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ORIGINAL ARTICLE

Comparison of ultrasound- and fluoroscopy-guided intra-articular corticosteroid injections for hip osteoarthritis

Yılmaz Karaduman,[1] Arzu Muz,[2] Emine Yüksel,[3] Seydi Gündoğan,[2] İsmail Eren Durmuş,[4] Suna Akın Takmaz[2]

[1]Department of Pain Management, Manisa City Hospital, Manisa, Türkiye
[2]Department of Pain Management, Ankara Training and Research Hospital, Ankara, Türkiye
[3]Department of Pain Management, Ankara Etlik City Hospital, Ankara, Türkiye
[4]Department of Pain Management, Tekirdağ Dr. İsmail Fehmi Cumalioğlu City Hospital, Tekirdağ, Türkiye

SUMMARY

Objectives: This study aimed to evaluate the effectiveness of ultrasound (US)-guided and fluoroscopy (FL)-guided intra-articular steroid injections on pain and hip function. The study focused on patients with hip osteoarthritis (coxarthrosis) who were refractory to medical treatment.

Methods: In this retrospective study, 61 patients with stage ≥2 coxarthrosis and VAS ≥4 were evaluated. Patients received either US-guided (Group U) or FL-guided (Group F) corticosteroid injections. Visual analog scale (VAS), Harris Hip Score (HHS), and analgesic use were assessed at 1 week and at 1, 3, and 6 months post-treatment. Analgesic use was evaluated based on the number of days with analgesic consumption and was interpreted as increased, decreased, or unchanged compared to baseline.

Results: Both treatment methods provided significant improvements in VAS and HHS scores at all follow-up points across osteoarthritis stages ($p<0.05$). However, no statistically significant difference was found between the groups in terms of pain scores, functional outcomes, or analgesic use. While marked improvements were observed in stage 2 patients, the clinical effectiveness of the injections decreased as the disease stage progressed.

Conclusion: Both US-guided and FL-guided steroid injections resulted in significant pain reduction and improved functionality in patients with osteoarthritis. No clear superiority was observed between the two techniques. Treatment was most effective in patients at earlier stages of the disease, with efficacy declining as the disease advanced. Additionally, US is a safer imaging modality compared to FL, as it does not involve exposure to ionizing radiation.

Keywords: Coxarthrosis; fluoroscopy; hip osteoarthritis; intraarticular corticosteroid injection; ultrasonography.

Introduction

Osteoarthritis (OA) is the most common type of arthritis worldwide. It is associated with degenerative changes that develop either idiopathically or secondary to specific conditions that damage the articular surface.[1,2] The hip joint is one of the most frequently affected sites of OA, and the lifetime risk of developing symptomatic hip osteoarthritis is approximately 25%.[3,4] OA significantly impairs quality of life and imposes a substantial socioeconomic burden globally. With increasing life expectancy and rising obesity rates, its prevalence is expected to rise further in the coming decades.[5] Coxarthrosis involves structural alterations such as cartilage degeneration, osteophyte formation, ligament laxity, and synovial inflammation.[6] The most common symptom is hip pain localized in the groin region. The disease is characterized by pain accompanied by stiffness, restricted range of motion, and crepitus. Symptoms typically worsen after rest or intense physical activity and often limit walking and daily functioning.[1]

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Correspondence: Dr. Yılmaz Karaduman. Manisa Şehir Hastanesi Ağrı Tedavisi Bölümü, Manisa, Türkiye.
Phone: +90 - 542 677 39 28 **e-mail:** ymzkaraduman@hotmail.com

Diagnosis is based on patient history, physical examination, and, most commonly, radiographic imaging.[7] Recently, the growing availability of US has contributed to a more detailed understanding of the disease. US is increasingly used as a valuable tool in both diagnostic and therapeutic contexts.[8]

Initial treatment of hip OA generally involves non-pharmacological interventions such as low-impact exercise, weight management, physical therapy, and lifestyle modifications. Pharmacologic management typically begins with paracetamol; non-steroidal anti-inflammatory drugs and, when necessary, short-term opioid analgesics may be added.[9] Interventional therapies prior to surgery include intra-articular injections of corticosteroids, hyaluronic acid, or platelet-rich plasma.[10]

