



Short Communication

## Simple Sugar Solution Injection to Cure Knee Osteoarthritis(OA)

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### Abstract:

**Abstract:** Knee osteoarthritis (oa) is a degenerative arthritis which commonly affects knee joint, mostly bilateral. Till date offered treatment is analgesics, physiotherapy, support in form of braces and lastly surgery. Steroid injection tried but with only short lasting effect<sup>2</sup>. We recommend use of dextrose 15% & local anaesthetic solution, each month for 3 months to stimulate regeneration and pain relief

**Keywords:** Prolotherapy, Dextrose Prolotherapy, Knee Osteoarthritis (OA)

### Introduction

Knee OA is so common that approximately 46% people will develop it during their life time<sup>1</sup>. Women are more likely to develop this disease than men, although its age related degenerative disease but other factors such as genetics or injury can cause it earlier. Chief symptoms of knee OA is pain, swelling, spasm and unstable joint<sup>3</sup>. It is mainly because of wearing out of articular cartilage. It is classified on X ray by basis of Kellergren Lawrence classification which is also important to predict treatment outcome.

**Intervention :** We use 15% dextrose solution with local anaesthetic, 5 ml per knee per sitting in sterile manner. we make dextrose 15% we need to draw 6ml of dextrose 25% which we abundantly use in paediatrics than it is to be diluted with 4 ml of lignocaine 2% /

bupivacaine 0.5% solution, authors personal choice is bupivacaine (to avoid lignocaine anaphylaxis reaction) then under all aseptic precautions joint is entered with 26G 1½ inch needle to place intraarticular injection. we use infero lateral patellar route for this purpose, after removing needle area is to be cleaned with spirit & post procedural 3 days of broad spectrum antibiotics and paracetamol as analgesic needs to be used.

One point to remember, never use any anti-inflammatory for first 3 days after the procedure because here our aim is to create aseptic inflammation<sup>4</sup>. Patient has to be called for next 2 months, total 3 intra articular injections needs to be given at the end of tenure. Follow up x ray and symptomatology should be evaluated.

