IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 3 Ver. VI (March. 2017), PP 117-123
www.iosrjournals.org

Efficacy of Intraarticular Steroid Injection in Osteoarthritis Knee

Dr. Sandesh Reddy Yaratapalli[1], Dr. Harith Reddy[2], Dr. Jambu Nageshwaran[3]
[1(]*Department Of Orthopaedics, Sri Ramachandra University, India)*
[2(]*Department Of Orthopaedics, Sri Ramachandra University, India)*

***Key words**: visual analog score(VAS), knee society score(KSS), osteoarthritis*

I. Introduction

Osteoarthritis is a chronic progressive joint disorder characterised by articular cartilage degeneration. It is characterized by pain commonly over the medial joint line and associated with varus and valgus deformity. Physical examination usually is marked by joint line tenderness, crepitus and painful range of movements. The pathological feature are characterized by progressive cartilage destruction, osteophytes formation, capsular fibrosis and subchondral cyst formation with sclerosis of the surrounding bone. Several pharmaceutical approaches, such as analgesics, non steroidal anti – inflammatory drugs, COX – 2 inhibitors and steroids (Hochberg et al., 1995), have been proposed, with the aim of reducing pain and maintaining and / or improving joint function. Corticosteroids are usually administered by intra – articular injection in patients who fail to respond to other conservative measures; in particular, patients with joint effusions and local tenderness may have greater benefit from this option (Flanagan et al., 1988). Although it has been established that corticosteroid injections are relatively safe, there are concerns regarding their possible adverse effects, following repeated injections. In our study Corticosteroid injection is effective in osteoarthritis (grade I, II) for short term relief. The extent of pain relief and improvement in KSS is much better in early stages(grade I and II) of OA compared to late stages(grade III)

Aim Of The Study:
To Evaluate The Efficacy Of Intraarticular Steroid Injection In Osteoarthritis Knee

II. Materials And Methods

- The study was carried out on patients with primary osteoarthritis.
- This is a prospective study.
- Study period was from August 2014 to November 2016.
- A total of 50 patients were included in the study.

Inclusion criteria
Patients with primary osteoarthritis of the knee.
Age more than 40 years.
Dissatisfaction with prior attempts at non-operative modalities like NSAIDs, nutritional supplements and physical therapy.
Radiographic evidence of symptomatic osteoarthritis of the knee such as loss of cartilage thickness, osteophyte formation, subchondral sclerosis, or cysts.

Exclusion criteria
Pregnant or lactating patients.
Grade-IV osteoarthritis.
Radiographic evidence of chondrocalcinosis.
Associated ligamentous laxity.
Ongoing infection.
History of crystalline arthropathy, inflammatory arthritis and neuropathic arthropathy.
Intra articular injection with CS within the previous 3 months.
Hypersensitivity to any of the study medications.

Initial evaluation:
Patients were evaluated initially by:

- History
- Clinical Examination

- Blood investigation
- CBC
- ESR
- CRP
- RA Factor
- Serum uric acid
- Based on the X ray, grading is done using Kellgren and Lawrence criteria
- Pre and Post injection evaluation by
  Visual Analog Score (VAS)
  Knee Society Score (KSS)

III. Results

4.1: Age Distribution

Our study comprised of 50 patients having Osteoarthritis. The mean age of patients receiving Corticosteroid was 65 years

4.2: Sex Distribution:

our study comprised of 24 male and 26 female patients respectively.

4.3: GRADES ACCORDING TO KELLGREN AND LAWRENCE CLASSIFICATION(KLC) OF OA :

In this study we had 21 patients with grade-I, 23 with grade-II and 6 patients with grade-III OA knees respectively.

4.4: VISUAL ANALOG SCORE (VAS):

The Corticosteroid injection group at the initial visit had VAS of 6.62 respectively. In our study, there was a significant difference in VAS at first and third months compared to sixth month follow-up.

Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Pre Op VAS	Grade I	21	5.67	.483	.105	5.45	5.89	5	6
	Grade II	23	7.13	.548	.114	6.89	7.37	6	8
	Grade III	6	8.00	.000	.000	8.00	8.00	8	8
	Total	50	6.62	.987	.140	6.34	6.90	5	8
Post op VAS 1 month	Grade I	21	2.00	.447	.098	1.80	2.20	1	3
	Grade II	23	3.35	1.112	.232	2.87	3.83	2	6
	Grade III	6	4.67	.816	.333	3.81	5.52	4	6
	Total	50	2.94	1.236	.175	2.59	3.29	1	6
Post Op VAS 3 month	Grade I	21	2.52	.680	.148	2.21	2.83	1	4
	Grade II	23	3.57	.945	.197	3.16	3.97	3	6
	Grade III	6	5.67	.516	.211	5.12	6.21	5	6
	Total	50	3.38	1.260	.178	3.02	3.74	1	6
Post op VAS 6 month	Grade I	21	3.24	.625	.136	2.95	3.52	2	4
	Grade II	23	4.48	.947	.198	4.07	4.89	3	7
	Grade III	6	7.00	.632	.258	6.34	7.66	6	8
	Total	50	4.26	1.411	.200	3.86	4.66	2	8

Table showing mean VAS scores and SD at various follow up intervals following corticosteroid injection

4.5: Knee Society Score (Kss):

The Corticosteroid injection group at the initial visit had KSS of 140.58 respectively. KSS increased in the first and third months follow-up followed by a decline in the scores at the end of six months follow-up.

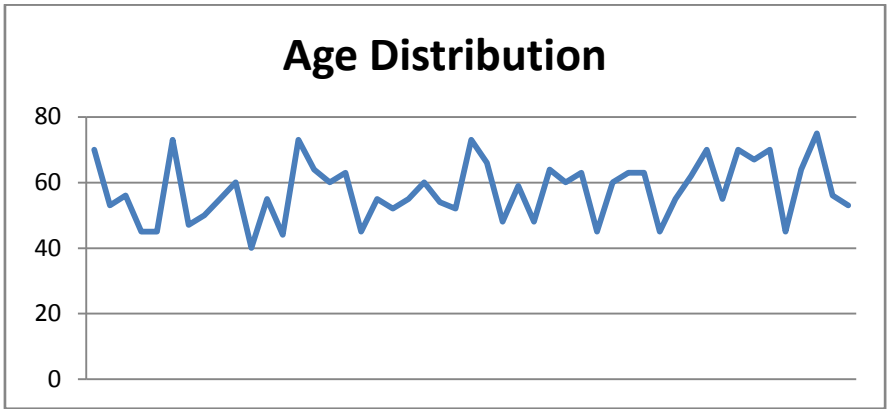
Descriptives

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Pre op KSS	Grade I	21	148.71	5.071	1.107	146.41	151.02	140	160
	Grade II	23	138.96	8.642	1.802	135.22	142.69	130	150
	Grade III	6	123.33	8.165	3.333	114.76	131.90	120	140
	Total	50	141.18	10.792	1.526	138.11	144.25	120	160
KSS after 1 months	Grade I	21	163.81	5.221	1.139	161.43	166.19	155	170
	Grade II	23	157.52	7.286	1.519	154.37	160.67	145	170
	Grade III	6	144.17	6.646	2.713	137.19	151.14	140	155
	Total	50	158.56	8.783	1.242	156.06	161.06	140	170
KSS after 3 months	Grade I	21	160.95	4.642	1.013	158.84	163.07	150	170
	Grade II	23	152.52	7.223	1.506	149.40	155.65	140	163
	Grade III	6	135.83	8.010	3.270	127.43	144.24	130	150
	Total	50	154.06	10.046	1.421	151.21	156.91	130	170
KSS after 6 months	Grade I	21	157.62	4.904	1.070	155.39	159.85	150	165
	Grade II	23	148.61	8.256	1.721	145.04	152.18	135	163
	Grade III	6	129.17	11.143	4.549	117.47	140.86	120	150
	Total	50	150.06	11.490	1.625	146.79	153.33	120	165

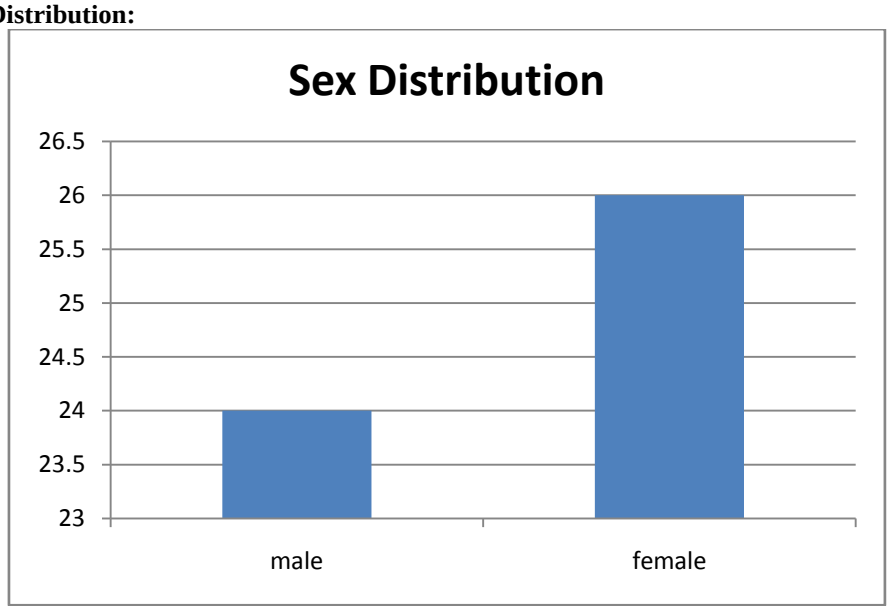
Table showing mean KSS scores and SD at various follow up intervals following CS injection