Anatomically, the hip joint is a ball-and-socket synovial joint formed by the articulation of the femoral head and the acetabulum.[11] Intra-articular corticosteroid injections are widely utilized for short-term pain relief in patients with hip OA. However, due to the deep anatomical location of the hip joint, blind injections are associated with lower success rates and an increased risk of complications.[12] For this reason, image guidance is essential to improve procedural accuracy. According to the literature, the accuracy rate of US-guided injections ranges from 90% to 100%, while FL-guided procedures yield an accuracy of approximately 76%. US offers advantages such as the absence of ionizing radiation and real-time visualization of soft tissues, whereas FL allows confirmation of intra-articular needle placement using contrast agents.[13] Although computed tomography and magnetic resonance imaging offer high accuracy, their clinical use is limited due to cost, accessibility, and radiation exposure.[14]

This study aims to compare the effectiveness of corticosteroid injections into the femoroacetabular joint administered under US and FL guidance. The primary aim of this study was to determine whether there is a significant difference in pain reduction between US-guided and FL-guided intra-articular corticosteroid injections in hip osteoarthritis. The secondary aims were to assess the influence of disease stage on treatment efficacy, to evaluate functional outcomes over time, and to compare analgesic consumption trends during the 6-month follow-up period.

Evidence on the effectiveness of image-guided intra-articular injections in hip OA remains limited, and comparative data between US and FL techniques are particularly scarce in the literature. This study aims to address this gap and contribute to the comparative understanding of these two widely used image-guided injection modalities.

Material and Methods

Ethical approval for the study was obtained from the local ethics committee of a tertiary hospital (decision dated August 7, 2024; No. 198/2024). The study was conducted in accordance with the principles of the Declaration of Helsinki (2008).

A retrospective analysis was performed on the medical records of 61 patients aged ≥18 years who had hip osteoarthritis at stage ≥2 according to the Kellgren–Lawrence classification and VAS ≥4 despite prior medical treatment. These patients received image-guided intra-articular corticosteroid injections between June 2022 and June 2024. The primary aim of this study was to evaluate the efficacy of intra-articular corticosteroid injection (40mg triamcinolone acetonide) administered under ultrasonographic or fluoroscopic guidance. The choice of imaging guidance, either US or FL, was determined by the experience and discretion of the practitioners. US-guided procedures were performed exclusively by a single practitioner experienced in this technique, whereas FL-guided procedures were carried out by another practitioner with greater expertise in fluoroscopic guidance. This ensured that both techniques were executed by the most qualified professionals.

Patients were categorized into two groups:
- Group U (US-guided injections)
- Group F (FL-guided injections)

Changes in mean VAS scores, HHS, and the number of days analgesics were consumed were assessed at multiple time points: 1 week and 1, 3, and 6 months post-treatment. Pre-treatment and post-treatment outcomes were then compared. Analgesic use was evaluated based on the number of days with analgesic consumption; it was calculated on a weekly basis for the first week and on a monthly basis for subsequent follow-up points. The results were interpreted as increased, decreased, or unchanged compared to baseline.

Outcome Assessments

Pain was assessed using a 10-point Visual Analog Scale (VAS), where 0 represents no pain and 10 represents the worst imaginable pain. Functionality was assessed using the Harris Hip Score (HHS), which includes domains such as pain, function, absence of deformity, and range of motion (score range: 0–100). Analgesic consumption was recorded as the number of days the patient used any oral or parenteral analgesic at each follow-up interval. This was calculated on a weekly basis for the first week and on a monthly basis for the subsequent time points (1st, 3rd, and 6th months). The results were interpreted as increased, decreased, or unchanged compared to baseline.

The primary outcome was the change in VAS score over time.

Secondary outcomes included change in HHS, the impact of disease stage on clinical response, and analgesic use.

