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Viscosupplementation Versus Corticosteroid Injection in Lumbar Facet Arthropathy: A Retrospective Comparative Study

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KEYWORDS

Viscosupplementation, Corticosteroid Injection, Hyaluronic acid, Triamcinolone, Lumbar Facet Arthropathy, Pain, Functional outcome

ABSTRACT:

Background: Lumbar facet joint arthropathy is a common cause of low back pain, often treated with either corticosteroid injections or hyaluronic acid (HA) viscosupplementation. While both treatments are used in clinical practice, their comparative efficacy in managing facetogenic pain remains unclear.

Objective: To compare the efficacy of injected Hyaluronic acid versus Corticosteroids in the treatment of clinico-radiologically diagnosed lumbar facetogenic pain.

Methods: This was a single centre, hospital based retrospective study conducted in the Department of Orthopaedics, R L Jalappa Hospital & Research Center, associated with the Sri Devaraj Urs Medical College, Kolar, Karnataka between February 2023 and January 2024.

Results: This study included 36 participants in both the HA and Triamcinolone (TA) groups, with similar ($P > 0.05$) baseline characteristics such as age, gender, height, and weight. Regarding the severity of osteoarthritis, assessed using the Kellgren scale, no statistically significant differences were found across lumbar levels ($P > 0.05$). However, significant severity differences were noted, with lower lumbar levels exhibiting higher severity ($P < 0.001$). At baseline, pain scores were comparable between the HA and TA groups ($P = 0.758$). At 1 month, the TA group showed significantly lower pain scores compared to the HA group ($P < 0.001$). At 3 months, pain scores were similar between the groups ($P = 0.792$), but at 6 months, the TA group again had significantly lower pain scores ($P = 0.001$). Both groups showed significant improvement in pain scores over time ($P < 0.001$). For functional status, measured by the Roland Morris Questionnaire (RMQ), baseline scores were similar ($P = 0.848$). At 1 month, the TA group had significantly better functional improvement ($P = 0.025$), but by 3 months, the HA group showed better improvement ($P = 0.039$). By 6 months, the HA group maintained better functional outcomes compared to the TA group ($P < 0.001$), with significant overall improvements in both groups ($P < 0.001$).

Conclusion: While TA provided rapid and significant short-term pain relief and functional improvement, HA demonstrated a sustained effect on functional outcomes over six months.

Introduction

Low back pain (LBA) is a prevalent condition, with lumbar facet joint arthropathy identified as a significant contributing factor. Various treatment modalities for LBA include facet blocks with steroids and anaesthetics and facet denervation procedures. While lumbar disc

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degeneration often precedes osteoarthritis (OA) of the facet joints,(1) both conditions frequently coexist, necessitating accurate diagnostic methods such as Magnetic Resonance Imaging (MRI) or discography to identify the pain source.(2) Chronic LBA caused by facet joint OA typically manifests during rest or at the initiation of movement.(3) Hyaluronic acid (HA), known for its viscoelastic properties, has shown efficacy in treating OA in joints such as the knee, shoulder, and hip and has recently gained attention in spinal applications.(4) Visco-supplementation with HA restores the lubrication and elasticity of synovial fluid, which are diminished in OA due to depolymerization of HA molecules, contributing to cartilage and bone degeneration.(5, 6) In contrast, corticosteroid injections, widely used in lumbar facet syndrome, alleviate pain by reducing inflammation and swelling and indirectly increasing joint viscosity.(7-9) Despite their widespread use, the reported efficacy of corticosteroids varies, and robust evidence-based support remains limited. “While HA has shown promise in managing lumbar facetogenic pain, prior studies report inconsistent results due to variability in diagnostic criteria, control groups, and outcome measures.(10) To address these gaps and provide comparative insights, this study was designed to evaluate the efficacy of intra-articular HA versus corticosteroids in treating clinico-radiologically diagnosed lumbar facetogenic pain. The objective of the present study was to compare the efficacy of injected Hyaluronic acid versus Corticosteroids in the treatment of clinico-radiologically diagnosed lumbar facetogenic pain.

