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RESEARCH ARTICLE

TO COMPARE THE CLINICAL OUTCOMES IN TERMS OF PAIN RELIEF AND FUNCTIONAL OUTCOMES BETWEEN MICROLUMBAR DISCECTOMY AND OPEN FENESTRATION WITH DISCECTOMY.

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Abstract

Introduction: Human beings are suffering from backache and leg pain since beginning of history. The origin of disc related sciatica with its pathology and clinical neurological findings were recognized only in the 20th century. the lumbar disc surgery and intra discal therapy are recent developments.
Aims and objectives: Our aim of study is to know if micro surgery gives better results than gold standard open technique in terms of pain relief, functional outcome to call it cost effective.

Materials and methods: Sample has two groups with 20 patients each who underwent micro lumbar discectomy and open fenestration discectomy. Patients were selected in each group who presented to out-patients clinic in two hospitals at same period of time. Data was recorded in study proforma and vas score and JOA scores were used. Statistical analysis was done using student t test (two tailed, independent).

Results: Our study shows improvement rate of 63+12.5 % in MLD group and 57+10.2 % at the end of 1 year. it shows better results in MLD group which is statistically strongly significant in post-operative period, 1 month, 6 months and no difference at 1 year and 2 years.

Discussion: Most studies show that surgically treated patients do better than non-operative patients initially; the difference between the two treatments diminishes over time, although ultimate clinical outcome in many studies, including the observational arm of sport, slightly favors surgery. Surgical methods evolved over the period. Laminectomy to less invasive inter-laminar fenestration for disc excision has become gold standard with the surgical method being cost effective. Micro-surgical techniques were developed in late 1980s which gave promising and encouraging results by its minimally invasive method, better visualization.

Conclusion: Micro-lumbar discectomy compared to standard open discectomy gives immediate encouraging results in terms of JOA and VAS scores due to small incision, less tissue retraction and damage, short duration of surgery, less bleeding, and better visualization of the nerve roots.

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Introduction:-

Chronic low back pain is a serious medical and social problem, and one of the common causes responsible for disability. It is estimated that, in all populations, an individual has an 80% probability of having low back pain at some period during their life time, and about 18% of the population experiences low back pain at any given moment.

About 3% of all patients discharged from hospitals have symptomatic low back pain. The prerequisite for successfully treating low back pain is to make an accurate pathological diagnosis. Research on the pathophysiology of low back pain and radiculopathy is integral to developing new management strategies.

DePalma et al found that the prevalence of zygo-apophysial joints, sacroiliac joints, and lumbar discs was 31%, 18%, and 42%, respectively. They confirmed the disc as the most common aetiology of chronic low back pain in adults. Crock et. al, first proposed the concept of internal disc disruption (IDD), which indicated the discogenic pain syndrome caused by disc degeneration and non-nerve root referred pain. IDD causing discogenic low back pain accounts for 26%-42% of chronic low back pain patients. The people affected are most commonly below 40 years who are in economically productive age group. The traditional extensive laminectomy and discectomy went into disrepute because of extensive disruption of posterior stabilizing structures of spine and its later complications. Limited laminectomy or fenestration and discectomy became gold standard and produced good results but with less postoperative morbidity. With introduction of operative microscope, surgery became minimally invasive with faster post-operative recovery. In this study, we have analyzed and compared the functional outcome of surgical management for lumbar disc prolapse by micro lumbar discectomy and fenestration technique.

Aims and objectives:-

Our aim of study is to know whether micro surgery gives better results than the gold standard open technique in terms of pain relief, functional outcome to call it cost effective. Also, our study aims to compare the clinical outcomes in terms of pain relief and functional outcomes and improvement by using 2 clinical outcome measures between micro-lumbar discectomy and open fenestration with discectomy having a minimum follow up period of 2 years.