Procedures

US-Guided Injection

The patient was monitored and positioned in the supine position on the examination table. The intervention area was sterilized with povidone-iodine. A 22-gauge black-colored Quincke spinal needle was used to administer a total of 3 ml of 2% prilocaine and 1 ml (40 mg) of triamcinolone acetonide intra-articularly. The procedure was performed using a 1.5–6 MHz convex ultrasound probe (Toshiba TUS-A500, Toshiba Medical Systems, Japan). After initial placement over the femoral crease, the probe was moved medially and inferiorly to identify the femoral head and joint capsule. The joint space was visualized in the longitudinal axis, and the needle was inserted using an in-plane approach until intra-articular positioning was confirmed. The injections were documented using the same ultrasound device. Figure 1 presents the recorded image of an intracapsular hip injection in a patient enrolled in the study.

FL-Guided Injection

The patient was monitored and placed in the supine position on the operating table. The intervention area was sterilized with povidone-iodine. The hip joint was visualized using FL imaging, and a

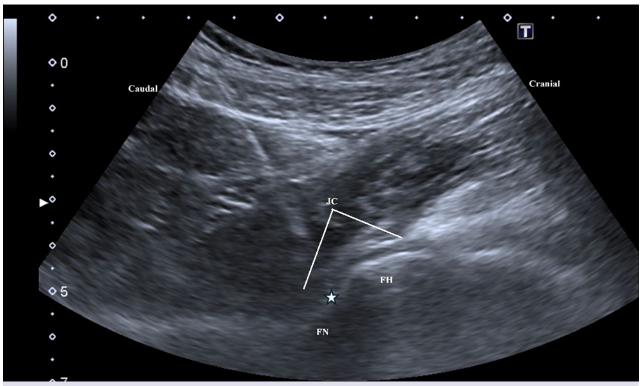

Figure 1. Ultrasound-guided intra-articular hip injection. The asterisk indicates the needle tip positioned within the joint capsule.

FH: Femoral head; FN: Femoral neck; JC: Joint capsule.

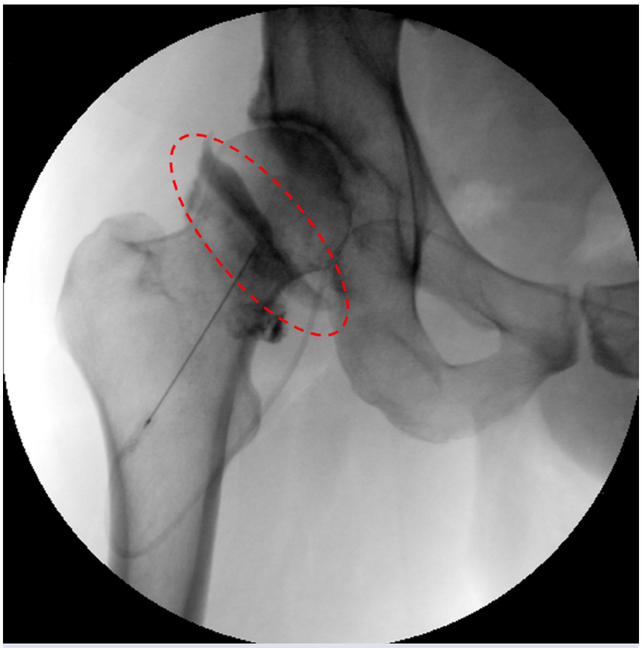

Figure 2. Fluoroscopy-guided intra-articular hip injection; the red dashed line indicates the distribution of contrast material within the joint capsule.

22-gauge black-colored Quincke spinal needle was inserted into the joint capsule under fluoroscopic guidance. The needle was directed toward the junction of the superior femoral neck and femoral head, which is commonly preferred to ensure accurate intra-articular access. The correct positioning of the needle tip within the joint capsule was confirmed by the administration of contrast material. Once verified, a total of 3ml of 2% prilocaine and 1 ml (40 mg) of triamcinolone acetonide was injected intra-articularly. The injections were documented using an FL device. Figure 2 presents the recorded image of an intracapsular hip injection in a patient enrolled in the study.

