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Research Article

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Review of Lumbar Disc Surgery

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Abstract

*** Background:** Although there are references of lumbago and leg pain in a Bible and even earlier , the scientific evaluation of lumbar disc disease as a surgical disorder began in 1934 when Mixter and barr published the first clinically adequate description of lumbar disc herniation as the cause of leg pain .
*** Objectives :** To reach a perfect method of surgical management of Lumbar Disc Herniation & do comprises between a three different surgical methods (laminectomy, hemilaminectomy and fenestration)
*** Methods :** This is a retrospective study of 150 cases with Lumbar Disc Herniation operated on in Baquba teaching hospital, AL Sheefa private hospital & Alwaya private hospital from July 2009 to July 2010.
*** Results :** Lumbar Disc Herniation mainly affected the disc between lumber vertebra 4 and lumber vertebra 5.
The main complain was pain . Operated on mainly by laminectomy & discectomy with good result in most of the cases.
*** Conclusions:** The surgical managements of Lumbar Disc Herniation with laminectomy & discectomy carry a good result in comparison with hemilaminectomy or fenestration.

Keywords: Lumbar Disc Herniation, Laminectomy

Introduction

Although there are references to lumbago and leg pain in the Bible and even earlier sources , the scientific evolution of lumbar disc disease as a surgical disorders began in 1934 when Mixter and Barr published the first clinically adequate description of lumbar disc herniation as a cause of leg pain .interest in the condition subsequently increased. But it was not until after the second world war that surgery for it gradually became one of the most common elective procedure in the united state.

Patient who respond to their initial attacks of back and leg pain can have significant recurrences. In a prospective controlled study, Weber showed that in the workplace 60 percent of these patients will have recurrent symptoms within 1 year. In one of the few randomized treatment studies, Weber studied 280 patients with clear-cut lumbar disc herniation that did not respond to nonoperative treatment. the patient were assigned randomly to continued nonoperative therapy or to surgery . At 1 year , the outcome in terms of relief of lower back and radicular symptoms was better for group treated surgically . However, the patient who were treated nonoperatively continued to improve, and by 4 years the advantage of surgical treatment was no longer statistically significant . Of course , patient with advanced neurological deficits , such as profound weakness or bowel and bladder difficulties , were excluded from the study because they were treated with urgent surgery. It seems clear , therefore, that the advantage of surgery over nonoperative therapy lies in the promptness of symptoms relief rather than in overall efficacy . In this era of the economic evaluation of pain and its effect on industry and personal life , such promptness may be a just reason for surgery, particularly if the

complication rate of surgery , as well as its expense, can be reduced to acceptable level.

Low back pain is extremely prevalent, and is the second most common reason for people to seek medical attention and account for 15% of all sick leave and is the most common cause of disability for person less than 45 years.

Estimates of life time prevalence 60 – 90 %, with an annual incidence of 5%, only 1% of patients will have nerve root symptoms and only 1-3 % have lumbar disc herniation.

Patient with lumbar disc herniation offer a wide range of joys and frustration to the surgeon. after treatment they may be grateful or angry, athletic or disabled, hopeful or depressed.

The surgeons disability to predict the ultimate outcome depends not only on his prognostic & surgical skills, but often on subtle cues, which take considerable experience to detect.

The age incidence range from 30 – 50 years

Moderate compression of the nerve root produce parasthesia.

When inflammation present , pain response is more easy elucidated.

Pain start as back pain with radiation to the leg & with time leg pain become more severe.

The radiation of pain depend on the level of the disc prolapse.

Each lumbar disc consist of two component, an internal semifluid mass, the nucleus pulposus, and a laminar fibrous container, the annulus fibrosus. The fibrocartilaginous complex form the articulation between the vertebral bodies necessary for alignment of the neural canal. The nucleus pulposus occupies an eccentric position within the annulus, usually closer to the posterior margin of the disc. The nucleus is composed of loose delicate fibrous strands embedded in a gelatinous matrix. The fibers form a mesh of undulating bundles. Within this fibrous network are many cells, some of which are chondrocytes. The nuclear material blends imperceptibly into the annulus. The latter is an eccentric series of fibrous lamellae that encase the nucleus and help to unite the vertebral bodies. On sagittal section, the lamellae are not consistently vertical. Near the nucleus they curve distinctly inward, whereas the superficial layers may be bowed with the convexity facing the periphery. Tele logically, the function of the nucleus is to resist compressive forces within spine, whereas the main function of the annulus is to withstand horizontal and torsional tension.

In aggregate, the discs make up approximately one-fourth of the length of the spinal column excluding the sacrum and coccyx but their contribution is not the same in every region.