Materials and Methods

This was a single centre, hospital based retrospective study conducted in the Department of Orthopaedics, R L Jalappa Hospital & Research Center, associated with the Sri Devaraj Urs Medical College, Kolar, Karnataka (IEC Approval Number SDUAHER/KLR/R&D/CEC/S/PG/67/2024-25 dated 21/10/2024). Patients aged between 40 and 75 years of either gender, presenting with symptomatic lumbar facet joint arthritis characterized by reproducible pain on hyperextension and lateral rotation, and radiographic evidence of facet joint degeneration were included in the study. Exclusion criteria encompassed patients with a history of alcohol or drug abuse; those who had received intra-articular injections of corticosteroids or hyaluronic acid in any joint within the past three months; patients with a history of lumbar surgery; individuals with allergies or contraindications to the administered agents; those with poor skin condition at the injection site; and patients with other confounding medical conditions, including non-osteoarthritic joint diseases, immune deficiencies, malignancies, joint infections, or anticoagulant use.

All patients who received intra-articular corticosteroid (triamcinolone) and viscosupplementation (hyaluronic acid) during the one-year period from February 2023 to January 2024 were retrospectively analyzed. Data were retrieved from the medical records of patients with a minimum follow-up of six months. Patient assessment was conducted based on information obtained from the Picture Archiving and Communication System (PACS). Based on previous literature by Fuchs et al.,(3) it was observed that the Roland Morris Questionnaire (RMQ) score decreased from a baseline value of 12.5 to 7.1 ± 5.4 in the SH group and 8.3 ± 4.8 in the TA group. A similar difference between the groups was expected in this study. To establish non-inferiority in the comparison of RMQ outcomes, the minimum required sample size was calculated to be 36 subjects in each study group, resulting in a total of 72 subjects (36 in the HA group and 36 in the TA group). Baseline data were obtained from all eligible subjects, including demographic information, height, weight, and duration of pain. Pain levels were assessed using a 100-mm Visual Analog Scale (VAS), and disability was measured using the RMQ. On the scheduled date of the procedure, the involved facet joints were fluoroscopically injected with the study medication using standard injection techniques. Patients in the TA group received 1 mL of triamcinolone per joint, while patients in the HA group received 1 mL of hyaluronic acid per joint. Study subjects were followed up at 1, 3, and 6 months after the procedure. During each follow-up visit, outcome data, including pain scores (VAS) and functional status (RMQ), were collected. At the 6-month visit, an overall patient satisfaction score, expressed as a global percentage improvement, was also recorded. Participants were instructed not to alter their ongoing treatments, including physical therapy and medications they were using prior to enrolment in the study. If they were undergoing physical therapy at the time of

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enrolment, they were allowed to complete the course as planned.

Statistical analysis: The data obtained was manually entered into Microsoft Excel and analysed using Statistical Package for Social Sciences (SPSS) v23. All the categorical variables were summarised using frequencies and percentages. Continuous variables were summarized using mean (standard deviation) and/or median (interquartile range) (based on the results of data normality, tested using Kolmogorov–Smirnov test and the Shapiro–Wilk test). To test for statistical significance, Chi square test or Fisher exact test (for categorical variables) and independent "t" test or Mann Whitney U test was used. The before and after treatment comparison (follow up at 1, 3, and 6 months after the procedure) was done based on repeated measures analysis of variance (ANOVA) test. Statistical significance was considered at $p<0.05$.

Ethical Statement: The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Approval was obtained from the Institutional Human Ethics Committee prior to commencement. All patients and their attenders were provided with the Patient Information Sheet (PIS) in their native language, and its contents were explained verbally to ensure thorough understanding and satisfaction. Written informed consent was obtained from all participants before their enrolment in the study.