Table 1. Gender distribution across groups

	Group F n (%)	Group U n (%)	Total n (%)	p
Gender				1.000
Male	18 (64.3)	22 (66.7)	40 (65.6)	
Female	10 (35.7)	11 (33.3)	21 (34.4)	
Total	28 (100)	33 (100)	61 (100)	

Inclusion Criteria

Patients aged ≥18 years who were diagnosed with stage ≥2 coxarthrosis, continued to experience symptoms despite prior medical treatment, and received a single dose of intra-articular corticosteroid injection (40 mg triamcinolone acetonide) under US or FL guidance were included in the study.

Exclusion Criteria

Patients with incomplete clinical or follow-up data or those who underwent other interventional treatments (e.g., platelet-rich plasma therapy, physical therapy, hyaluronic acid injection, or radiofrequency ablation) or hip surgery during the follow-up period were excluded.

Statistical Analyses

The data were analyzed using SPSS 20. Normality of continuous variables was tested using the Shapiro–Wilk test. Results are presented as mean±standard deviation unless otherwise stated. The chi-square test, t-test, and repeated measures ANOVA were applied for the analyses. For post hoc comparisons following ANOVA, Bonferroni correction was used to adjust for multiple comparisons. A $p<0.05$ was considered statistically significant.

Results

A total of 94 patients with hip osteoarthritis were screened for inclusion in the study. Following exclusions during the initial assessment and follow-up period, 61 patients who met the inclusion criteria were included in the final analysis (Fig. 3).

Of the 61 patients, 28 (45.9%) were treated with FL-guided injections (Group F) and 33 (54.1%) with US-guided injections (Group U). There were 40 female patients (65.6%) and 21 male patients (34.4%), with no statistically significant difference in gender distribution between the groups ($p=1.000$; Table 1).

No significant difference in analgesic needs was observed between the groups at any time point ($p>0.05$; Table 2).

When patients were stratified by treatment type, significant differences in VAS values were observed over time in both strata and across all stages of coxarthrosis. It was observed that the clinical effect decreased as the stage of coxarthrosis increased, with the lowest treatment response found in patients at Stage 4 ($p<0.001$; Table 3).

No statistically significant difference was found when patients were stratified by stage and VAS values were compared within each group. Both groups showed a decrease in VAS scores over time, with Group U demonstrating a faster improvement, particularly in Stage 2. However, this difference diminished in the long term, and no significant advantage was observed between the treatment modalities in Stage 3 and Stage 4 patients (Table 4).

Table 2. Change in analgesic requirements within the group

		Change in analgesic requirement n (%)			
Group	Time	Decreased	Unchanged	Increased	p
F (n=28)	1st week	18 (64.3)	8 (28.6)	2 (7.1)	0.061
U (n=33)		16 (48.5)	17 (51.5)	0	
F	1st month	16 (57.1)	10 (35.7)	2 (7.1)	0.128
U		25 (75.8)	8 (24.2)	0	
F	3rd month	10 (35.7)	18 (64.3)	0	0.072
U		17 (51.5)	13 (39.4)	3 (9.1)	
F	6th month	5 (17.9)	21 (75)	2 (7.1)	0.225
U		9 (27.3)	18 (54.5)	6 (18.2)	

