OUTCOME OF HERNIATED LUMBAR DISC SURGERY BY FENESTRATION METHOD

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ABSTRACT:

Back ground: The lumbosacral pain disease though not causes to mortality, but it causes tremendous loss of time and productivity result in great economic losses.

Objectives: To see the outcome of herniated lumbar disc surgery by fenestration method in the form of symptomatic relief.

Study Design: Descriptive study

Study Place & Period: 1ST July 2015 to 30th June 2018, Neurosurgery ward PUMHS Nawabshah

Materials & Method: We included 200 patients in our study.. All patients operated in general anaesthesia and local anaesthesia at the site of incision; results were documented in the form of symptomatic relief by using Mac Nab's Criteria. Patients with significant motor deficit, upper motor neuron disease and caudaequina syndrome were not included in our study.

Results: Total 200 patients were included in our study among those male 62% (n=124), females were 38% (n=76). Age ranges were from 22 to 65 years, before fenestration method we used the visual analog score for pain assessment which is most common complain 167(83.5%). 0-10, VAS 8, 27% (n-54) VAS 7, 17% (n=35), VAS 9, 13% (n=26), VAS 5, 7.5% (n=15), VAS 3, 7.5% (n=15), VAS 10, 5% (n=10), VAS 6, 6.5% (n=13), VAS 4, 7% (n=14), VAS 2, 4% (n=8), VAS 1, 3.5% (n=7) VAS 0, 1.5% (n=3). Mix symptoms 33(16.5%) and by using Mac Nab's Criteria for outcome A=Excellent 45% (n=90) B=Good 40% (n=80), C=Fair 12.5% (n=25), D=Poor 2.5% (n=5). 10% (n=10) still having same or opposite side clinical symptoms and 5% (n=5) went in complications of wound infection and CSF leak.

Conclusions: Fenestration is one of the good surgical method for herniated or prolapsed intervertebral disc removal with relief of sign and symtoms of herniated disc less trauma, less instability, less postoperative hospital stay, early mobilization and small wound.

Key words: Fenestration, Numbness, SLR, herniated Disc.

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INTRODUCTION:

Low backache one of the important medical issue of developing countries, both genders effected almost equally from young to old age, either due to lumber disc or any other musculoskeletal disorder ie muscle spasm, stenosis, claudication or disc buldge etc.

Low back pain affects everyone from young age to adulthood; it is common musculoskeletal disorder result in significant morbidity and very big global burden in developing countries. One estimation is that 70% to 80% people have suffered low back pains any any stage of life once almost. The yearly prevalence of backache from 15% to 45% but also mainly depend how much people is under study and scrutiny methodlogy[1].

pain in Lower region of back due to herniated disc prolapsed in lumbar is main reason of illness all over the globe upsetting mostly adolescents. Many factors causes disc degeneration at lumber 4, 5 & lumber 5 and sacral 1 causing prolapse thru foramen in intervertebral region, particularly[2,3].

Sciatica, back pain and radiating pain in one or both lower limbs due to nerve root compression is common clinical feature of disc herniation.[4]

back pain occurs due to the nuisance at root of the nerve with dura matter by herniated disc portion. The current modificatins in radiological investigations like CT scan and Magnetic Resonance Imaging are useful investigating tool for the better diagnostic approach in patients presenting with painful states due to nerve root compressions.[5]

in 19th century operations for disc with herniation at lumber region were claimed. In united states this method is very famous for spinal cord surgeries due to disc herniations.[6]

Depend upon expertise victory speed for herniated discectomy range stuck between 49% to 90%.[7,8].

With the help of surgery and removal of herniated disc is simple and very effective solution for sciatic pain, this procedure got an important, reasonably safe with satisfying results in back pain patients.fenestration method of herniated disc has been used extensively for years and having advantages over laminectomy techinique.

The commonly used widespread laminectomy surgery and disc removal go hooked on ill repute for the reason that of unstablisation of spine at posterior levels & its unwanted effects.[9]

Fenestration method became popular because of its merits like less time consuming less blood loss less complication less spine instability compared to extensive laminectomy also early return to work and less hospital stay time[10.]

objective of our resarch was to evaluate the results of modern fenestration surgery in the form of relief from symptoms and sign which was due to Herniated lumber disc.

The outcome of present study will suggest the guidance for future further workup to decrease the disability and further improvement in technique and make it more reputed.

Inclusion criteria: patients visiting the hospitals were presented with clinical features at back region due to intervertebral hernition of lumber disc and diagnosis confirmed by advance imaging (MRI) and with failing response to conservative treatment of minimum 3 Months duration. Presence of neurological impairment (paresthesia, motor/ sensory deficit) along with at least three of the following clinical features formed the criteria for selection of patients for surgery. The criteria are position of comfort (flexion at hips/knees), positive straight leg raising test (was less than 60 degree), spinal tenderness, selective restriction of spinal movements, accentuation of symptoms with cough/ sneeze).