Results

In this study, 36 participants were included in both the Hyaluronic acid (HA) group and the Triamcinolone (TA) group. The mean age of participants in the HA group was 63.2 years (SD 9.5), while in the TA group, it was 64.5 years (SD 10.2), with no statistically significant difference (P = 0.578). Participants aged below 60 comprised 33.3% in the HA group and 41.7% in the TA group, whereas those above 60 accounted for 66.7% and 58.3%, respectively (P = 0.465). In terms of gender distribution, 38.9% of the HA group and 30.6% of the TA group were male, while 61.1% and 69.4% were female, respectively, with no significant difference (P = 0.458). The mean height was 166.9 cm (SD 7.7) in the HA group and 164.7 cm (SD 8.1) in the TA group (P = 0.242), and the mean weight was 73.2 kg (SD 9.1) in the HA group and 72.9 kg (SD 10.6) in the TA group (P = 0.898). Regarding the site of involvement, the L3-L4 segment was affected in 22.2% of the HA group and 25.0% of the TA group, the L4-L5 segment in 50.0% and 47.2%, and the L5-S1 segment in 27.8% for both groups, with no significant differences observed (P = 0.957).

In this study, the severity of osteoarthritis, assessed using the Kellgren scale, was compared between the HA group and the TA group across various lumbar levels. At the L3-L4 level, the mean severity scores were 2.3 (SD 0.8) on the right and 2.3 (SD 0.7) on the left for the HA group, compared to 2.5 (SD 0.7) on both sides for the TA group, with P values of 0.263 and 0.229, respectively. At the L4-L5 level, the HA group had mean scores of 2.8 (SD 0.8) on the right and 2.9 (SD 0.8) on the left, while the TA group had scores of 2.9 (SD 0.7) and 3.0 (SD 0.9) on the right and left, respectively, with P values of 0.574 and 0.619. At the L5-S1 level, the HA group had mean scores of 3.1 (SD 0.7) on the right and 3.2 (SD 0.8) on the left, compared to 3.4 (SD 0.8) and 3.3 (SD 0.8) in the TA group, with P values of 0.095 and 0.598. Although differences were observed in scores between groups, they were not statistically significant (P < 0.05). The overall P values for both groups were less than 0.001, indicating significant differences in severity across lumbar levels – lower the level of involvement, higher the severity.

Baseline pain scores were similar between the HA group (mean 69.4, SD 13.1) and the TA group (mean 68.4, SD 14.3), with no significant difference (P = 0.758). At 1 month post procedure, the TA group showed a significantly lower mean pain score (31.7, SD 11.8) compared to the HA group (42.1, SD 8.4; P < 0.001). However, at 3 months, the pain scores were similar between the groups (33.5, SD 9.5 for HA and 34.2, SD 12.7 for TA; P = 0.792). At 6 months, the TA group again showed significantly lower pain scores (32.1, SD 8.8) compared to the HA group (39.8, SD 10.2; P = 0.001). The overall improvement in pain scores was significant within both groups (P < 0.001).

Functional status scores were also comparable at baseline, with mean RMQ scores of 12.5 (SD 2.1) for HA and 12.6 (SD 2.3) for TA (P = 0.848). At 1 month post procedure, the TA group had a significantly lower mean RMQ score (7.3, SD 2.4) compared to the HA group (8.4, SD 1.6; P = 0.025). At 3 months, the HA group showed better functional improvement (mean 7.2, SD 1.6) than the TA group (mean 8.1, SD 2.0; P = 0.039). By 6 months,

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the HA group maintained lower scores (6.8, SD 1.7) compared to the TA group (8.6, SD 1.5; $P < 0.001$). Overall changes in functional status were significant within both groups ($P < 0.001$).

