SURGICAL MANAGEMENT OF LUMBAR DISC HERNIATION BY STANDARD LAMINECTOMY IN A PERIPHERY HOSPITAL; AN EXPERIENCE WITH 64 PATIENTS

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ABSTRACT

Objectives: To study the outcome of surgical management of lumber disc herniation by standard laminectomy procedure.

Material and Methods: This study was conducted in a periphery hospital, form March 2000 to July 2002. patient spresenting with bachache and leg pain were thoroughly investigated. For the confirmation of herniated disc, myelography was performed in 50 patients, CT Scan in 10 patient and MRI in 4 patients. All patients underwent standard laminectomy. Patients were followed up after 3-4 weeks.

Results: Sixty four patient were operated upon for lumbar disc herniation. The youngest patient was 20 years old while the oldest was 65 years old. All these patients underwent standard laminectomy. Forty six patient were males while eighteen were females. The majority of the patients were in the forth and fifth decade of life. Two patients developed discitis, four patients had dural tear during operation, two patients developed wound sepsis.

Conclusion: Results of standard laminectomy for lumber disc herniation are favourable.

Key words: Lumber disc herniation, Laminectomy.

INTRODUCTION

Backache is so common that nearly everybody experience it once in life. In the majority of cases the cause of low backache is not known. In a small number of patients it is due to lumber disc herniation. There are several risk factors, which pre-dispose to

backache and disc herniation. Office workers and shopkeepers who are all the time sitting in a bent over position for more prone to backache and disc herniation. Labourers and farmers who frequently bend and twist while lifting heavy objects are at high risk. Drivers have also an increase risk of disc herniation. It is commonly found in 20 to 50 years age group and is more common in males.[1] The vast majority 95% of lumber disc Prolapse arise with nearly equal frequency at the lowest disc spaces. Correct nerve root and disc space can be diagnosed by history and examination. Anteroposterior and lateral X-ray film combined with a coned lateral view of the lumbosacral junction provide a cheap and possibly valuable information about the degree of wear and tear changes in the bones of the lumber spine, the presence of loss of disc height or lateralized collapse of disc space, and the presence of spondylolisthesis, apophyseal joint orthropathy and spinal stenosis can be inferred from this examination[2]. Myelography once considered as gold standard for imaging the spinal card, sub arachnoid space and nerve root, has been replaced by CT scan and MRI. It displays about 85% of disc prolapse but gives a substantial number of false negative and false positive results. As it is an invasive investigation it should be reserved for those cases where operative relief of the symptomatology in certainly required. CT scan has largely replaced Myelography, as it is non invasive and is widely available. Disc prolapse can be easily seen at L5-S1 level with distortion of fat shadow. As there is more fat at L5-S1, level between theca and disc space than as at L4-5, the vast majority of errors in the CT diagnosis of prolapse disc occur at L4-5, particularly in fat or large patients. MRI scanning is the latest test for a prolapsed disc. Where available it has replaced both myelography and CT scan. MRI views the water content of tissue. Prolapse disc are degenerate disc. Degeneration is associated with a loss of water content. Clearly a disc imaged outside its normal profile and with an abnormally low water content has a substantial chance of being the cause of sciatica.

Burning the skin of the affected leg at multiple sites with a hot iron rod has been a traditional way of treating the distressing pain of sciatica. This mode of treatment called "Daghoona" is still practiced in the remote areas of NWFP.

Surgery for prolapse lumber disc was first described in 1934[3]. Standard laminectory, microdiscectomy, chemonucleolysis percutaneous nucleotomy and laser discectomy are various treatment modalities which have been adopted, since then. As the people are anxious to get relief without surgery, epidural anaesthesia has been tried, but it is frankly a symptomatic treatment. The manoeuvre is not too upsetting to the patient, and the skill required is widely available in the hands of experienced anaesthetist. Acupuncture has been used as a supplementary therapy capable of reducing the requirements of more invasive forms of treatment[4]. But it has no place in cases of cauda equina syndrome, where surgery is an emergency. In the 6th and 7th decades of twentieth century, there was great enthusiasm about chemonucleo lyses. Cheymopapain which causes lyses of the nucleous pulposis was used. Chymopapain is the major proteolytic component of crude papain. The procedure was later abandoned due to several reasons. The injection is occasionally attended by potentially fatal allergic response. The skill required is considerable. The greater defect of chemonucleolysis is that, it treats that part of the disc which is not causing symptoms. Sometimes severe complication such as transfixion, damage to nervous tissue and severe obliterative arachnoiditis occurred.

