

process. It is less frequent later in the series of injections and is very rarely bad enough for patients to want to stop treatment. The glucose solution can be diluted for those patients who are particularly sensitive. There may also be bruising at the site of injections. The skin is cleaned with alcohol or chlorhexidine before treatment to reduce the risk of infections. Please avoid pools and spas for 24 hours to prevent infections.

Rare, but possible, complications from any injections include increased pain, swelling, bleeding, infection, numbness, weakness, nerve injury, spinal headache due to accidental lumbar puncture, respiratory difficulty due to muscle spasm or accidental pneumothorax, arrhythmia or allergic reaction.

Risk is usually related to the region being treated.

Occasionally the vitamin and mineral supplements can cause nausea or diarrhoea, which is improved by taking them with food (recommended), lowering the dose or stopping them.

## OTHER TREATMENTS

Prolotherapy is ideally part of a whole treatment plan. You can continue your general exercises, strengthening and rehabilitation, and continue massage, acupuncture, mobilisation and manipulation treatment if required, but please talk to your prolotherapy doctor to discuss any modifications that may be required.

Behavioural and psychological therapies can be useful to help you cope with pain and loss of function. Medications such as antidepressants, fish oil and glucosamine can be taken.

Your doctor may provide prolotherapy in conjunction with other regenerative treatments such as PRP (Platelet Rich Plasma) or perineural injection treatment.



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## *Prolotherapy* smart

**A regenerative injection therapy  
that stimulates the growth  
of connective tissue to strengthen  
weakened and painful ligaments,  
tendons and joints.**

**A non-surgical approach  
to managing musculoskeletal pain  
and injuries by treating the cause  
of the problem.**



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## WHAT IS PROLOTHERAPY?

Prolotherapy is a safe and effective regenerative injection treatment that increases strength and stability in ligaments, tendons and joints. These injections aim to treat the cause of the pain and have the potential to offer longer lasting relief than some other treatments. It may be an alternative to surgery, long term pain medication use and cortisone.

Weakened ligaments and tendons are believed to be a common cause of musculoskeletal pain, joint pain and instability.

Prolotherapy injections contain 15-20% glucose and a small amount of local anaesthetic (lignocaine). The strong glucose and the mild trauma from the needle causes inflammation which triggers the immune system to restart the healing and repairing process. New, strong collagen fibres are formed, strengthening weakened ligaments and tendons and reducing pain and disability.

## TREATMENT SCHEDULE

Before treatment is commenced, an initial assessment is done by your doctor to decide if prolotherapy is suitable for you. This involves giving a history and undergoing a physical examination, and sometimes having an x-ray, scan or blood tests.

Prolotherapy is a regenerative therapy which will require several treatments before ligament strengthening occurs and improvement is noted.

To achieve lasting results, a series of injections is needed, spaced approximately 1-2 weeks apart. Typically, 6-8 treatments are needed for the low back, 4-5 treatments for the neck, hip and shoulder and 3- 4 treatments for the knee. If you have had surgery to the affected area, or have other medical conditions, you may require more treatments.

Different joints/areas can be treated during the same visit if needed. No injection treatment is totally pain free. If needed you can take paracetamol or codeine/tramadol ½ hour prior to treatment. Please avoid anti-inflammatory tablets, such as aspirin, nurofen and diclofenac, for 7-10 days prior to your treatment.

## TECHNIQUE

If needed, the overlying skin is numbed with an injection of local anaesthetic. Local anaesthetic is also included in the injections to reduce injection pain and may also allow your nervous system to reset itself to a level that tolerates pain better.

Prolotherapy solution is injected into several tender, weak areas where the ligament or tendon attaches onto the bone. Glucose injected into joints may encourage regeneration of worn cartilage. Prolotherapy injections can also be used to relieve and treat muscle trigger points.

## HOW EFFECTIVE IS PROLOTHERAPY?

Many clinical trials assessing the efficacy of prolotherapy have been performed. The largest Australian trial was completed at a clinic in Queensland<sup>1</sup>. 110 patients with chronic low back pain were treated.

- At 6 months, 50% had less than half their original pain
- At 12 months, 40% had less than half their original pain, and pain was reduced by 75%
- At 12 months, the average reduction in pain was 40%

Disability reductions were similar.

Prolotherapy can be used to treat a wide variety

of musculoskeletal conditions, including osteoarthritis, low back pain, shoulder pain and rotator cuff injuries, tennis elbow, Achilles tendinopathy, hip pain and much more.

<sup>1</sup> Yelland MJ et al (2004) *Prolotherapy Injections, Saline Injections, and Exercises for Chronic Low-Back Pain: A Randomized Trial. Australasian Musculoskeletal Medicine*, 9(2):80-87

## NUTRITION

Vitamin C, Zinc and manganese are building blocks for collagen. In addition to a healthy diet, with plenty of protein and vegetables, taking these nutrients in the form of supplements seems to improve the efficacy of prolotherapy.

Vitamin C 1-2g per day

Zinc 15-30mg per day

Manganese 5-20mg per day

Your doctor may also recommend magnesium 300mg per day to help reduce muscle tightness.

## WHAT ARE THE SIDE EFFECTS OF TREATMENT?

Side effects are minimised by using careful injection techniques, however minor side effects can still occur. The main side effects of prolotherapy injections are a mild to moderate flare in the pain (a deep, dull ache) and stiffness. This usually occurs during the first 48 hours after treatment, but could last just a few hours or up to seven days after the injections. It is temporary and usually well controlled with simple pain relief medication such as paracetamol, heat packs and gentle walking/movement. Please avoid anti-inflammatory medications like aspirin, ibuprofen or diclofenac. The post-treatment discomfort is due to the inflammation caused by the injections to help stimulate the healing