Discussion

The present study compared the demographic characteristics and baseline radiographic findings of patients with lumbar facetogenic pain who received intra-articular HA or TA. The analysis revealed no statistically significant differences between the two groups in terms of demographic variables, radiographic severity of osteoarthritis, or site of lumbar involvement. These findings highlight the homogeneity of the study population, ensuring a robust comparison of the therapeutic efficacy of the two interventions. The demographic variables, including age, gender distribution, height, and weight, were comparable between the HA and TA groups. The mean age of participants in both groups was approximately 63 years, aligning with previous studies that suggest lumbar facet joint pain is most prevalent in older adults due to degenerative changes (Kalichman & Hunter, 2007).(11) The balanced distribution of participants below and above 60 years further supports the generalizability of the study findings to middle-aged and older populations. Although a slightly higher percentage of females was observed in both groups, this distribution was not statistically significant. Previous research has reported similar trends, indicating a potential predisposition of women to facet joint pain, possibly due to biomechanical and hormonal factors (Manchikanti et al., 2004; Perolat et al., 2018).(12, 13) The Kellgren scale scores indicated comparable levels of osteoarthritis severity between the HA and TA groups at each lumbar segment (L3–L5). These results are consistent with the understanding that facet joint osteoarthritis progresses uniformly in bilateral joints and affects lower lumbar segments more severely (Manchikanti et al., 2007; Manchikanti et al., 2010).(14, 15) The overall P values of <0.001 for severity differences across lumbar levels support this trend, with L5 showing the highest scores. These findings emphasize the degenerative nature of facet joint arthritis and validate the use of the Kellgren scale for radiographic assessment. The absence of significant differences in baseline characteristics ensures the internal validity of this study. Both HA and TA groups started with similar levels of disease severity, allowing for a fair comparison of post-treatment outcomes.

Baseline pain scores were similar between the HA and TA groups, ensuring that the two groups started with comparable levels of symptom severity. This homogeneity supports the internal validity of the findings. Both groups experienced significant improvements in pain scores post-treatment, indicating the effectiveness of both interventions in managing facetogenic pain. At one-month post-procedure, the TA group exhibited significantly lower pain scores compared to the HA group. This aligns with the known mechanism of corticosteroids, which rapidly suppress inflammation and inhibit the release of pro-inflammatory mediators such as cytokines and prostaglandins (Coutinho & Chapman, 2011).(16) These effects result in quicker symptomatic relief, particularly in inflammatory pain conditions. By the three-month mark, pain scores were comparable between the groups, suggesting a waning effect of corticosteroids and a delayed but sustained onset of action for HA. Viscosupplementation with HA acts by restoring the viscoelastic properties of synovial fluid, reducing mechanical stress, and potentially modifying joint cartilage metabolism (Conrozier et al., 2021).(17) This slower onset of action reflects its role in addressing the underlying pathophysiology rather than providing immediate relief. At six months, the TA group again demonstrated lower pain scores than the HA group ($P = 0.001$), though both groups maintained substantial improvements from baseline. This finding may reflect individual variability in treatment response and raises the possibility that HA's benefits may plateau over time, particularly in cases of advanced degenerative changes.

Baseline RMQ scores were also comparable between groups, ensuring an unbiased comparison. Both groups showed significant functional improvement at all time points ($P < 0.001$), reflecting the clinical benefits of both interventions in reducing pain and improving mobility. At one month, the TA group had significantly better functional scores than the HA group, consistent with its rapid anti-inflammatory effects. Immediate pain relief likely facilitated greater mobility and reduced disability in this group. At three months, the HA group showed better RMQ scores compared to the TA group. This may be attributed to the chondroprotective and lubricative

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effects of HA, which could enhance joint mechanics and reduce disability over time (Bowman et al., 2018; Maheu et al., 2019).(18, 19) By six months, the HA group maintained superior functional improvement. This suggests that HA provides sustained benefits in mitigating disability, potentially through its long-term effects on cartilage metabolism and joint biomechanics. These findings align with previous studies suggesting that HA's efficacy in reducing disability may surpass corticosteroids in the long term" (Askari et al., 2016; Bannuru et al., 2009).(20, 21)