Exclusion criteria: Those patients not willing to participate in study, having other problems like malignancies of bone primary or metastasis, upper motor neuron disease.

Data collection: The study conducted from 1st July 2015 to 30th June 2018, Neurosurgery ward PUMHS Nawabshah, after written and verbal consent from patients. Total 200 patients were included in our study among those male & females with symptoms: i.e. low backache, numbness and radiating pain of lumbo sacral roots and sign SLR<60 in either one or in both limbs of herniated lumber level at L3-4, L4-5 & L5-S1 confirmed by saggital and axial MRI films, those failed to response on conservative treatment for three months. All patients operated in under general anaesthesia and local anaesthesia at the site of incision, results were documented in the form of symptomatic relief i.e. pain relief by using Visual Analog Score and Mac Neb's Criteria of outcome. Patients with significant motor deficit, upper motor neuron disease and caudaequina syndrome not included in the study.

Mac Nab`s criteria [2] of outcome:
A is labeled as Excellent and dropped. B is Good, C is Fair and D is Poor:

Data analysis: data was analyzed through SPSS 20 version. Mean and SD of age and other variables calculated. Qualitative and qualitative values were assessed thru SPSS. In this study the pain was analysed thru Visual Analog Scale (VAS) [11]. Before and after operation the VAS score were assessed. A paired student t -test was applied and on top change was considered as significant statistically if p value is less than 0.005, that shows a important decrease in subjects awareness of ache and superior serviceable capability subsequent to surgical procedure.

RESULTS:

study conducted in our setup consist of total 200 patients. The mean age was 41.5 Std. Deviation9.89992 years **Tatble 1,**

Out of 200 subjects there were 62% (n=124) male, and 38% (n=76) females. out of which 45% (n=90) were middle class, 40% (n=80) were lower class, and 15% (n=30) belongs to upper class families. Nonsmokers 59.5% (n=119), Smoker 40.5% (n=81). Uneducated 37% (n=74) Educated 63% (n=126). 33.5% (n=67) were manual workers, 25.5% (n=51) office workers, 24.5% (n=49) house wives and 16.5% (n=33) with no any occupation. Urban 47% (n=94), Rural 53% (n=106), married 92.5% (n=185), unmarried 7.5% (n=15). The middle age 65% (n=130), young age 26.5% (n=53). **Figure 1.**

The most common clinical symptom was pain 83.5% (n=167), mixed symptoms 16.5% (n=33). Duration of symptoms 1-3 months 42% (n=84), duration more than 3 months but less than 6 months 38% (n=76), duration more than 6 months 20% (n=40), SLR less than 60 degree 86.5% (n=173), SLR not assessable 13.5% (n=27).**figure 2**

Before fenestration method visual analog score for pain assessment was applied and we found that 0-10, VAS 8, 27% (n-54) VAS 7, 17% (n=35), VAS 9, 13% (n=26), VAS 5, 7.5% (n=15), VAS 3, 7.5% (n=15), VAS 10, 5% (n=10), VAS 6, 6.5% (n=13), VAS 4, 7% (n=14), VAS 2, 4% (n=8), VAS 1, 3.5% (n=7) VAS 0, 1.5% (n=3). Total 167(83.5%) withpain while 33(16.5%) with mix symptoms.**Figure 3**

By using Mac Nab's Criteria for outcome A=Excellent 45% (n=90) B=Good 30% (n=60), C=Fair 15% (n=30), D=Poor 10% (n=20). 5% (n=10) still having same or opposite side clinical symptoms and 5% (n=10) went in complications of wound infection and CSF leak. **figure 4**

Regarding the paired sample test with 95% Confidence Interval of the Difference it shows that VAS and age group p value was <0.00, VAS and occupation, VAS and addiction, VAS and main complain, Vas and duration, VAS and side, VAS and SLR was statistically significant p=<0.00. **table 2.**

Regarding the paired sample test with 95% Confidence Interval of the Difference it shows that Mac Nab`s criteria of outcome and age group p value was .303, Mac Nab`s criteria of outcome and occupation p value was <0.00, Mac Nab`s criteria of outcome and addiction p value was <0.00, Mac Nab`s criteria of outcome and main complain p value was <0.00, Mac Nab`scriteria of outcome and duration p value was .180, Mac Nab`s criteria of outcome and side p value was .002, Mac Nab`s criteria of outcome and SLR was statistically significant p=<0.00. **table 3.**

MRI lumbosacral spine shown Disc level 43% (n=86), 41% (n=82), 16% (n=32) at L4-5, L5-S1, L3-4 respectively. 86.5% (n=173) SLR of either side was less than <60 & 13.5% (n=27) SLR could not be recorded due to poor response from patient possibly because of pain. Unilateral symptoms were 90% (i.e. 47% right sides pain, numbness & restricted SLR while 43% left side and 10% sign and symptoms were bilateral.