MATERIAL AND METHOD

Sixty-four patients were selected for lumbar disc surgery from a large number of patients who presented with backache and leg pain from March 2000 to July 2002. A detailed history was taken from each patient, and a thorough physical and systemical examination was performed. Routine blood and urine tests were done. An ECG, X-Ray chest, blood sugar and serum electrolytes were done in patients of above 40 years of age. For the confirmation of herniated disc Myelograrphy was performed in 50 patients, CT scan in 10 patients and MRI in 4 patients. Most of the patients under went Myelograrphy, because of its easy availability. The following was the selection criteria for surgery.

1. **Cauda equina syndrome**

   In these rare cases patients have extreme pain and disability, loss of feeling in the lower body and incontinence of bladder and bowel. These patients were operated in emergency.

2. **Progressive neurological loss**

   Patients having loss of muscle power or feeling in the leg.

3. **Severe and uncontrollable leg pain**

   All those patients who had severe and uncontrollable pain in spite of 4 to 6 weeks of bed rest and taking analgesic under went surgery.

All these patients under went standard laminectomy. They were mobilized on the second day of surgery, except those who had dural tears. All these patients were asked to come for follow up after 3 to 4 weeks. After 8 weeks they were advised spinal extension exercises, and were stressed to use their back muscles properly in future.

Operative Procedure

The patient is put in the prone position. A pillow is put beneath the chest and pelvis to eliminate lumbar lordosis and reducing venous congestion by keeping the abdomen free. The skin incision is midline and centered as nearly as possible over the involved disc level. From the tangents to the iliac crest a line is drawn across the back. The next inter spinous dip to the palpating finger below this line is that of L4-5. The incision is marked in the midline approximately 4cm long. Local anaesthetic with adrenaline infiltration is used, taking care to inject well down into the musculature next to spinous process. Correct positioning is probably the greatest contribution to be made to the avoidance of bleeding from extra dural veins. Atraumatic dissection of the muscles is best accomplished with a periosteal elevator and a fine electrocautry needle. Separation of the muscles from the two limiae and a portion of the hemilana above and below permits retraction without undue tension. This longitudinal release accompanied by paralytic agent given by the anaesthesiologists at the time of surgical incision provides adequate release of laminae and facets, allows the muscles to return easily to position on completion of operation, avoids post operative muscle spasm and wound discomfort and allows the patient to ambulate early. Laminection of the appropriate level is carried out, starting at the lower border of the lamina of the respective vertebra. The ligamentum flavum is divided in the midline and then excised from each side, lifting it well away from the dura. Bone is removed beyond the lateral margin of dura meter on the side of greater pain or deficit. In case of big median disc, this lateral excision is to be carried upto the medial facets. This posterolateral exposure permits access from one side and require minimal retraction of dura meter and cauda

equina over the ruptured fragment of disc. A small tear in the annulus and posterior longitudinal ligament, often small in relation to the size of ruptured disc material is easily extended laterally so that the disc space can be evacuated of residual degenerative disc tissue. The approach ensures complete removal of the compressive lesion with virtually no danger to the released cauda equina and nerve root. When the disc space has been evacuated as much as possible, the wound is closed in layers.

RESULTS

In this study out of 64 patients, 48 (75%) were men and 16 (25%) were women. (Table 1). The youngest patients was 20 years old and the oldest was 65 years old. The majority of the patients presented in the 4th and fifth decade of life. (Table 2). Thirty six patients had disc lesion. At L4–5, (56.25%), 23 had disc lesion at L5-S1, (23.7%) and 5(7.8%) patients had disc lesion at L3-4. (Table 3)

Three patients presented with cauda equina syndrome. Out of these three, one patient was having in continence of urine. Two patients had disc lesion with spondylolisthesis. These patients were in the 6th decade of life. Decompressive laminectomy and discectomy without fusion was done in these patients. Both these patients were free of symptoms after a follow up period of one year. One patient was operated for a recurrent disc at L4-5. This patient had micro discectomy at the same level one year ago. In one patient disc prolapse was associated with spinal stenosis. Discectomy and decompressive laminectomy was done in this patient. This patients continued to have backache and numbness in his leg at on exertion after a follow up period of one year. Four patients had dural tears during the operation. In all these patients dura was stitched. Four patients had burns due to cautry. Two patients had wound infection. Two patients developed discitis. (Table 4) Both these patients had severe backache. TLC and ESR, were raised. These patients were advised complete bed rest, and were put on antibiotic, steroids and analgesic. Both these patients improved in two weeks time with no residual neurological deficit.