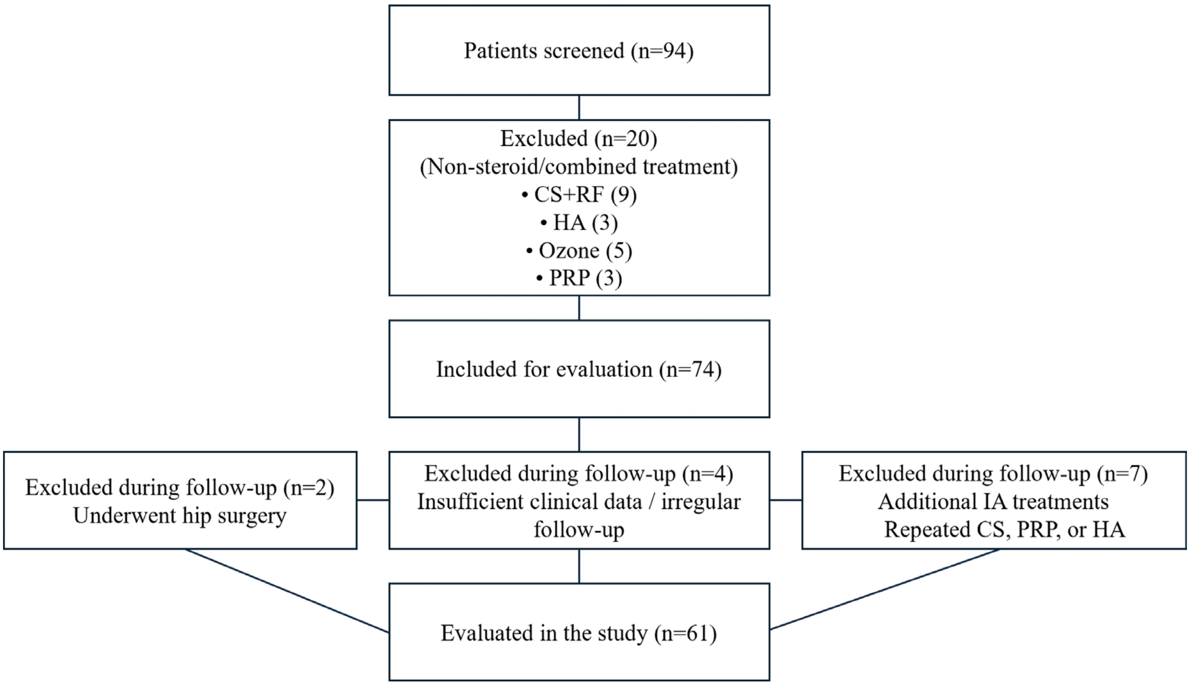

Figure 3. Flowchart illustrating the selection process and reasons for exclusion.

CS: Corticosteroid; RF: Radiofrequency; PRP: Platelet-rich plasma; HA: Hyaluronic acid.

Table 3. Comparison of VAS scores within treatment groups

Group	Hip osteoarthritis stage		VAS pre-treatment	VAS 1st week	VAS 1st month	VAS 3rd month	VAS 6th month	p-value and Partial eta2
F	2	Mean±SD	7.80±0.447	7.60±1.342	5.40±3.286	2.40±0.548	3.20±1.643	0.027 0.691
	3	Mean±SD	8.00±0.000	5.20±0.447	4.60±0.894	7.40±1.342	8.00±0.000	0.002 0.859
	4	Mean±SD	8.17±0.707	6.50±1.150	6.67±1.879	7.28±1.841	8.17±0.707	<0.001 0.396
U	2	Mean±SD	7.33±0.500	6.11±1.453	2.33±0.707	2.78±1.202	3.56±2.186	<0.001 0.822
	3	Mean±SD	7.25±0.463	5.38±1.506	3.13±0.835	4.50±2.390	6.63±1.188	<0.001 0.682
	4	Mean±SD	8.31±0.704	7.13±1.544	6.56±2.065	7.81±1.471	8.31±0.704	<0.001 0.376

VAS: Visual Analog Scale; SD: Standard deviation.

When patients were stratified by treatment type, significant changes in HHS values were observed throughout the treatment process, especially in early-stage disease. In Stage 2 patients, the HHS scores improved significantly up to the 6th month, whereas improvements were more limited in Stage 3 and Stage 4 patients. As the stage of coxarthrosis increased, the clinical response decreased, with the lowest response observed in Stage 4 patients (Table 5).

When patients were stratified by stage and HHS values were compared within groups, Group F had a higher initial score in Stage 2 (p=0.012), but no significant difference was found between the groups in post-treatment periods. No statistically significant difference was found between the two groups in Stage 3 and Stage 4, both at baseline and across all follow-up periods (Table 6). No adverse event was observed during or after the procedures.