The findings indicate that TA provides faster pain relief and short-term functional improvement, making it an appropriate choice for acute symptom management. Conversely, HA shows a more sustained impact on functional status, supporting its use as a long-term intervention in managing facetogenic pain. Clinicians may consider patient-specific factors, such as the duration and severity of symptoms, when selecting between these treatments. Previous studies have reported similar temporal trends in pain and functional outcomes with corticosteroids and HA. Manchikanti et al.(15) (2010) demonstrated the short-term efficacy of corticosteroids in reducing facet joint pain, while Bellamy et al.(22) (2006) highlighted HA's delayed but longer-lasting effects in osteoarthritic joints. Bisicchia & Tudisco further suggested that HA's long-term benefits may be particularly evident in preserving joint function and mobility, consistent with the current findings.(23) The findings also corroborate with that reported by He et al.(24)

The present study has several limitations that warrant consideration. The retrospective design introduces potential biases, such as reliance on medical records, which may lack complete data or uniform documentation. Additionally, the study was conducted at a single centre, which may not reflect broader population characteristics. Finally, the reliance on subjective outcome measures like VAS and RMQ, though validated, may introduce variability due to patient perception and reporting. Future prospective, multicentre trials with larger cohorts are recommended to validate these results.

Conclusion

This study highlights the distinct temporal benefits of intra-articular HA and TA in the management of lumbar facetogenic pain. While TA provided rapid and significant short-term pain relief and functional improvement, HA demonstrated a sustained effect on functional outcomes over six months. Both treatments were effective in reducing pain and disability, with overall significant improvements from baseline in both groups. The choice between HA and TA should be guided by patient-specific factors, including the need for immediate symptom relief versus long-term functional improvement.

References

1. Niosi CA, Oxland TR. Degenerative mechanics of the lumbar spine. Spine J. 2004;4(6 Suppl):202s-8s.
2. Cleary M, Keating C, Poynton AR. Viscosupplementation in lumbar facet joint arthropathy: a pilot study. J Spinal Disord Tech. 2008;21(1):29-32.
3. Fuchs S, Erbe T, Fischer HL, Tibesku CO. Intraarticular hyaluronic acid versus glucocorticoid injections for nonradicular pain in the lumbar spine. J Vasc Interv Radiol. 2005;16(11):1493-8.
4. Kelly MA, Moskowitz RW, Lieberman JR. Hyaluronan therapy: looking toward the future. Am J Orthop (Belle Mead NJ). 2004;33(2 Suppl):23-8.
5. Laurent TC, Fraser JR. Hyaluronan. Faseb j. 1992;6(7):2397-404.
6. Balazs EA, Watson D, Duff IF, Roseman S. Hyaluronic acid in synovial fluid. I. Molecular parameters of hyaluronic acid in normal and arthritis human fluids. Arthritis Rheum. 1967;10(4):357-76.
7. Binder DS, Nampiaparampil DE. The provocative lumbar facet joint. Curr Rev Musculoskelet Med. 2009;2(1):15-24.
8. Stephens MB, Beutler AI, O'Connor FG. Musculoskeletal injections: a review of the evidence. Am Fam Physician. 2008;78(8):971-6.
9. Carette S, Marcoux S, Truchon R, Grondin C, Gagnon J, Allard Y, et al. A controlled trial of corticosteroid injections into facet joints for chronic low back pain. N Engl J Med. 1991;325(14):1002-7.

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10. DePalma MJ, Ketchum JM, Queler ED, Trussell BS. Prospective pilot study of painful lumbar facet joint arthropathy after intra-articular injection of hylan G-F 20. Pm r. 2009;1(10):908-15.

