

Treatment Of Acute Protruded Disc with Percutaneous Disc Decompression And Transforaminal Epidural Steroid injection

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Abstract

Background: The primary goal to the surgical cure of the Lower-back and radicular pain is common presenting complain of herniate lumbar disc and compression of the nerve root by protrusion of disc material.

Objective: To assess the effectiveness of epidural steroid injection for low back pain in a combination with percutaneous disc decompression in patients presenting to Baqubah Teaching Hospital in Diyala province, Iraq whom suffering from protruded disc with radicular pain.

Patients and Methods: Depending on inclusion and exclusion criteria, fifty consecutive patients diagnosed as having protruded disc and whom used conservative therapy for six weeks with no improvement all were conducted in the Orthopaedic clinic in Baqubah city during 2013 till 2015, 25 patients use both method and 25 patients use only Decompressor.

Results: The result were shown no significant differences between decompression and decompression+ESI for the age, sex, operating time, hospitalization, and stight leg rising test(S.L.R.T) but significant difference between decompression and decompression+ESI at $p < 0.05$ for time retain to work /day, numbness, and radition/pain with mean \pm SD; (20.8 ± 7.4 and 15.8 ± 6.6 for time retain to work respectively), (1.3 ± 0.5 and 1.6 ± 0.5 for numbness respectively), (1.4 ± 0.5 and 1.8 ± 0.4 for radition/pain respectively). And the result revealed that the operating time was significant positive correlation with age and significant negative correlation with numbness and time retain to work/day significant negative correlation with numbness and radition/pain, while significant positive correlation with S.L.R.T, the data was taken depending on oswestry disability index (ODI) questioners.

Conclusion: Used of both decompressor with epidural injection are provided rapid relief of sciatica and low-back pain in the first three months after operation that improved the movement and early exercise.

Key words: Epidural steroid injection, low back pain, herniated lumbar disc, percutaneous disc decompression.

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Introduction

Low-back and radicular pain is common presenting complain of herniated disc. It is the life time incidence in USA is 80%. The prevalence is high because of risk factors which are heavy weight lifting twisting

obesity and poor posture and living environment. This is a disabling condition affects women and men equally, the onset between 25-50 years. The most common cause is limitation of physical activity [1].

The treatment used for this problem it is of conservative management, epidural steroid injection, and surgery [2][3]. Epidural steroid injection (ESI) is a nonsurgical treatment for low back pain and radicular pain caused by disc herniation. The low back pain of mechanical origin associated with signs and symptoms of nerve irritation, responded to (ESI) with high results of pain relief, improved function and reduced the need for operation. So the long acting steroid injection has been widely used as a mode of minimally invasive treatment and it has been shown to provide analgesia for variable periods [4][5].

A number of minimally invasive procedures for disc herniation have been developed which compare to those of conventional open surgery [6][7].

Percutaneous disc decompression (PDD) is a disc decompression method which removes disc material and reduces internal pressure in herniated disc. The reduction of pressure creates a partial vacuum, which enables the disc to suck the herniation inside and reabsorb the tissue [8][9][10][11].

The aim of this study is to assess the effectiveness of epidural steroid injection for low back pain in a combination with percutaneous disc decompression in patients presenting to Baqubah Teaching Hospital in Diyala province, who were suffering from protruded disc with radicular pain.

Materials and Methods

Fifty patients with percutaneous discectomy performed for herniated disc. All were conducted in the Orthopaedic clinic in Baqubah city during 2013 till 2015, (25) of them were received transforaminal epidural steroid injection after completion of procedure of decompression. The case selection criteria included patients of either sex with age less than 60 years, having complaints of back pain for more than 6 weeks duration with a positive SLRT (straight leg rise test) and not responding to

the conventional treatment. Patients with disc protruded on MRI were entered in to the study.