Table 4. Comparison of VAS scores between treatment groups

Hip osteoarthritis stage and groups			VAS pre-treatment	VAS 1st week	VAS 1st month	VAS 3rd month	VAS 6th month
Stage 2	Group F	Mean±SD	7.80±0.447	7.60±1.342	5.40±3.286	2.40±0.548	3.20±1.643
	Group U	Mean±SD	7.33±0.500	6.11±1.453	2.33±0.707	2.78±1.202	3.56±2.186
p-value			0.109	0.084	0.105	0.437	0.758
Stage 3	Group F	Mean±SD	8.00±0.100	5.30±0.500	4.80±0.850	6.90±1.300	7.80±0.200
	Group U	Mean±SD	7.80±0.400	5.40±1.200	4.50±0.900	6.80±1.800	7.50±0.950
p-value			0.103	0.205	0.733	0.452	0.083
Stage 4	Group F	Mean±SD	8.17±0.707	6.50±1.150	6.67±1.879	7.28±1.841	8.17±0.707
	Group U	Mean±SD	8.31±0.704	7.13±1.544	6.56±2.065	7.81±1.471	8.31±0.704
p-value			0.552	0.187	0.879	0.360	0.552

VAS: Visual Analog Scale; SD: Standard deviation.

Table 5. Comparison of HHS scores within treatment groups

Group	Hip osteoarthritis stage		HHS pre-treatment	HHS 1st week	HHS 1st month	HHS 3rd month	HHS 6th month	p-value and Partial eta2
F	2	Mean±SD	60.00±0.000	63.60±12.740	72.00±15.652	83.00±4.472	78.40±10.479	0.003 0.301
	3	Mean±SD	51.00±2.236	69.60±0.894	69.60±0.894	55.00±8.660	52.00±2.739	0.002 0.872
	4	Mean±SD	36.39±9.971	44.33±12.663	45.56±17.226	42.22±16.199	37.22±8.613	<0.001 0.364
U	2	Mean±SD	52.89±6.547	59.00±3.937	78.22±3.492	77.89±7.524	72.22±8.857	<0.001 0.782
	3	Mean±SD	51.63±3.503	64.38±9.797	70.63±3.204	65.63±11.783	54.00±6.256	0.007 0.568
	4	Mean±SD	35.00±8.367	42.25±13.026	46.31±15.709	39.00±14.329	33.69±8.882	<0.001 0.382

HHS: Harris Hip score; SD: Standard deviation.

Discussion

This study compared the effects of US-guided and FL-guided intra-articular corticosteroid injections on pain control and functional improvement in hip OA. The results showed significant improvements in both VAS and HHS scores with both methods, although no significant superiority was observed between the groups. However, FL has several disadvantages compared to USG, such as the use of contrast agents, exposure to ionizing radiation, the need for radiation protection measures, and the requirement for additional personnel, such as a radiology technician.

In our study, no significant difference was observed between US-guided and FL-guided interventions in terms of gender distribution (p=1.000) (Table 1). This indicates that gender does not influence the choice of imaging modality. A systematic review on the prevalence of radiographic hip OA demonstrated that the average prevalence increases with age in both men and women.[15] In 1957, Kellgren and Lawrence introduced a widely used grading scale for the radiologic evaluation of OA.[16] Osteoarthritis has traditionally been assessed using conventional radiographs, which for many years were considered the gold standard for diagnosing the condition. However, in recent years, innovative imaging techniques

Table 6. Comparison of HHS values between treatment groups

Osteoarthritis stage and groups			HHS pre-treatment	HHS 1st week	HHS 1st month	HHS 3rd month	HHS 6th month
2	Group F	Mean±SD	60.00±0.000	63.60±12.740	72.00±15.652	83.00±4.472	78.40±10.479
	Group U	Mean±SD	52.89±6.547	59.00±3.937	78.22±3.492	77.89±7.524	72.22±8.857
p-value			0.012	0.471	0.428	0.194	0.263
3	Group F	Mean±SD	51.00±2.236	69.60±0.894	69.60±0.894	55.00±8.660	52.00±2.739
	Group U	Mean±SD	51.63±3.503	64.38±9.797	70.63±3.204	65.63±11.783	54.00±6.256
p-value			0.730	0.177	0.417	0.111	0.447
4	Group F	Mean±SD	36.39±9.971	44.33±12.663	45.56±17.226	42.22±16.199	37.22±8.613
	Group U	Mean±SD	35.00±8.367	42.25±13.026	46.31±15.709	39.00±14.329	33.69±8.882
p-value			0.665	0.640	0.895	0.546	0.248