11. Kalichman L, Hunter DJ. Lumbar facet joint osteoarthritis: a review. Semin Arthritis Rheum. 2007;37(2):69-80.

12. Perolat R, Kastler A, Nicot B, Pellat JM, Tahon F, Attye A, et al. Facet joint syndrome: from diagnosis to interventional management. Insights Imaging. 2018;9(5):773-89.

13. Manchikanti L, Boswell MV, Singh V, Pampati V, Damron KS, Beyer CD. Prevalence of facet joint pain in chronic spinal pain of cervical, thoracic, and lumbar regions. BMC Musculoskeletal Disorders. 2004;5(1):15.

14. Manchikanti L, Manchikanti KN, Manchukonda R, Cash KA, Damron KS, Pampati V, et al. Evaluation of lumbar facet joint nerve blocks in the management of chronic low back pain: preliminary report of a randomized, double-blind controlled trial: clinical trial NCT00355914. Pain Physician. 2007;10(3):425-40.

15. Manchikanti L, Singh V, Falco FJ, Cash KA, Pampati V. Evaluation of lumbar facet joint nerve blocks in managing chronic low back pain: a randomized, double-blind, controlled trial with a 2-year follow-up. Int J Med Sci. 2010;7(3):124-35.

16. Coutinho AE, Chapman KE. The anti-inflammatory and immunosuppressive effects of glucocorticoids, recent developments and mechanistic insights. Mol Cell Endocrinol. 2011;335(1):2-13.

17. Conrozier T, Raman R, Chevalier X, Henrotin Y, Monfort J, Diraçoglù D, et al. Viscosupplementation for the treatment of osteoarthritis. The contribution of EUROVISCO group. Ther Adv Musculoskelet Dis. 2021;13:1759720x211018605.

18. Bowman S, Awad ME, Hamrick MW, Hunter M, Fulzele S. Recent advances in hyaluronic acid based therapy for osteoarthritis. Clinical and Translational Medicine. 2018;7(1):6.

19. Maheu E, Bannuru RR, Herrero-Beaumont G, Allali F, Bard H, Migliore A. Why we should definitely include intra-articular hyaluronic acid as a therapeutic option in the management of knee osteoarthritis: Results of an extensive critical literature review. Semin Arthritis Rheum. 2019;48(4):563-72.

20. Bannuru RR, Natov NS, Obadan IE, Price LL, Schmid CH, McAlindon TE. Therapeutic trajectory of hyaluronic acid versus corticosteroids in the treatment of knee osteoarthritis: a systematic review and meta-analysis. Arthritis Rheum. 2009;61(12):1704-11.

21. Askari A, Gholami T, NaghiZadeh MM, Farjam M, Kouhpayeh SA, Shahabfard Z. Hyaluronic acid compared with corticosteroid injections for the treatment of osteoarthritis of the knee: a randomized control trail. SpringerPlus. 2016;5(1):442.

22. Bellamy N, Campbell J, Robinson V, Gee T, Bourne R, Wells G. Viscosupplementation for the treatment of osteoarthritis of the knee. Cochrane Database Syst Rev. 2006;2006(2):Cd005321.

23. Bisicchia S, Tudisco C. Hyaluronic acid vs corticosteroids in symptomatic knee osteoarthritis: a mini-review of the literature. Clin Cases Miner Bone Metab. 2017;14(2):182-5.

24. He W-w, Kuang M-j, Zhao J, Sun L, Lu B, Wang Y, et al. Efficacy and safety of intraarticular hyaluronic acid and corticosteroid for knee osteoarthritis: A meta-analysis. International Journal of Surgery. 2017;39:95-103.