Criteria of exclusion included motor deficit and bladder or bowel involvement (cauda equina syndrome), bleeding disorder, local sepsis at the site of needle placement and spinal deformity, extruded or migrated disc, fracture spine, malignancy. Follow up them for 2 to 12 months depending on physical examination including (Weak ankle dorsiflexion, time return to work, numbness, pain, straight leg raise test). In addition to the detailed examination, patient Oswestry disability questionnaire [8] was filled up for every patient separately. Oswestry Disability Index (ODI) was calculated in percentages by dividing the score of patient by total score and multiplying it by hundred.

Preoperatively patients received one gram of cefotriaxone I.V as prophylaxis. If patient allergic to cefotriaxone, one gram of I.V vancomycin given instead. Disc decompression operating time is a 45-60 minute, outpatient, X-ray guided procedure that performed under local anesthesia, may need sedative to relax the patient. General anesthesia is not required and the recovery from the procedure is quite rapid. Sterile technique to minimize the risk of infection. A patient in prone position, cannula was placed to affected disc and starting to remove nucleus pulposus material. Then the pressure on the exiting nerve root relieved. The disc material removed from the center of the disc to the probe to outside of decompressor probe [12].

Epidural steroid injection (ESI) was given after just needle of decompressor got out of disc by give of 4ml bupivacaine 0.4% with 4ml of lignocaine 2% with 2mg tramadol (100mg) and 2ml (80 mg) methylprednisolone was injected in the epidural space. The patient was observed for few hours post operatively for any complication.



Poor result reported for open surgery to disc herniation. The early response to treat and relieve the symptoms of patients having acute disc protruded with radiculopathy pain and dysfunction by using both percutaneous disc decompression with transforaminal epidural injection to the affected nerve root rather than use disc decompression alone were investigated in this study.

Statistical analysis

Values were expressed as mean ± standard deviation. Statistical examination of data was performed by one-way ANOVA, and a correlation test was conducted to compare the treated groups with the control groups using a P-value ≤ 0.05 as level of significance.

Result

Fifty patients with percutaneous discectomy performed for herniated intervertebral disc, 25 patients with mean age (40.0 ± 9.85) have percutaneous discectomy (decompression) only and 25 patients receive transformational epidural steroid injection after completion of procedure of

decompression with mean age (35.4 ± 10.84) Table 1.

The result were shown no significant differences between decompression and decompression +ESI for the age, sex, operating time, hospitalization, and S.L.R.T, but significant difference between decompression and decompression +ESI at p < 0.05 for time retain to work/day, numbness, and radition /pain with mean ± SD; (20.8 ± 7.4 and 15.8 ± 6.6 for time retain to work respectively), (1.3 ± 0.5 and 1.6 ± 0.5 for numbness respectively), (1.4 ± 0.5 and 1.8 ± 0.4 for radition/pain respectively).

The correlation between all parameters were shown in the table (2). The Operating time significant positive correlation with age and significant negative correlation with numbness, and time retain to work/day significant negative correlation with numbness and radition/pain, while significant positive correlation with S.L.R.T.

Table (1): Discriptive of the mean age and the number of the female and male that included in the study.

	Group	Number	Mean	Std. Deviation
Age	Decompressor	25	40.0000	9.85732
	Decompressor +ESI	25		
Female	Decompressor	8	35.4400	10.84005
	Decompressor +ESI	14		
Male	Decompressor	17		
	Decompressor +ESI	11		



Table (2): The correlation between operating time, hospitalization, age, sex, time retain to work/day(T.R.T.W/day), radition/pain(rad/pain) and S.L.R.T.