Materials and method:-

Study population is patients presented to OPD (out-patient clinic) with low backache with indication for surgical procedure. Our study sample represents mainly people working in rural area from various states with low socioeconomic status. Sample has two groups with 20 patients each who underwent micro lumbar discectomy (Group 1 MLD) and open fenestration discectomy (Group 2 OFD). Patients were selected in each group who presented to OPD in two hospitals at same period of time. Data was recorded in study proforma and VAS (Visual analogue score) and JOA scores were used. Statistical analysis was done using student T test (two tailed, independent)

Results:-

Most commonly affected age group is 3rd and 4th decade of life in otherwise healthy people. Our study mean age was 38.6 and 40 years. In our study male predominance was 60 % in group 1, 75 % in group 2 showing increased incidence in male population probably due to poor methods of heavy labor work. Males are usually involved in these activities for daily living. So socio economic status of family is worst affected. In our study there is no significant correlation between duration and symptoms and prognosis. Weight in two groups is matched if there is no correlation found with prognosis and improvement scores. Radiculopathy on both sides is equally involved and is bilateral in 35 % of patients which is equal in both groups. Clinical findings in the patients showed a wide spectrum in which positive SLRT (straight leg raising test) was most common sign which was similar in two groups. In our study most commonly involved vertebrae is L4-L5 (65%, 55%), followed by L5-S1 (55%, 40%) matched in both groups. Significant correlation was not found between canal diameter and claudication distance. Our mean incision was 2.5 cm and 3.9 cm in two groups MLD and OFD, with difference statistically strongly significant.

In our study blood loss recorded was more in open fenestration which is strongly significant with mean 106 mls and 149 mls in groups 1, 2. In contrary to our study with strongly significant shorter duration associated with MLD (111 mins) than OFD (132 mins), Katayama shows comparable duration surgery for both. Duration of hospital stay is 3.8 days mean in MLD, and 4.5 days in OFD difference which is significant strongly. Complications noted in both groups are comparable with 2 dural tear in each group which is 10%. As this is a short term study with small sample size it is not correlating with standard complication rate of 2.2%. 1 patient had superficial wound infection in OFD group which is not significant. Our study shows improvement rate of 63+12.5 % in MLD group and 57+10.2 % at the end of 1 year. It shows better results in MLD group which is statistically strongly significant in post-operative period, 1 month, 6 months and no difference at 1 year and 2 years. Similarly VAS scores show strongly significant difference in post-operative period at 1 month, 6 months and no difference at 1 year and 2 years.

Discussion:-

Low back pain is now appearing as modern international epidemic. Intervertebral disc prolapse accounts for majority of cases of low backache seen by orthopedic surgeons in clinical practice. It is a major contributor of functional disability. Various treatment modalities are described for intervertebral disc prolapse including non-surgical and surgical management.

Most studies show that surgically treated patients do better than non-operative patients initially; the difference between the two treatments diminishes over time, although ultimate clinical outcome in many studies, including the observational arm of SPORT, slightly favors surgery. Surgical methods evolved over the period. Laminectomy to less invasive inter-laminar fenestration for disc excision which has become the gold standard surgical method is also cost effective. Microsurgical techniques were developed in 1978 by Yasagil, Casper, Williams which gave promising and encouraging results by its minimally invasive method having better visualization. Several studies were conducted to compare the results of these two methods giving variable results. Similar study was conducted and published in 2006 by Yoshito Katayama.

Open fenestration discectomy

Author	Patients (n)	Results %	
		Satisfied	Not satisfied
Finneson (1978)	296	67.6	32.4
Frenkel and Angehofer (1978)	124	96	4
Schramm et al. (1978)	3238	>80	
Berger (1979)	1101	87.7	
Oldenkott (1979)	760	89	12.3
Mayer and Reiche (1982)	139	88	11
OUR STUDY (2014)	20	85	12
			15

Limitations:-

Small sample size, incidence and complications cannot be calculated. It is a short term study with mean follow up of 2 years. Long term prognosis and outcome need for repeat surgery is not known. Randomization of sample into groups would have increased the validity of study.

Conclusion:-

Microlumbar discectomy compared to standard open discectomy gives immediate encouraging results in terms of JOA and VAS scores due to small incision, less tissue retraction and damage, short duration of surgery, less bleeding, better visualization of anatomical structures (nerve roots). This helps in early mobilization and faster recovery. Though results are comparable and no significant difference after 2 years follow-up, immediate recovery is encouraging. Standard open interlaminar fenestration discectomy also gives satisfactory results, and is technically less demanding, does not require operative microscope set-up which adds to cost of surgery.

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