IV. Tables:

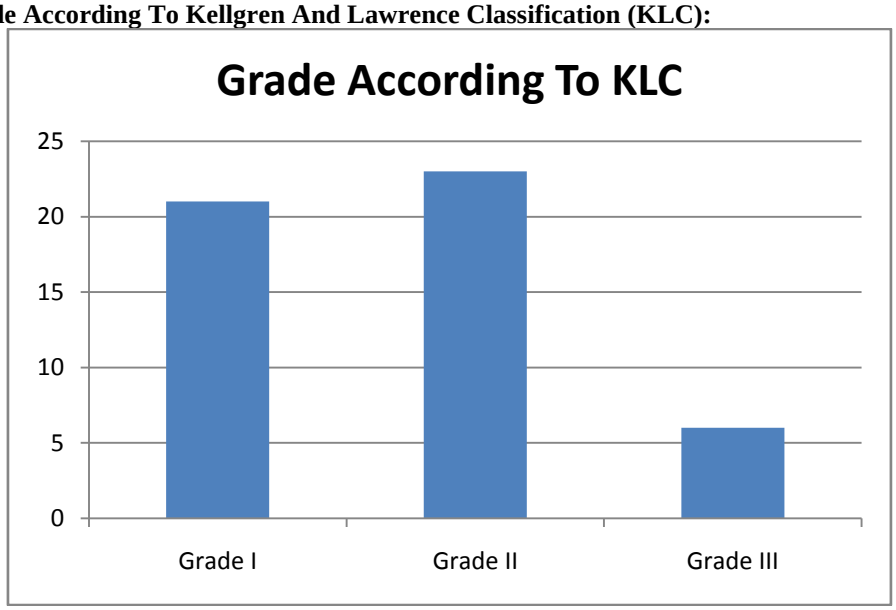
4.1. Age Distribution:



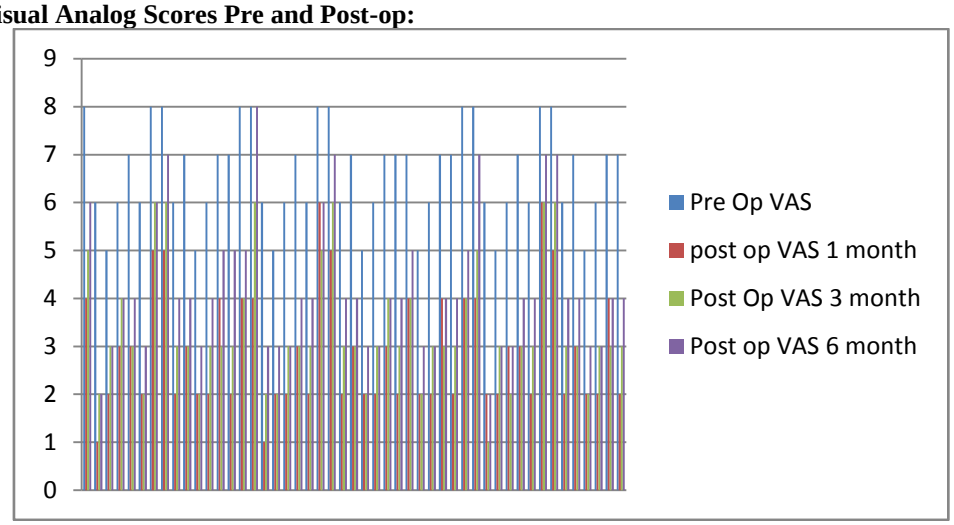
4.2. Sex Distribution:



