

Facet joints infiltration: A viable alternative treatment to physiotherapy in patients with low back pain due to facet joint arthropathy

AA Kawu, A Olawepo¹, AOO Salami²

Department of Orthopaedics, University of Abuja Teaching Hospital, Gwagwalada, Abuja, ¹Department of Anatomy, University of Ilorin, Ilorin, ²National Orthopaedic Hospital, Yaba, Lagos, Nigeria

Abstract

Background: There is a paucity of information on treatment options and outcome of treatment of patients that have MRI findings of FJA presenting with low back pain in the developing country. This prospective cohort study conducted mainly in the University of Abuja Teaching Hospital Gwagwalada, Abuja Nigeria is to compare the short-term clinical outcome between two groups, one having undergone facet joints infiltration (FJI) and the other physiotherapy for facet joint arthropathy (FJA).

Materials and Methods: All patients with clinical lower back pain (LBP) and MRI features of FJA were recruited into this prospective study randomly. All the FJI patients had depot methylprednisolone and the physiotherapy patients had McKenzie regimen. Outcome questionnaires comprising Oswestry disability index scores (ODI), visual analogue scores (VAS), and patient satisfaction scores (PSS) were completed at all clinic visits. Follow-up was for 6 months for both groups. The results were analyzed using SPSS 17.0.

Result: There were 10 FJI patients and 8 physiotherapy patients (1.25: 1). The outcome scores comprised the following ODI, VAS, and PSS. The FJI group had a better score compared to the physiotherapy group at short-term evaluation and this difference was statistically significant. The female patients in both groups fare better compared to the male counterparts.

Conclusions: FJI offered added benefit over physiotherapy in LBPs diagnosed with FJA. Patients with FJI have a significant reduction in pain symptom than the patients in the physiotherapy group. Though majority of the patients reported satisfactory outcome, the FJI patients group had a better outcome.

Key words: Facet joint arthropathy, low back pain, McKenzie, methylprednisolone, oswestry disability index score

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Introduction

Lower back pain (LBP) is a common phenomenon world wide.^[1-15] There are a number of surveys in many countries that reveal a point-prevalence of 17%-30%, a 1-month prevalence of 19%-43%, and a lifetime prevalence of 60%-80%.^[1] Approximately, 1% of the population is permanently disabled by back pain at any given point, with another 1%-2% temporarily disabled from their normal occupation.^[1-2,4]

There are a number of factors that have been implicated in the genesis of back pain and disability that can be used to determine whether a pathological process seen on imaging studies is associated with symptoms experienced by a patient.^[1-4,6] Certain of these factors are based on epidemiological studies, while others are based on clinical findings and physiological tests.^[5,6]

Address for correspondence:

Dr. A. Kawu Ahidjo,
Department of Orthopaedics, University of Abuja Teaching Hospital,
Gwagwalada, PMB 228, Abuja FCT, Nigeria.
E-mail: ahidjokawu@yahoo.com

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Goldthwait^[7] introduced the concept that pain is generated from the facet joint, while the term facet joint syndrome was coined by Ghormley.^[8] Pain from the facet joint is generated from several sources causing low back pain.^[9-11] Conservative treatment of low back pain involves physiotherapy using the McKenzie regimen.^[12] Facet joint infiltration^[13-16] has emerged as a new tool in the management of low back pain in patients with facet joint arthropathy.

Facet joint infiltration is an established treatment option in the management of LBP that has not caught up in Nigeria. Over the next few years, its potential benefits and many other questions about its indications, complications, and long term outcome will need to be addressed with proper structured prospective studies in Nigeria. We were neither aware of previous studies nor centres that perform FJI for the treatment of FJA in Nigeria at the time of this report.

This prospective study is an assessment of the short-term outcome of cohort of LBP patients with clinical diagnosis and magnetic resonance imaging (MRI) finding of FJA randomly placed in the treatment group of FJI and physiotherapy.

Materials and Methods

Patient selection

All the patients were interviewed; examined, and had FJI procedure done by the first reviewer personally, while physiotherapy was done at the Dept. of Physiotherapy, UATH Gwagwalada Abuja. Eighteen patients were recruited, and 10 of these patients had FJI under mobile X-ray guidance with methylprednisolone and the other 8 patients had physiotherapy employing the McKenzie regimen. The following inclusion criteria were used to recruit the patients into this study:

1. Chronic pain of more than 3 months' duration, not responding to conventional drugs.
2. Non-radicular low back pain
3. Focal tenderness over the facet joint elicited by digital pressure
4. MRI features of FJA

The exclusion criteria were:

1. Radicular pain radiating below the knee
2. MRI findings of nerve root compression
3. Clinical or imaging of infection and neoplastic disease

Procedure

The procedure was explained to the patients in detail and informed consent obtained. Methylprednisolone was used to infiltrate the facet joint under X-ray guidance. The levels to be injected were selected by tenderness elicited over the joint, which correlate with MRI findings.