HHS: Harris Hip Score; SD: Standard deviation.

such as ultrasonography have been introduced to provide a better understanding of the disease. This shift is primarily due to advancements in US technology and improvements in US equipment. Ultrasonography has proven to be a valuable imaging technique in both the diagnosis and treatment of hip joint osteoarthritis, significantly enhancing our understanding of the disease process.[17]

We used the Kellgren–Lawrence staging system to assess the patients in our study. Therefore, interventions performed without imaging devices, relying solely on anatomical landmarks, are less reliable compared to more superficial joints such as the knee. Additionally, the hip joint is located near critical neurovascular structures, and performing injections without imaging guidance may pose a risk of injury to the femoral artery, femoral nerve, and lateral femoral cutaneous nerve.[18] Leopold et al.[19] reported that hip injections performed using the anterior approach without imaging guidance had an accuracy rate of 60%. They also observed that 27% of these injections made contact with the femoral nerve and recommended the use of image-guided procedures to prevent serious complications.

The literature lacks studies comparing the accuracy or therapeutic efficacy of US and FL in hip intra-articular injections. In our study, injections were performed under either US or fluoroscopy guidance to enhance procedural safety and accuracy. Thus, the efficacy of treatment using US and FL techniques was examined. When we assessed the impact of US-guided and FL-guided injections on analgesic requirements and VAS scores, we found that the treatment was effective in reducing both the need for analgesics and VAS scores in patients with early-stage coxarthrosis. Especially in Stage 2 patients, long-term pain control was achieved, whereas in Stage 3 patients, the treatment was initially effective but pain levels increased again after the third month. In Stage 4 patients, the treatment provided partial improvement in the short term, but pain levels returned to baseline by the sixth month. These findings suggest that the treatment is more effective in patients with early-stage osteoarthritis, whereas it may be less effective for long-term pain management in advanced-stage patients (Table 2, 3).

Byrd et al.[20] conducted a study with 50 patients who underwent both US-guided and FL-guided hip intra-articular injections. The patients reported that US-guided injections were less painful and more comfortable compared to FL-guided injections. Since our patients received only one treatment technique, we were unable to make a direct comparison. However, US-guided injections are known to offer several advantages over FL-guided injections, including the absence of ionizing radiation, the ability to examine soft tissues, and no need for contrast media during the procedure.[21,22] US-guided injections can also be performed without the need for contrast material and in an office setting. In contrast, FL has several drawbacks, including the requirement for lead-equipped rooms and operating room conditions, the use of contrast material, and the risk of exposure to radioactive X-rays for both the patient and the practitioner. Additionally, the ability of ultrasonography to visualize surrounding soft tissues in real time makes it a more detailed and advantageous option; however, it should be noted that the effectiveness of US-guided procedures is highly dependent on the experience of the practitioner.