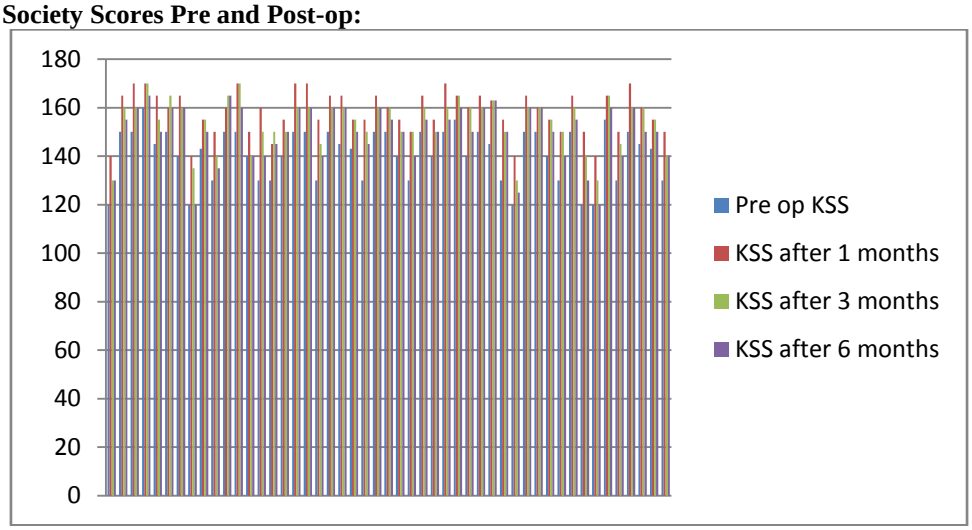
4.3. Grade According To Kellgren And Lawrence Classification (KLC):



4.4. Visual Analog Scores Pre and Post-op:



5.5: Knee Society Scores Pre and Post-op:



V. Discussion

In recent years, numerous studies evaluated the efficacy of Corticosteroid injection. Several studies demonstrated that intra articular steroid injection can sufficiently reduce pain, improve function and quality of life.It has been suggested that variation in the response to intra articular steroid therapy may be attributable to inaccurate injection. In a study, Jones et al addressed the issue by obtaining a single plain joint radiograph after joint aspiration and injection in patients who received CS mixed with a radiographic contrast medium. The study addressed accuracy of injection in a series of joints including 59 knees from 109 patients with a spectrum of rheumatological conditions.Accurate injection was associated with successful aspiration of the synovial fluid at the time of injection. Reduction in joint inflammation was in turn, associated with accurate injection. In our study we have aspirated synovial fluid before the injection.In our study patients at good amount of pain relief at initial months compared to the end of six months follow up.

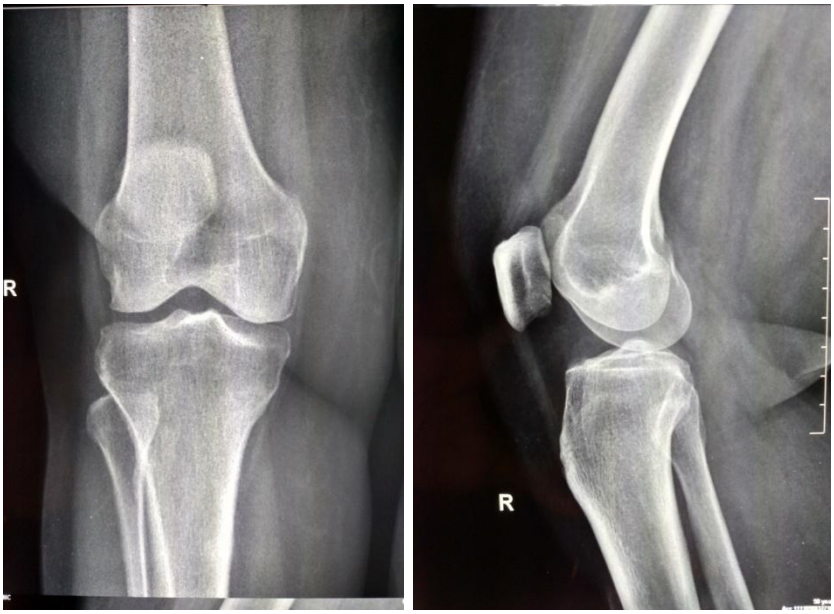
A.Skwara et al in his randomized control study on gait patterns following intra articular Corticosteroid injection stated that single injection shows good range of motion and pain relief as well as improvement in clinical results. In this study most of the patients had full range of motion with terminal pain. Significant gait changes were not noted before the injection in most of the patients.