X-ray guided procedure

The patient was placed prone with pillow under the abdomen to reverse lumbar lordosis. The tender facet joint was palpated, marked and located with the mobile X-ray. Cleaning and draping done and 22-G needle inserted until it contacted bone at the edge of the facet joint. The needle was manoeuvred into the facet joint by gentle movement with a distinct 'give'. Once the needle was in place, 0.5 ml of 0.25% bupivacaine and 0.5 ml (20 mg) of methylprednisolone acetate were injected into the joint. The patients were observed for 1 h after the procedure to monitor for allergic reaction and weakness in the lower limb.

Patient assessment

Pain relief was assessed using ODI and VAS. Patient Satisfaction Score (PSS) questionnaire was used to evaluate subjectively the outcome of the treatment option. This was done pre-intervention and at 3 weeks, 3 months, and 6 months for both treatment options. The results were analysed by means, standard deviation, simple percentages and Chi-square as appropriate using Statistical Package for Social Science (SPSS Inc. Chicago Illinois USA) 17.0; a *P* value of <0.05 is significant.

Results

In the FJI group, there were 10 (55.6%) patients with M: F = 0.6: 1. The mean age was 42.3 ± 12.2 years (range 33–64 years). In the physiotherapy group, there were 8 (44.4%) patients with M: F = 0.6: 1. The mean age was 46.7 ± 10.4 years (range 38–69 years). The difference between the groups regarding mean ages (*P* = 0.421), gender (*P* = 0.786), occupation (*P* = 0.873), and the mean follow-up period (*P* = 0.312), were not statistically significantly.

Tables 1 and 2 show the pre and post-treatment ODI and VAS for both study groups. The pre-intervention mean ODI in the FJI and physiotherapy group were very similar (56.2 ± 7.4 vs 58.3 ± 9.2). The FJI group fared consistently better with a low mean score against the mean score of the physiotherapy group [Figure 1]. This was statistically significant (*P* = 0.013).

In Table 2, the mean VAS showed pre-intervention level of back pain similar in both study groups (7.6 versus 7.2).

Table 1: Oswestry disability index score

	FJI (male)	FJI (Female)	Physio (Male)	Physio (Female)
Pre-intervention	58.6 ± 6.8	52.3 ± 9.2	59.0 ± 8.6	56.3 ± 8.9
6wks score	49.7 ± 6.2	47.0 ± 7.1	55.3 ± 5.4	53.4 ± 7.1
3month score	42.3 ± 5.5	38.9 ± 6.8	53.7 ± 7.2	38.7 ± 6.3
6month score	39.6 ± 4.9	37.1 ± 5.2	51.8 ± 6.3	37.1 ± 4.9

Physio = Physiotherapy

Table 2: Visual analogue scores

	FJI (male)	FJI (female)	Physio (male)	Physio (female)
Pre-intervention	7.8 ± 1.9	7.2 ± 1.6	7.4 ± 2.1	7.0 ± 2.3
6 wks score	5.9 ± 2.1	5.1 ± 2.1	6.8 ± 1.9	6.4 ± 1.5
3 month score	4.5 ± 1.3	4.1 ± 1.5	5.8 ± 1.6	5.2 ± 1.4
6 month score	4.1 ± 1.7	3.9 ± 1.2	5.2 ± 1.3	4.8 ± 1.9

Physio = Physiotherapy

Table 3: Patients' satisfaction of the treatment offered

Satisfaction	Fji (%)	Physiotherapy (%)
Extremely satisfied	2 (20)	1 (12.5)
Very satisfied	3 (30)	2 (25.0)
Satisfied	4 (40)	3 (37.5)
Dissatisfied	1 (10)	2 (25.0)
Very dissatisfied	0	0
Extremely dissatisfied	0	0

The post intervention mean VAS was significantly lower in the FJI group compared to the physiotherapy group [Figure 2]. This was statistically significant ($P = 0.032$). The clinical success was 90% for the FJI group and 75% for the physiotherapy group.

More patients in the FJI group claimed to be extremely satisfied with the treatment option compared to the physiotherapy group (20% vs 12.5%). More of the patients in the FJI group were satisfied and similar numbers were satisfied with the treatment offered.

It was noted that significant numbers of patients in the physiotherapy group were dissatisfied with their treatment option compared to the FJI group (25% vs 10%). The difference was statistically significant comparing the satisfaction between the two group ($P = 0.043$).