Table 1: Baseline characteristics of the study groups

	HA group N = 36	**TA group N = 36**	**P value**
	n (%)	**n (%)**	
Age (in years), Mean (SD)	63.2 (9.5)	64.5 (10.2)	0.578

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Age (in years)	≤60	12 (33.3)	15 (41.7)	0.465
	>60	24 (66.7)	21 (58.3)	
Gender	Male	14 (38.9)	11 (30.6)	0.458
	Female	22 (61.1)	25 (69.4)	
Height (in cm), Mean (SD)		166.9 (7.7)	164.7 (8.1)	0.242
Weight (in kg), Mean (SD)		73.2 (9.1)	72.9 (10.6)	0.898
Site of involvement	L3-L4	8 (22.2)	9 (25.0)	0.957
	L4-L5	18 (50.0)	17 (47.2)	
	L5-S1	10 (27.8)	10 (27.8)	
*Statistically significant at p<0.05 SD, Standard deviation; TA, Triamcinolone; HA, Hyaluronic acid				

Table 2: Distribution of patients by severity of osteoarthritis

		HA group N = 36	**TA group N = 36**	**P value**
		n (%)	**n (%)**	
Severity of osteoarthritis (Kellgren)	L3-L4 right	2.3 (0.8)	2.5 (0.7)	0.263
	L3-L4 left	2.3 (0.7)	2.5 (0.7)	0.229
	L4-L5 right	2.8 (0.8)	2.9 (0.7)	0.574
	L4-L5 left	2.9 (0.8)	3.0 (0.9)	0.619
	L5-S1 right	3.1 (0.7)	3.4 (0.8)	0.095
	L5-S1 left	3.2 (0.8)	3.3 (0.8)	0.598
P value		<0.001*	<0.001*	
*Statistically significant at p<0.05 SD, Standard deviation; TA, Triamcinolone; HA, Hyaluronic acid				

Table 3: Comparison of study groups by pain scores and functional status

		HA group N = 36	**TA group N = 36**	**P value**
		n (%)	**n (%)**	
Pain scores (Visual analogue scale)	Baseline	69.4 (13.1)	68.4 (14.3)	0.758
	Post procedure – 1 month follow up	42.1 (8.4)	31.7 (11.8)	<0.001*
	Post procedure – 3 months follow up	33.5 (9.5)	34.2 (12.7)	0.792
	Post procedure – 6 months follow up	39.8 (10.2)	32.1 (8.8)	0.001*
	P value	<0.001*	<0.001*	
Functional status (Roland Morris Questionnaire)	Baseline	12.5 (2.1)	12.6 (2.3)	0.848
	Post procedure – 1 month follow up	8.4 (1.6)	7.3 (2.4)	0.025*
	Post procedure – 3 months follow up	7.2 (1.6)	8.1 (2.0)	0.039*
	Post procedure – 6 months follow up	6.8 (1.7)	8.6 (1.5)	<0.001*
	P value	<0.001*	<0.001*	
*Statistically significant at p<0.05 SD, Standard deviation; TA, Triamcinolone; HA, Hyaluronic acid				