Corticosteroids have a complex mechanism of action, exerting both immunosuppressive and anti-inflammatory effects. When injected intra-articularly, they may have both local and systemic effects. They work by modulating several pro-inflammatory cytokines involved in cartilage damage and degradation, effectively interrupting inflammatory and immune cascades.[23] Intra-articular corticosteroid injections in coxarthrosis contribute significantly to treatment by alleviating pain and increasing range of motion, improving functional ability, and reducing the need for analgesics. Studies evaluating the efficacy of these injections in coxarthrosis have shown notable reductions in pain levels and improvements in functional outcomes. Kullenberg et al.[5] reported that FL-guided injections of 80mg triamcinolone acetonide effectively reduced pain at rest and during weight-bearing, increased hip range of motion, and decreased the use of analgesics at both 3 and 12 weeks. Similarly, Qvistgaard et al.[24] demonstrated that US-guided methylprednisolone injections resulted in significant pain reduction on days 14 and 28; however, this benefit diminished after 3 months. Lambert et al.[25] reported that injections containing triamcinolone hexacetonide provided pain relief lasting up to 3 months and resulted in significant improvements in the Western Ontario and McMaster Universities Arthritis Index (WOMAC) scores. Similarly, Atchia et al.[26] demonstrated that US-guided injections of 120 mg methylprednisolone acetate effectively managed pain up to week 8. A review reported that corticosteroid injections are effective in coxarthrosis and that this effect may last up to 12 weeks.[27] Lai et al.[28] retrospectively examined 82 FL-guided intra-articular hip corticosteroid injections and reported that 19.5% of the injections showed no response, 47.6% provided short-term pain relief (≤2 weeks), and 32.9% resulted in sustained pain relief (>2 weeks). These studies demonstrate that intra-articular corticosteroid injections, whether administered under FL or US guidance, offer both short- and medium-term relief from symptoms and contribute to functional improvement.[24–28]

However, there is no comparative study that demonstrates the technical superiority of US-guided and FL-guided corticosteroid injections in coxarthrosis. Our study aimed to evaluate which technique offers more advantages in terms of clinical outcomes by comparing the efficacy and safety of these two methods. There was no statistically significant difference between Group F and Group U in terms of VAS and HHS scores ($p>0.05$). Clinically, an improvement in functional capacity and a reduction in pain levels were observed in both groups after treatment. However, it was observed that pain control and functional gains were not maintained in the long term in both groups, with values regressing to levels close to baseline. These findings suggest that the effectiveness of both methods is limited, particularly in advanced-stage patients (Table 4, 6).

In intra-articular hip injections, increasing the volume of the mixture, typically by adding a local anesthetic, may enhance the distribution of corticosteroids within the synovium. In a 2012 randomized controlled trial by Young et al.,[29] patients with coxarthrosis received intra-articular injections containing 1 ml of triamcinolone acetonide (40 mg) and 2 ml of local anesthetic, which were compared with injections containing the same combination plus 6ml of saline. All procedures were performed under fluoroscopic guidance. In the study, both groups showed significant improvement in the WOMAC Index, with improvements in pain, stiffness, and activities of daily living. However, no statistically significant difference was found between the 3 ml and 9 ml volumes. Therefore, the recommended injection volume is between 3 and 9 ml, as higher volumes do not offer any additional benefits over 3 ml. In our practice, we use a 4 ml injection volume (1 ml of triamcinolone acetonide+3 ml of 2% prilocaine) for our coxarthrosis patients. However, it is important to note that high concentrations of local anesthetics have been shown to be cytotoxic to chondrocytes, particularly with older molecules such as bupivacaine.[30] For this reason, we prefer prilocaine as our local anesthetic of choice.

Our data revealed that both techniques demonstrated similar efficacy and were not superior to each other in terms of changes in VAS, HHS, and analgesic requirements (Table 4–6). No complications or side effects were observed with either method. Furthermore, both techniques allowed for accurate visualization of the needle during injection.

Conclusion

The effects of intra-articular corticosteroid injections performed under US guidance and FL guidance on pain control and functional improvement in hip osteoarthritis were compared. Both methods showed similar levels of improvement in analgesic use, VAS, and HHS scores; however, no statistically significant difference was found between the groups. The FL method has certain disadvantages, such as the need for contrast material and radiation exposure, whereas US stands out as a safer method that allows real-time visualization of soft tissues. Although both methods are effective, especially in early-stage patients, long-term pain control remains limited in advanced stages.

Ethics Committee Approval: The Ankara Training and Research Hospital Ethics Committee granted approval for this study (date: 07.08.2024, number: 198/2024).

Informed Consent: Written informed consent for the procedures was obtained from all patients. Due to the retrospective nature of the study, additional informed consent was not required.

Conflict of Interest: The authors declare that there is no conflict of interest.

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