

Comparitive Study between Effects of Arthroscopic Joint Lavage and Intra-Articular Corticosteroid Injection Alone in Patients with Osteoarthritis of The Knee.

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I. Introduction

Degenerative Osteoarthritis(OA)of the knee is one of the most oldest and most common chronic diseases and a major cause of pain and disability, particularly among the elderly.¹ Various conservative modalities like rest, traction, physical therapy, NSAIDs were tried in which two modalities have relived pain and decreased the progression of osteoarthritis viz., arthroscopic lavage and intra-articular steroid injection into the knee joint.¹⁻⁵

Osteoarthritis is a group of overlapping, distinct diseases, which may have different etiologies but with similar biologic, morphologic, and clinical outcomes. The disease process not only affects the articular cartilage, but involves the entire joint, including the subchondral bone, ligaments, capsule, synovial membrane and periarticular muscles. Ultimately the articular cartilage degenerates with fibrillation, fissures, ulceration and full thickness loss of the joint space.⁶⁻⁷

The diagnosis of osteoarthritis most often has been based on radiographic appearance rather than clinical features⁷⁻⁸. Thus the combination of knee pain plus a radiograph, disclosing atleast some of the cardinal features defined by Kellergren & Lawrence⁹ such as osteophyte, joint space narrowing, subcondral sclerosis, deformity) was considered sufficient to make a diagnosis of osteoarthritis. Although most clinicians integrate other clinical features, particularly certain historical features, physical examination, synovial fluid characteristics, and laboratory tests, into the diagnostic process, no formal set of criteria recognized these features until quite recently.

Creamer² stated that etiology of degenerative disease in the knee is yet unknown and multi factorial. With aging, significant changes are found in the cells of all zones. The osteoarthritic lesion is divided into three stages- early, moderately advanced and advanced.

The earliest changes seen in osteoarthritis are:

1. Roughening or fibrillation of the articular surface.
2. Fibrillation restricted to the tangential zone.
3. The number of cells increased.
4. Loss of proteoglycans.
5. The trabeculae of the subchondral bone plate appear normal or slightly thickened.

Changes in Moderately Advanced Lesions:

1. The height of the articular cartilage is diminished.
2. Defects extend through the tangential and transitional zones into the 'radial zone.
3. The number of cells is increased and cell proliferation in all zones occurs with increased synthetic activity.
4. There is loss of proteoglycans in the transitional and radial zones.
5. The blood vessels arising from the subchondral bone are increased in thickness, reflecting the increased stress transmitted to them as a result of the loss of elasticity and stress distributing characteristics of articular cartilage.

Changes in Advance Osteoarthritis:

1. The articular cartilage is diminished in height.
2. Clefs extend through the entire thickness of cartilage down to subchondral bone.
3. The tissue has few viable cells and much loss of proteoglycans.
4. The subchondral bony trabeculae are greatly thickened.

In this study we would like to compare the effects of both modalities in relieving pain in early to moderate osteoarthritis of knee joint.

II. Materials & Methods

Patients presenting with symptomatic OA of the knee joint with Type I and II Kellergren- Lawrence radiographic changes and who were already receiving treatment with either analgesics or NSAIDs were recruited into the study. The study was a prospective trial of 3 years duration. If the patient had bilateral knee OA, they were asked to identify the most symptomatic knee joint as the target knee joint for the study. All concomitant therapies, including NSAIDs and analgesics, were maintained for the duration of the study and there was no washout period for NSAIDs or analgesics.

Patients who were not affordable for arthroscopic procedure were given only intra-articular steroid injections(40 mg depot preparation of Methyl Prednisolone alone without local anaesthetic) and the rest were given arthroscopic lavage[Fig 1 & 2].Outcome measures were evaluated at baseline 1 week, 1month and 3months which included severity of pain (100-mm visual analog scale and lequesne's functional index). In addition, the target knee joint was assessed for the presence of a joint effusion and the range of movement was measured using a goniometer.

III. Results

160 patients were included in the study with painful osteoarthritis knee. 84 patients were offered arthroscopic lavage and 76 patients were offered intra articular corticosteroid injection. At knee joint arthroscopy, six patients with OA of the knee were found to have meniscal tears which required intra-articular surgical repair. These patients were withdrawn from the study, as this extra surgical procedure could potentially confound the results. No patients were lost to follow up. There were statistically significant improvements in pain at rest as measured by VAS score ($P=0.003$) and Lequesne score ($P=0.007$) for time and near-significant improvements for stiffness ($P=0.069$), pain on movement as measured by VAS score ($P=0.068$) in both the groups at 1 month of follow up. However, there was no significant difference among the two groups for any of these parameters.

At 3 months both the groups had worsened pain relief and (Mean VAS score 7.4 in Arthroscopic group and Mean VAS Score .7.8 in Steroid group) and function as measured by Lequesne score. But ,there was no significance among both groups compared to base line ($P=0.021$)

No complications were encountered in both the procedures.