Seth S Leopold et al in his study on 100 patients has used VAS, knee society score and WOMAC score to evaluate the efficacy of CS intra articular injections in OA knee. Aspiration was done to all patients in both the groups prior to the injection. In his study patients were allowed to have a second injection of CS in their 6 months follow up period. Patients were allowed to take NSAIDs. He has concluded good results with respect to pain relief or function at six months of follow up. In our study we have used VAS and knee society score for evaluation of CS intra articular injection in OA knee. We have done aspiration to all patients prior to the intra articular injection. Only one intra articular injection of CS was given to the patients in 6 months follow up

period. Patients were allowed to take NSAIDs and encouraged to do quadriceps and hamstring strengthening exercise.The present study demonstrated only modest treatment effects from baseline for corticosteroid.

VI. Figures:

Case : 1

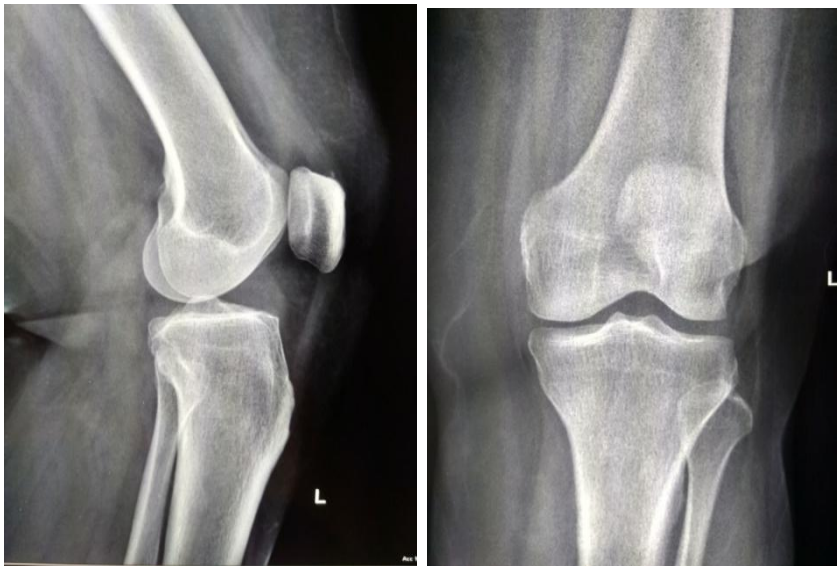


55 years old female with right side grade I OA knee. Patient underwent intraarticular streroid injection.

Follow up scores

System	Pre op	1 month	3 month	6 month
VAS	6	3	2	2
KSS	150	170	165	160

Case: 2



65 years old female with right side Grade I OA knee. Patient underwent intra-articular corticosteroid acid injection.

Follow up scores

System	Pre op	1 month	3 month	6 month
VAS	6	3	3	2
KSS	150	170	160	160

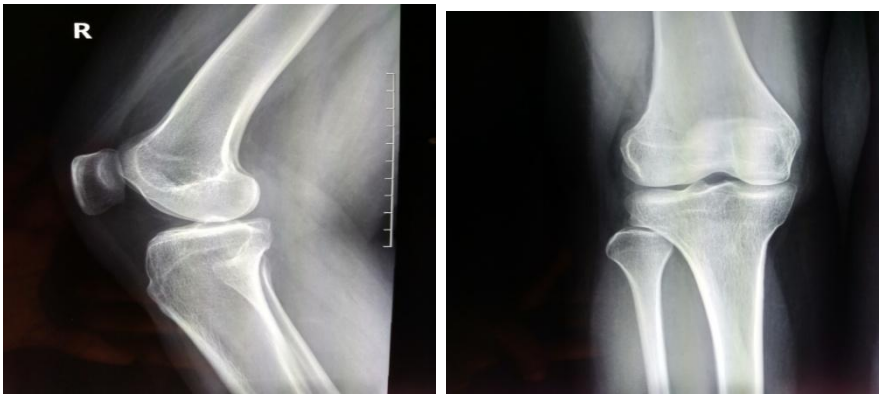
Case : 3

60 years old female with right side grade II OA knee. Patient underwent intraarticular corticosteroid acid injection.

Follow up scores

System	Pre op	1 month	3 month	6 month
VAS	7	6	4	4
KSS	140	145	160	150

Case : 4



72 years old female with right side Grade II OA knee. Patient underwent intraarticular corticosteroid acid injection.

Follow up scores

System	Pre op	1 month	3 month	6 month
VAS	7	4	4	5
KSS	140	150	160	160

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