Correlations									
		Operatin g time	Hospitali zation	Age	Sex	T.R.T. W/day	Numb ness	rad/p ain	S.L. R.T
Operatin g time	Pearson Correlation	1	.120	.420 **	- .114 -	.147	-.301- *	- .109 -	.096
	Sig. (2-tailed)		.405	.002	.431	.309	.034	.453	.508
Hospitali zation	Pearson Correlation	.120	1	.117	- .034 -	.049	-.154- -	- .172 -	- .051 -
	Sig. (2-tailed)	.405		.420	.812	.735	.285	.232	.724
Age	Pearson Correlation	.420**	.117	1	- .167 -	.088	-.245- -	- .206 -	.023
	Sig. (2-tailed)	.002	.420		.246	.545	.086	.151	.874
Sex	Pearson Correlation	-.114- -	-.034- -	- .167 -	1	.220	-.152- -	- .218 -	.081
	Sig. (2-tailed)	.431	.812	.246		.124	.292	.129	.578
T.R.T.W /day	Pearson Correlation	.147	.049	.088	.220	1	-.435- **	- .545 **	.344 *
	Sig. (2-tailed)	.309	.735	.545	.124		.002	.000	.014
Numbnes s	Pearson Correlation	-.301- *	-.154- -	- .245 -	- .152 -	-.435- **	1	.171	- .120 -
	Sig. (2-tailed)	.034	.285	.086	.292	.002		.234	.405
rad/pain	Pearson Correlation	-.109- -	-.172- -	- .206 -	- .218 -	-.545- **	.171	1	- .081 -
	Sig. (2-tailed)	.453	.232	.151	.129	.000	.234		.578
S.L.R.T	Pearson Correlation	.096	-.051- -	.023	.081	.344* -	-.120- -	- .081 -	1
	Sig. (2-tailed)	.508	.724	.874	.578	.014	.405	.578	
**. Correlation is significant at the 0.01 level (2-tailed).									
*. Correlation is significant at the 0.05 level (2-tailed).									

Discussion

Prolapse intervertebral disc is a very common disorder as evidence seen on MRI scanning. About 25% of the population between ages 40-50 years old have disc

prolapsed or herniation on MRI SCAN. Disc herniation typically causes radicular limb pain only [13]. The most common medication used in case of herniation are nonsteroidal

anti-inflammatory, muscle relaxant and analgesics [14][15][16][17]. Most patients with low back pain and radicular pain improve with simple rest and medication but some continue to have problems thus leading to chronic partial or total disability. Long term comparative studies [18][19]. Conducted on patient with disc prolapse have shown that although surgical treatment offers rapid improvement in the first year but in long term the result of operative and non-operative treatment are comparable. Conventional open surgery remains the gold standard for treatment but the disadvantages of open surgery included extensive retraction and dissection of paraspinal muscle, longer operative time, larger wound and bone resection [20][21]. The decompressor is used with significantly different other modalities in that it removes the predominant amount of disc material from the herniated disc, reducing pressure in the disc and the surrounding area. Less perineural scarring and postoperative fibrosis may be expected, using a cannula placement similar to that used for discography. However, epidural fibrosis may also develop with minimally invasive techniques [22]. One of the major advantages of the new decompressor system reported to be the cannula small diameter, minimizing the risk of injury during disc insertion. Which performed with a pneumatically driven, suction, cutting probe in a cannula with a 2.8 mm outer diameter. The disc removed to decompress the nerve roots this can be examined externally [23].

The success rate with epidural steroid injection varies in literatures, but most reported a good success rate in short term with average success rate at 6 months has been 30 to 40% [24]. Wang found them to be effective in long term while Cukier *et al* reported no significant benefit by their use [25][26]. Anil Juyal *et al*, out of 124 patients whom were

followed up for one year, 39 patients (31.5%) had relapse in pain. So the overall response rate in one year follow up found to be 68.5% [27]. In my study no major post procedure complication except pain at site of cannula insertion occurred in 2 patients (4%) It is estimated that as much as 40% of back surgeries fail and even after successful surgeries, pain and subsequent disability have been reported in long term follow up [28].

In conclusion, careful administration of decompressor's cannula is safe and effective in the treatment of pain in lumbar protruded disc herniation. It can avoid operation intervention as well as improve the quality of life without surgical intervention.

In conclusion, there is a significant positive correlation between each ACL IgM and CMV antibody with recurrent abortion of women in the first trimester of pregnancy. But ACL is more important than CMV infection.

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