Table 1. Descriptive Statistics. n=200				
	Minimum	Maximum	Mean	S.D
Age	22.00	65.00	41.5400	9.89992
Visual Analogue Scale 0-10	.00	10.00	6.4400	2.47934
Mac Nab`s criteria of outcome	1.00	4.00	1.9000	.99748

Figure 1. Demographic Varibales

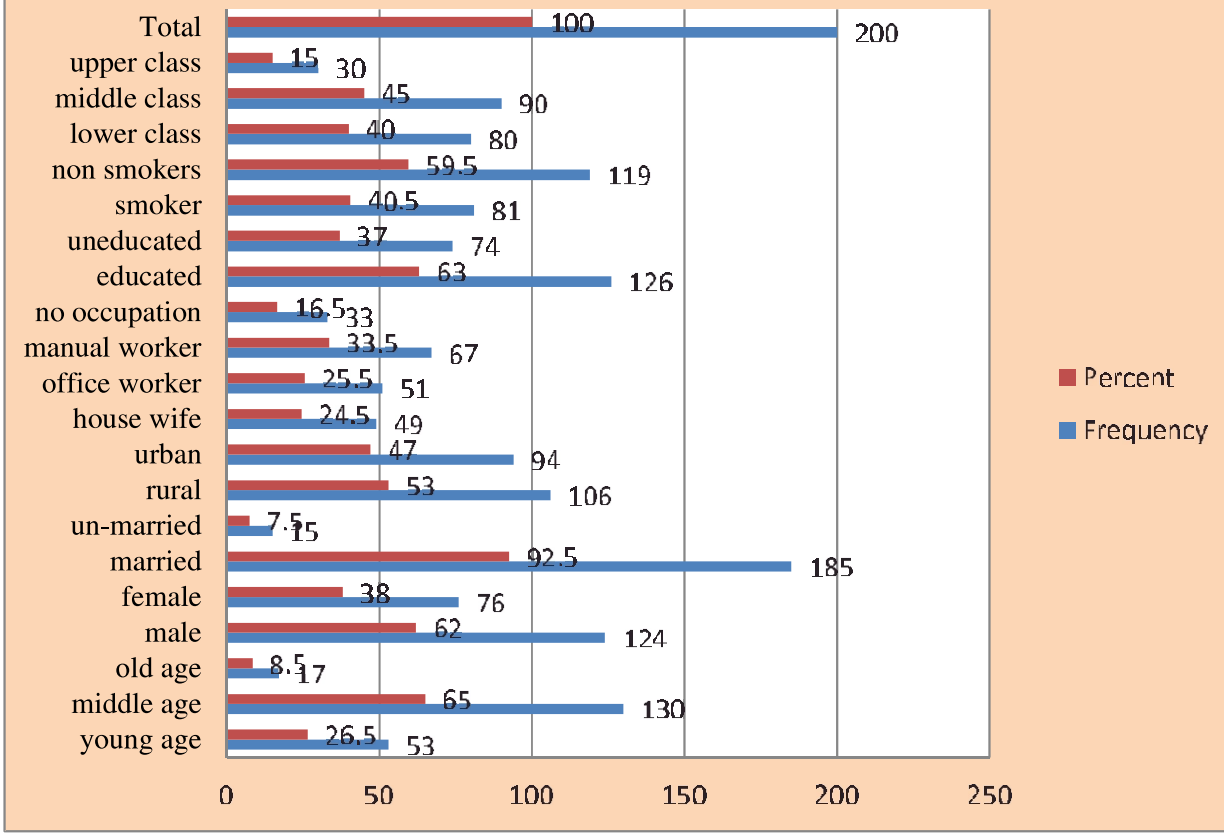

Figure 2: Clinical Presentation

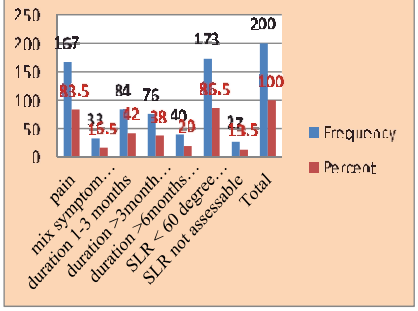

Figure 3: Visual Analogue Scale 0-10

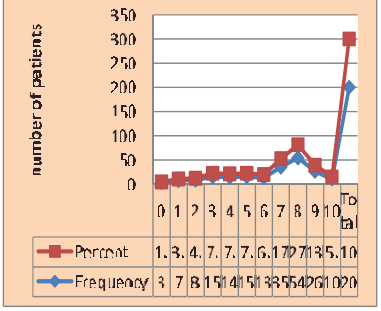

Figure 4: Mac Nab`s criteria of outcome:

