Prolotherapy Position Paper

**Background:** Injection techniques to stimulate the repair of ligament and tendon injuries have been used by physicians in the United States since 1937. Described as prolotherapy, sclerotherapy and regenerative injection technique, these procedures have gained recent increased interest and supportive research in clinical practice. For the purposes of this paper, the term prolotherapy will be used to indicate this type of injection procedure. This paper will review the past and current concepts related to the use of prolotherapy as a safe and effective option for the conservative treatment of ligament and tendon enthesopathy.

**Definition:** Prolotherapy is the iatrogenic stimulation of the wound repair process by injecting solutions into damaged ligaments, tendons, and joints. This injection stimulates the healing of ligamentous laxity, chronic enthesopathy, or tendinosis by initiating an acute inflammatory response. (Ravin, et al)

**Indications:** Prolotherapy is indicated for the treatment of acute and chronic tendinous and ligamentous enthesopathy associated with pain, dysfunction and/or joint instability. (Ravin, et al)

**Contraindications and Precautions:** Absolute contraindications: acute fracture; infection, localized to treatment area or systemic; allergy or sensitivity to any component of the solutions; Complex Regional Pain Syndrome Type III (reflex sympathetic dystrophy); severe renal or hepatic insufficiency; within 6-12 weeks of surgery at the treatment site; patients undergoing chemotherapy or with an active or metastatic neoplastic process; acute vasculitis; or if the patient is unable to provide informed consent.

Precautions: pregnancy, autoimmune disease, uncontrolled Type I diabetes, nerve entrapment syndrome, prosthetic joint, immune deficiency, age < 16 y/o, bleeding dyscrasias or anticoagulation.

**Risks and Adverse Events:** The common and benign side effects reported with prolotherapy include but are not limited to temporary post-injection pain, stiffness, and bruising. Significant side effects with prolotherapy are not common and include but are not limited to spinal headaches, pneumothorax, temporary systemic reactions and nerve damage. The side effects are similar to other side effects seen with spinal injection procedures (Dagenais S, et al).

**Research:** The current research supports the described physiology by which prolotherapy stimulates wound repair (Banks, Clark) Areas of documented efficacy include the Achilles tendon (Maxwell, Alfredson), adductor tendon groin pain (Topol), anterior cruciate ligament (Reeves), anterior knee pain (Holmes), cervical spine instability (Centeno), cervical spine facet pain (Hooper), coccygodynia (Khan), discogenic pain (Miller) iliac crest pain (Kim), lateral epicondyle (Zeisig), the lumbar spine (Cochrane Database, Wilkinson), patellar tendinosis (Alfredson), the sacroiliac joint (Cusi), spinal pain (¹Dagenais) and the temporomandibular joint (Hakala). When performed in
conjunction with physical therapy/rehabilitation, prolotherapy was found to be better than placebo in the treatment of chronic low back pain (Yelland).

**Alternative treatments:** NSAIDs and narcotics are the most commonly prescribed treatments for pain. Significant side effects include GI bleed, suppression of wound healing, constipation, hormonal imbalance, addiction and death. Supervised exercise and physical therapy have been shown to be both safe and effective for the treatment of low back pain (Rainville).

Recent published literature reviewed the efficacy of spinal injections for subacute and chronic low back pain (Stall). These injections are used for the treatment of a variety of diagnoses including spinal stenosis, facet arthrosis, degenerative disc disease, disc herniation and tears of the annular ligament. Overall the results indicated that there was no strong evidence for or against the use of any type of injection therapy. Epidural steroid injection and facet injections failed to improve pain, disability or function.

**Conclusions:** Based on the body of literature prolotherapy has been shown to be as safe as other injection techniques (²Dagenais) and can be safely utilized by properly trained physicians on tendons, ligaments and joints throughout the body utilizing appropriate diagnostic and injection techniques. Prolotherapy has stricter criteria for utilization when compared to other injections techniques. It should be performed in conjunction with suitable physical rehabilitation. When patients are appropriately selected with the diagnosis of tendinosis, ligamentous laxity, enthesopathy or joint instability prolotherapy is a safe and effective conservative treatment option.

**Bibliography:**


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