Table 3 shows the patients' response to the satisfaction of the treatment offered. In the FJI group, 80% of the patients would have the procedure again and 20% said they 'do not know'.

In the physiotherapy group, 62.5% of the patients would have the procedure again, 25% said they 'do not know' and 12.5% said 'no'. Also, in the FJI group, 90% of the patients would recommend the procedure to family and friends and 10% said they 'do not know'. In the physiotherapy group, 62.5% of the patients would have the procedure again, 25% said they 'do not know' and 12.5% said 'no'.

Discussion

Facet joints are a source of pain in as much as 15%–45% of patients with LBP.^[19] It has also been noted that most studies have failed to show correlation between radiologic imaging findings and facet joint pain.^[14-16] Facet joint injection with local anesthetics and steroid is the simplest and most common procedure for facet joint-mediated pain.^[19]

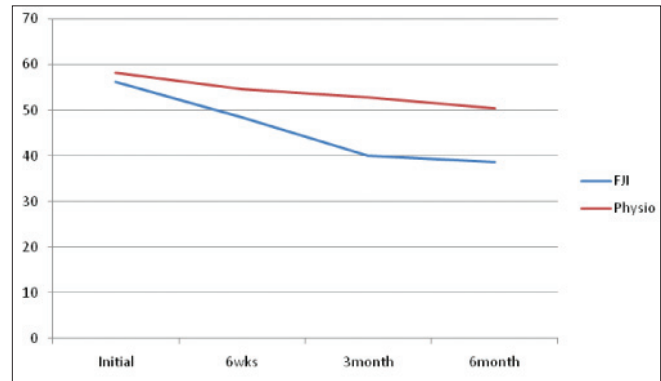


Figure 1: The Oswestry Disability Index scores

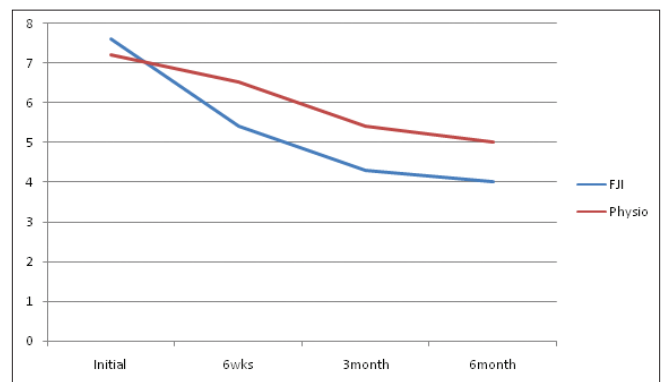


Figure 2: The visual analogue scores

This was a small study group compared to the other reviewed studies.^[14-16] This may be due to the recent establishment of our spine unit where patient load is relatively small. The pathology study is essentially a problem of the middle age and this may be attributed to the degenerative changes that occur with age. This agrees with the finding of Taylor *et al.*^[17] that showed changes in facet joint occur with age.

Fujiwara *et al.*^[18] stated that with degeneration, all motion in the facet joint decreased in the male, while in the female there is preservation of motion with concomitant increase in axial rotational motion. This preservation of facet joint motion in the female may explain the finding of lower pain in this group compared to that in the males. Females fared better than the males in both treatment groups as this motion preservation could also explain this finding.

The clinical success was 90% for the FJI cohort group at 6 months. This corroborates the findings of Schulthe *et al.*^[21]

This was different from the findings of Carette *et al.*^[14] that noted 46% success and Chaturvedi *et al.*^[19] that showed relief in 62% of their patients in their study at 6 months. This was a significant higher satisfaction rate compared to other studies.^[15,16,20-23] The difference in the rate of satisfaction found in this study could be due to the parameter employed in the subjects recruited for the study and the study designs.

Complications of FJI include dura puncture, haematoma formation, spinal cord or neural trauma, spinal anaesthesia, septic arthritis/spondylitis, and chemical meningitis.^[24] These complications are related to improper needle placement, bleeding, or infection.^[19] None were seen in this study due to meticulous attention to technique and aseptic procedure.

Conclusions

The question pursued in this study was whether FJI was a viable alternative treatment to physiotherapy in the management of patients with LBP. The findings were as follows:

1. There were two statistically significant findings, the patients in FJI group fared better and feel satisfied with the treatment than those in the physiotherapy group.
2. Women fared better than men in both treatment options.
3. The FJI group has more confidence in their treatment compared to the physiotherapy group.
4. The FJI group would be more willing to recommend the treatment received to family and friends.

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