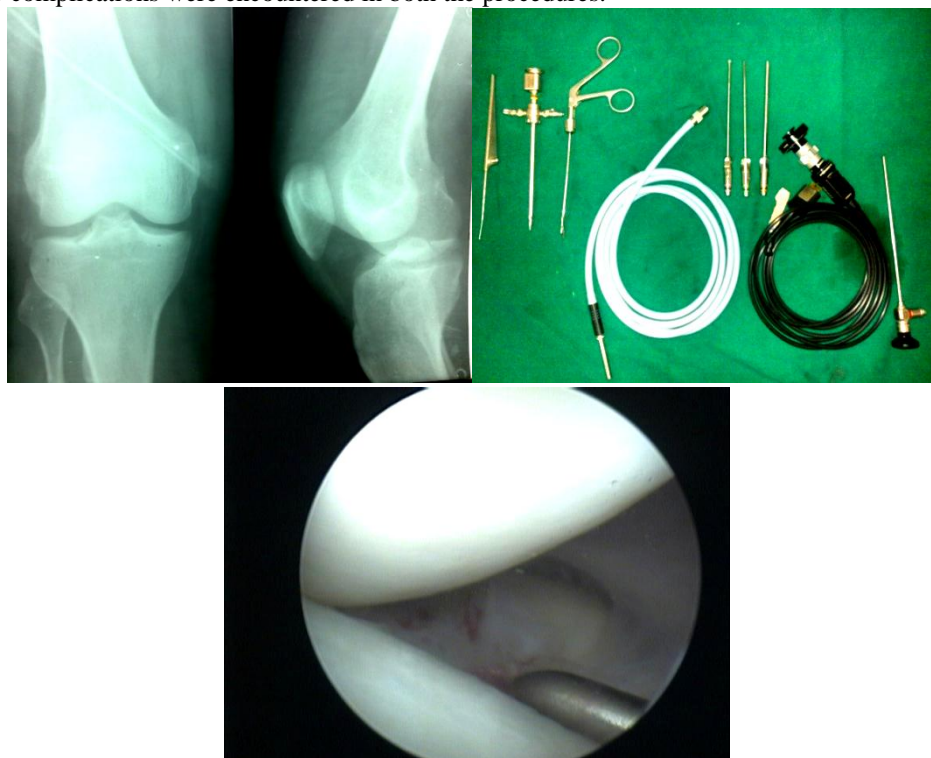


Fig 1: Arthroscopic lavage given to a Type I Kellergren-Lawrence Knee. Arthroscopic picture of cartilage defect.



Fig 2 : Intra-articular Steroid injection given to a patient with Kellergren Lawrence Type I OA knee with symptoms.

IV. Discussion

Our study demonstrated that there is improvement in both the groups in first 3 months. However, the improvement in intra articular steroid group was much after 1 week and weaned off gradually by 3 months and the improvement in arthroscopic lavage was from post-operative period to 3 months. Although at 1 month, arthroscopic lavage group had much better pain and function, it was not statistically significant. Clinical benefits were more among less affected population(Kellergren- Lawrence⁹ I). Immediate pain relief among arthroscopic lavage group could be due to wash out of inflammatory mediators and synovial effusion from the joint.

Selection bias might have been introduced, as the study population was divided based on financial implications. Also, patients entering the study may have had high expectations of benefit from the arthroscopy and lavage, with resultant expectation bias. These biases could potentially influence the validity of the results.¹⁰

V. Conclusion

Based on our results we conclude that both arthroscopic lavage and steroid infiltration showed same results in 1 month.No complications was seen during both procedures.

References

- [1]. Brandt KD, Bradley JD. Should the initial drug used to treat osteoarthritis pain be a nonsteroidalantiinflammatory drug? *J Rheumatol* 2001;28:467–73.
- [2]. Creamer P. Intra-articular corticosteroid injections in osteoarthritis: Do they work and if so, how? *Ann Rheum Dis* 1997;56:634–6.
- [3]. Ravaud P, Moulinier L, Giraudeau B *et al*. Effects of joint lavage and steroid injection in patients with osteoarthritis of the knee. Results of a multicenter, randomised, controlled trial. *Arthritis Rheum* 1999;42:475–82.
- [4]. Bradley JD, Heilman DK, Katz BP, G'Sell P, Wallick JE, Brandt KD. Tidal irrigation as treatment for knee osteoarthritis. *Arthritis Rheum* 2002;46:100–8.
- [5]. Altman R, Asch E, Bloch D *et al*. Development of criteria for the classification and reporting of osteoarthritis: classifications of osteoarthritis of the knee.*Arthritis Rheum* 1986;29:1039–49.
- [6]. Young L, Katrib A, Cuello C *et al*. Effects of intraarticular glucocorticoids on macrophage infiltration and mediators of joint damage in osteoarthritis synovial membranes: findings in a double-blind, placebo-controlled study. *Arthritis Rheum* 2001;44:343–50.
- [7]. Brismar BH, Wredmark T, Movin T, Leandersson J, Svensson O. Observer reliability in the arthroscopic classification of osteoarthritis of the knee. *J Bone Joint Surg Br* 2002;84:42–7.
- [8]. Dougados M, Ayral X, Llistrat V *et al*. The SFA system for assessing articular cartilage lesions at arthroscopy of the knee. *Arthroscopy* 1994;10:69–77.
- [9]. Kellgren JH, Lawrence JS. Radiological assessment of osteoarthritis. *Ann Rheum Dis* 1957;16:494–501.
- [10]. Jaccard J, Wan CK. LISREL approaches to interaction effects in multiple regression. Thousand Oaks (CA): Sage Publications, 1996.