are variable. However, it is known that muscle healing is dependent on local vascularity and regeneration of intramuscular nerve branches, both of which may be enhanced by PRP.

The evidence for the use of PRP in vivo is promising, especially in the treatment of tendon injuries, however the treatment is not proven, and high quality evidence is lacking. All studies do agree that the risk of PRP is low.

NICE have published guidelines[6,7,8] on the use of autologous blood and PRP in plantar fasciitis and tendinopathy which provide a review of current literature, but they do not offer any recommendations.

(3) PROLOTHERAPY

Conditions: (a) OA of the non-synovial joints. (b) Stump neuroma. (c) Medial tibial Stress Syndrome. (d) Intra-substance and other tears (not complete rupture) of tendon, plantar fascia and ligaments. (d) Plantar plate tear. (e) Insertional Achilles tendinopathy. (f) Retinaculum tear with peroneal subluxation.

Proliferative injection therapy (prolotherapy, 15-25% glucose) has been used clinically since the late 19th century and has been mentioned in medical journals since at least 1937. The rationale behind

prolotherapy is that injecting proliferants, such as hypertonic glucose solution, into damaged connective tissue, initiates inflammation, which leads to a healing cascade resulting in fibroplasia, deposition of new collagen and tissue hypertrophy.
Animal studies have reported collagen proliferation, increased bone-ligament-bone junction strength and ligament mass with prolotherapy injections compared to controls. The periosteum is richly innervated with nociceptive nerve fibres, therefore in MTSS it is possible that a prolotherapy injection may reduce pain by disrupting these sensory fibres as a result of the direct osmotic shock action of hypertonic dextrose on cells local to the injection site.
Trials of prolotherapy have found it to be beneficial in the treatment of lateral epicondylopathy, osteitis pubis,[1] plantar fasciopathy, Achilles tendinopathy and recalcitrant coccygodynia. Most trials of prolotherapy are case series given the difficulty of recruiting adequate patient numbers not responsive to other treatments, providing level 4 evidence. There is currently no published literature investigating the use of prolotherapy in the management of MTSS.

NICE[9,10] guidelines are currently in the draft stage and no specific guidance is available. Reader is invited to carry out a thorough literature review for evidence before considering this treatment modality.

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