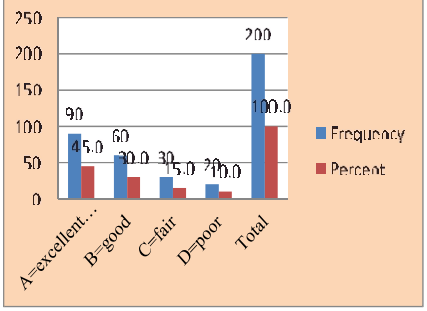

Table 2: Paired Samples Test. (95% CI Difference)	Sig. (2-tailed)
visual analogue scale 0-10 - age group	.000
visual analogue scale 0-10 - occupation	.000
visual analogue scale 0-10 - addiction	.000
visual analogue scale 0-10 - main complain	.000
visual analogue scale 0-10 - duration	.000
visual analogue scale 0-10 - side	.000
visual analogue scale 0-10 - straight leg raising test	.000

Table 3: Paired Samples Test. C I 95% Difference	Sig. (2-tailed)
Mac Nab`s criteria of outcome - age group	.303
Mac Nab`s criteria of outcome - main complain	.000
Mac Nab`s criteria of outcome - duration	.180
Mac Nab`s criteria of outcome - side	.002
Mac Nab`s criteria of outcome - straight leg raising test	.000
Mac Nab`s criteria of outcome - visual analogue scale 0-10	.000

DISCUSSION:

Low back pain due to Herniated lumbar intervertebral disc causes many problems related to back pain thou not causes death but great economic loss due to morbid condition and time loss. Common cause of sciatica is disc prolapse which occurs in 5-10% of all back pain patients. In small narrow spinal canal prolapsed disc leads to cauda equine syndrome.

Surgeon's experience properly diagnosed case that can get relief from symptoms, with less expenses and limited risk mainstay of lumber disc prolapse treatment is surgical removal of disc with many methods of its removal.

Lower back ache due to disc disease causes morbidity in the world, young adults suffer mostly, 4-6% population suffered from sciatica clinically due to lumber disc prolapse [1,2,3.]

The surgical excision of the disc has been the standard treatment of lumber disc prolapsed after failure of conservative treatment, though the methods of discectomy vary. 49-90% is success rate of disc surgery from literature.[7,8]

Fenestration technique has certain distinct advantages over the more commonly used laminectomy technique of disc excision. Manish et al., found superior results in surgical approach and outcome after operation of disc quick movement of patients with early recovery and least postoperative unwanted effects and persistent pain for fenestration method in comparison to laminectomy[13.]

Study bbyManohara B et al. concluded that end points of fenestration surgery was 90%with good results, 6.2% fair and 3.8% was poor in practical conclusion. On other hand current study shown that results were good in 84% of patients while poor in 16% patients[14.]

high-quality to brilliant outcome was seen in 80.42% patients, light outcome seen in 17.2% patients and unfortunate fallout was seen in 2.17% patients as shown in study byNahar et al.,[15.]

Study by Garg et al. concluded high-quality consequences amongst 86% patients at the same time as light consequences in 12% & reduced outcome in 2% cases[16.]The difference in study may be due to diverse collection criterion of subjects. study by MOUSA IMRAN AL-GHAZALI, there is small incision, paraspinal muscle elevation only on the symptomatic side, short time of surgery and minimum blood loss. This approaches nearly similar to microdiscectomy. The procedure of disc removal has limitations also. Twelve patients (16.7%) required superior or inferior laminotomy, most of them done in the early phase of learning curve, which has benefit of accurate lateral recess with spinal stenosis. No autogenously fat graft was used in all cases[17.]

In 1939, love described inter-laminar fenestration[18.]Micro-lumbar discectomy technique was described by Caspar[19.]

Fenestration method compared to others is less time consuming surgery, less chances of complication, less blood loss, short hospital stay, less economical losses. In future it will become more reputed.

To see the result of Fenestration method various parameters like Denis Pain Scale, Prolo functional used, but we use VAS for pain assessment and Mac Neb's Criteria of outcome.

Conclusion:

In properly selected and diagnosed cases of herniated lumbar disc surgery, disc removal through fenestration method give good results in the form of pain relief and other signs and symptoms with good outcome. Fenestration method not only give above results but it give proper vision of important structures during surgery with less trauma, less instability, less post operative hospital stay and early mobilization with small wound.

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