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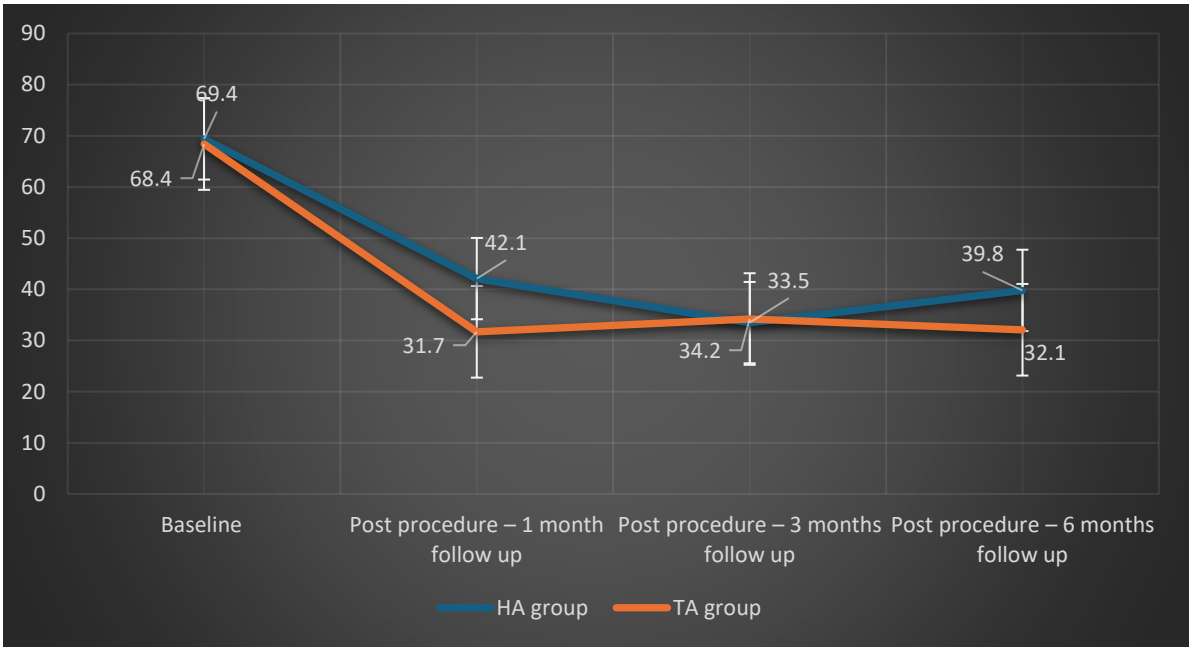

Figure 1: Comparison of study groups by pain scores

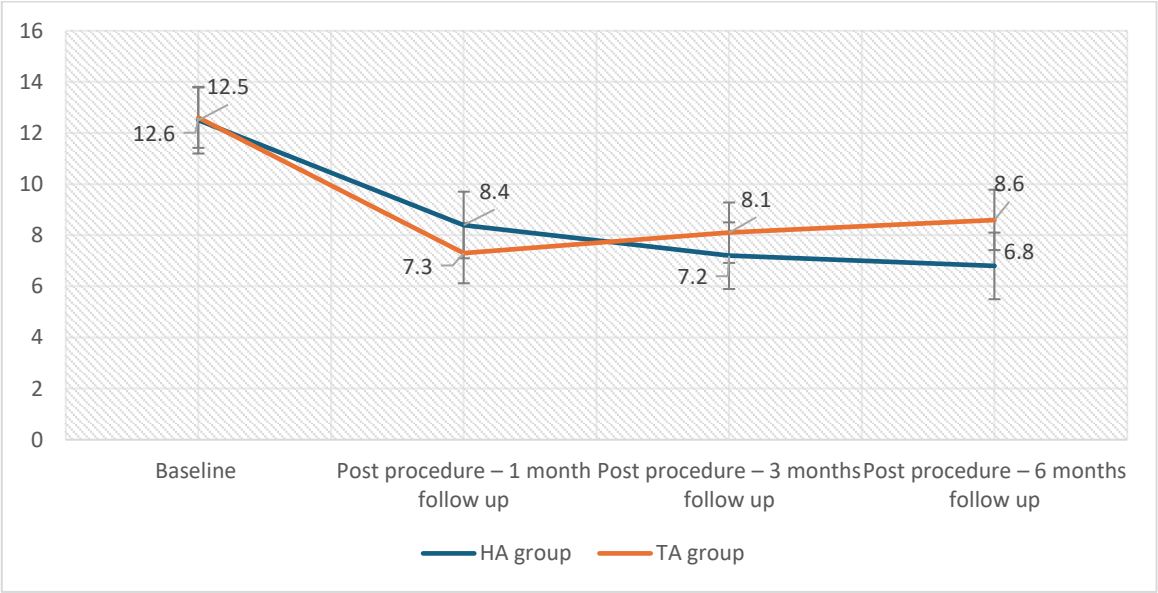

Figure 2: Comparison of study groups by functional status