SEX INCIDENCE

Sex	No.	%age
Male	46	75%
Female	18	25%

TABLE – 1

AGE PATTERNS

Age	No. of patients	%age
20-29 years	10	15.62%
30-39 years	20	31.25%
40-49 years	22	34.36%
50-59 years	10	15.62%
Above 60 years	2	3.25%

TABLE – 2

DISCUSSION

In this study the disc herniation was found to be much more common in males, The M:F ratio is 3:1. The men are exposed to more physical stresses without the knowledge of using their muscles of back properly. The number of men affected in this study is lower as compared to another study which shows M: F of 5.7:1.[5] While another

DISTRIBUTION OF PATIENTS ACCORDING TO THE LEVEL AFFECTED

	No. of patients	%age
L3-4	5	7.81%
L4-5	36	56.25%
L5-31	23	23.7%

TABLE – 3

COMPLICATIONS

Complication	No. of patients	% age
Dural Tear	4	6.25%
Discitis	2	3.12%
Wound Infection	2	2.12%
Burns due to Cautry	4	6.25%

TABLE – 4

study shows female predominance. Forty one patients who underwent percutaneous discectomy shows 14 (34%) male and 27 (66%) females[6]. The disc herniation in this study is at L4–5 in 36 (56.25%) patient, L4–5, while it is in 23 (35.9%) patients at L5–S1. This is not in conformity with another study which shows that it occurs with almost equal frequency at the lowest two disc levels[1]. Standard laminectomy provide adequate anatomic exposure, which has been the most important element in all surgery. Because every approach to the spinal lumen is conducted because of compressed neural elements, the principle that, there should be adequate exposure of neural elements, remains stead fast from foraman magnum to the sacral canal. The basic principle of gaining an adequate release and lateral surgical approach is stressed. Observance of this principle not only provides satisfactory decompression but is the most practical means of reducing chances of dural tear. The chance of chronic adhesive arachnoiditis which results frequently from cohesion of nerve roots subsequent to surgical retraction and dissection within a restricted exposure is also reduced. In our study non of the patient developed adhesive arachnoiditis. In micro discectomy there is excessive retraction of the nerve root, for without bone removal the nerve root must be moved further to word the midline to expose the underlying disc. It also increases the risk of continued pain post operatively because of inadequate decompression of the lateral recess. This approach also miss an extruded disc fragment that has migrated out of the field. Micro operative technique or microdiscectomy provide a minimally invasive approach to the prolapsed disc. In this procedure minimal amount of bone and ligaments are removed. The smaller incision reduces post operative discomfort. The patient stay in hospital is minimized. Microdiscectomy in carefully selected group is safe and favourably received by the patient[3]. The clinical outcomes of microdiscectory are comparable with those of standard discectomy[7]. A trial of chemonucleolysis versus the traditional lamirectomy failed to show any advantage over operation and in some respect the enzyme treatment was clearly inferior[7].

Another double blind controlled trail demonstrated a definite but not dramatic alleviation of symptoms greater than saline injection in exactly the similar manner[8]. The advantage of per cutaneous discectomy include no lumber incision, muscle stripping or bone removal, thus eliminating the major causes of post operative pain, the epidural space in never violated and the nerve root never directly manipulated. However the post operative standard laminectomy pain could be reduced due to local infiltration of bupivacaine.[9] The major disadvantage is inability to remove disc no longer in continuity with disc space. The pathological structures are not directly visualized. It would be extremely dangerous to allow the tip of the rongeur to penetrate and extend beyond the annulus fibroses. There is moderate evidence that automated per cutaneous discectomy produces poor clinical results than standard discectomy.[5]

Segmental instability which may be seen in patients operated upon for disc herniation[10] was not seen in anyone of the patients who underwent standard laminec-

tomy in our study. While segmental in stability was seen in 10 patients out of 41 patients in another study who underwent percutaneous discectomy[6]. The patients who had disc prolapse with spinal stenosis continued to have backache and legs pain. The failure of surgery to relieve pain could be due to widespread spondylotic changes that are the rule in this condition[11].

CONCLUSION

Although now a days minimally invasive procedures for lumber disc surgery are favoured, the results of standard laminectomy are comparable to other procedures. In certain cases it could be a treatment modality of choice.

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