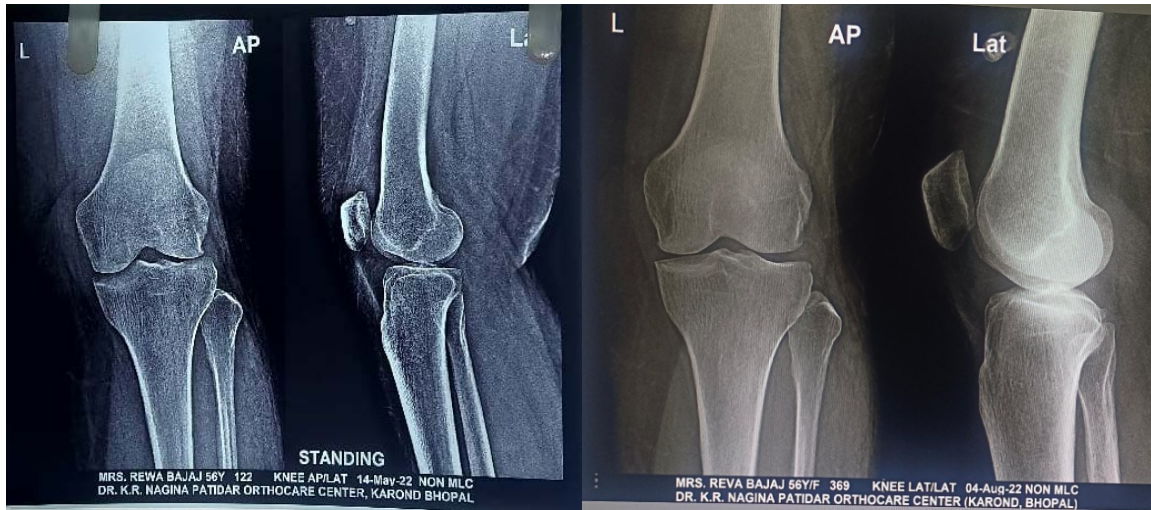


Image 1 & 2 :patients pre & post procedure x ray patient 1

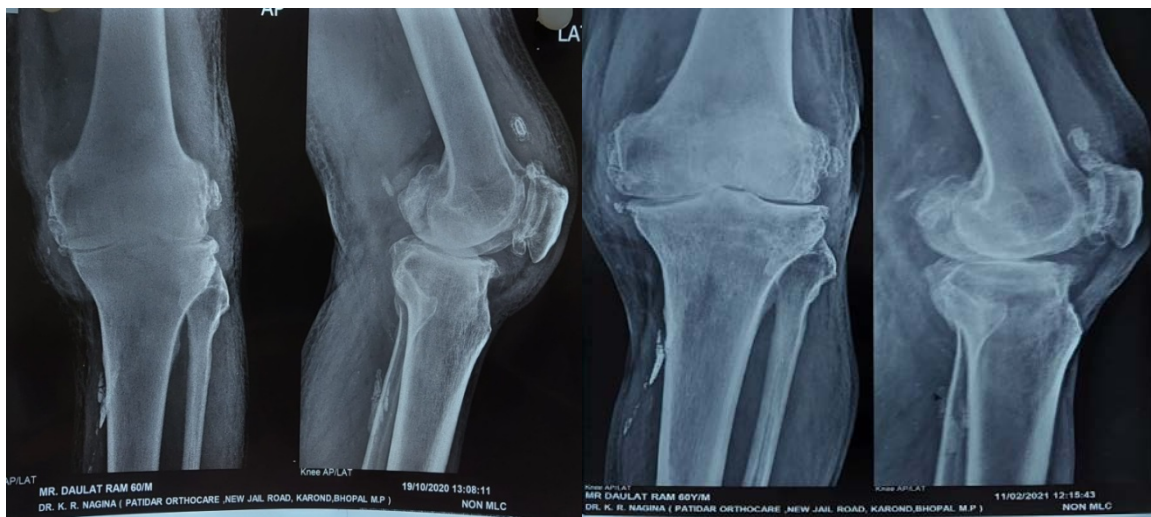


Image 3 & 4 : Patients Pre & Post Procedure X Ray Patient 2



Image 5 & 6 : Patients Pre & Post Procedure X Ray Patient 3

**Discussion:**

Dextrose 15% injection stimulates regeneration of cartilage by creating limited inflammation inside the knee. This concept was first introduced by an American doctor George Stuart Hackett. He conceptualised that ligament weakness due to chronic wear and tear creates craniocaudal, anteroposterior, lateralomedial joint instability which leads to abnormal force distribution across the joint and ultimately leading to cartilage degeneration. Dr. Hackett postulated that by strengthening the ligament we can treat a lot of musculoskeletal disorders. He successfully applied this analogy to cervical pain and low back pain, although it is not described originally by Dr. Hackett, to be used in knee OA but later prolotherapy doctors used it and found it beneficial in terms of pain, swelling and spasm reduction subjectively and on x ray imaging objectively.

Mild irritation at injured site creates inflammation, regeneration and connective tissue healing. Agents to create this inflammation can be sodium morrhuate and phenol but in later years it was found that dextrose 15% is equally effective and safe agent. Prolotherapy works on the principle of connective tissue healing so primary tissue regeneration takes place after 14 – 21 days. So there is no additional benefit in repeating it before 21 days. We prefer to repeat it after 1 month. Reeves KD et al<sup>5</sup> did a Randomized prospective double-blind placebo-controlled study of dextrose prolotherapy for knee osteoarthritis with or without ACL (Anterior cruciate ligament) laxity in which they found Prolotherapy injection with 10% dextrose resulted in clinically and statistically significant improvements in knee osteoarthritis which is similar to our study. Preliminary blinded radiographic readings (1-year films, with 3-year total follow-up period planned) demonstrated improvement in several measures of osteoarthritis severity. ACL laxity, when present in these osteoarthritic patients, improved. Dumais et al<sup>6</sup> compared DPT (Dextrose prolotherapy) plus a home-based

physical therapy program to home-based physical therapy alone in a randomized crossover trial. Participants with chronic knee pain and any KL (Kellgren Lawrence) grading received injections at 0, 4, 8, and 12 weeks of 20% dextrose intra-articularly and 15% dextrose in coronary and collateral ligaments versus therapy only. Assessments were performed at week 16. After that, the 2 arms crossed over with a second assessment at week 36. Participants had statistically similar baseline characteristics, and 86% were Kellgren III or IV. Improvement in composite WOMAC (Western Ontario and McMaster Universities Osteoarthritis Index) score was significantly more in the group receiving DPT (Dextrose Prolotherapy) for period 1 ( $21.8 \pm 12.5$  vs  $6.1 \pm 13.9$ ;  $p < .05$ ) and period 2 ( $9.3 \pm 11.4$  vs  $1.2 \pm 10.7$ ;  $p < .05$ ) with an overall significance of  $p < .001$  using a standard statistical method of cross-over design. Rabago et al<sup>7</sup> conducted a 3-arm RCT (Randomized Control Trial) comparing DPT to normal saline injection and a home-based exercise. Participants with chronic knee pain and any radiological evidence of OA by KL grading were randomized to receive injection at 1, 5, and 9 weeks with optional treatments at 13 and 17 weeks consistent with a published protocol. Effects were assessed using the WOMAC questionnaire at 0, 5, 9, 12, 26, and 52 weeks. Participants had statistically similar baseline characteristics and 63% were rated Kellgren III-IV. By 9 weeks, participants receiving DPT reported substantial improvement in the WOMAC composite score ( $13.91 \pm 3.2$  points) compared with both control therapies. Maximum benefits were recorded by 24 weeks and persisted through 52 weeks. At 52 weeks the DPT group improved more than either the saline injection or exercise groups in WOMAC composite score ( $15.3 \pm 3.3$  vs  $7.6 \pm 3.4$  vs  $8.2 \pm 3.3$ ;  $p < .05$ ). Sit RWS et al<sup>8</sup>, Sert AT et al<sup>9</sup>, Chowdhury et al<sup>10</sup> found similar results to the above mentioned studies.

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**Conclusion:**

So this can be concluded that dextrose prolotherapy with dextrose 15% is an effective, safe, reproducible, feasible & economic way to treat knee osteoarthritis.

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