Gross and microscopic examination suggest that the discs are contracted to alleviate shock while simultaneously transmitting forces from any combination of vectors. Because the nucleus is liquid it can be distorted but not compressed by compressive forces. Only distortion of the annulus can relieve pressure in the nucleus, and the resilience of annulus promotes recovery from pressure. The nucleus composed of a protein- polysaccharide gel that has a high imbibition pressure, and binds nearly nine times its volume of water. Prolonged mechanical pressure can expel the water from the nucleus , so this binding is a biophysical rather than biochemical phenomenon. The spectrum of disc lesions includes ballooned discs, nuclear herniation into adjacent vertebral bodies (schmols nodes), thinned disc and finally disc protrusion.

Disc protrusion, the process of most interest context, result from chronic structural changes superimposed on mechanical stress. Herniation is a greater threat in younger individual, between the ages of 30 and 50, in whom the nuclear material has good turgor, in contrast to older individual, in whom the nuclear is discarded and fibrotic. The nucleus progressively bulged through a rent in the annulus, but it is retained by the posterior longitudinal ligament. When the ligament ruptures, the free sequestrum of nuclear material may pass into the spinal canal (the so-called extruded disc).

Patients and Methods

This is a retrospective study of (150) cases with Lumbar Disc Herniation operated on in Baquba teaching hospital , AL Shefaa private hospital & Alwaya private hospital from July 2009 to July 2010.

History taken:

Patient asked about nature, severity, duration and radiation of pain.

Also asked about nature of his work.

General examination:

General look of patient
Vital signs

Neurological examination:

Inspection: any muscle wasting
Muscle tone

Muscle power: (look for foot drop)

Reflexes: compares between two sides

SLRT (path gnomonic for disc herniation between fifth lumbar vertebra and first sacral vertebra)

All patient send for plain X- ray of lumbosacral area

MRI taken for all patients

Pre operative medication given

Operation varies from laminectomy, hemilaminectomy or fenestration depending on size of disc , age of the patient & body weight.

Patient ambulated after 12 hrs.

Antibiotics & pain killer given for 10 days.

Results

Lumbar disc herniation affected male (75%) more than female (25%).

Mainly at the level between forth lumbar vertebra and fifth lumbar vertebra.

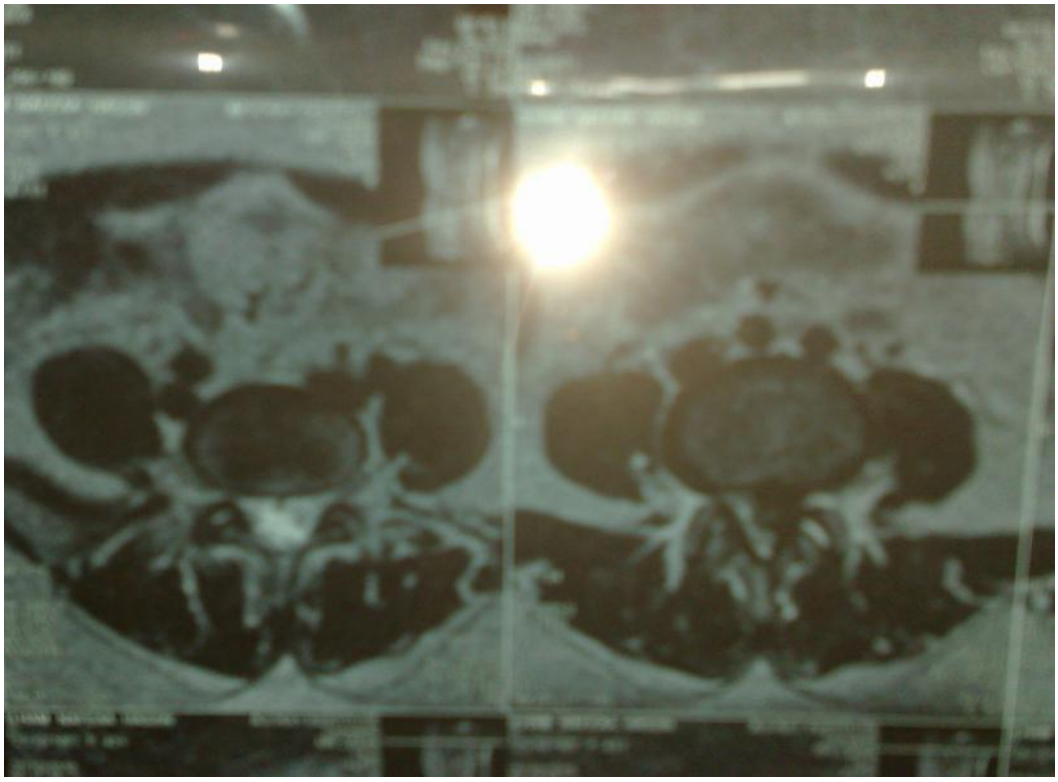
Patient complain of pain if the herniation at the level between forth lumbar vertebra and fifth lumbar vertebra and neurological deficit if it at the level of fifth lumbar vertebra and first sacral vertebra.

Rarely the patient complain of sphincter disorders.

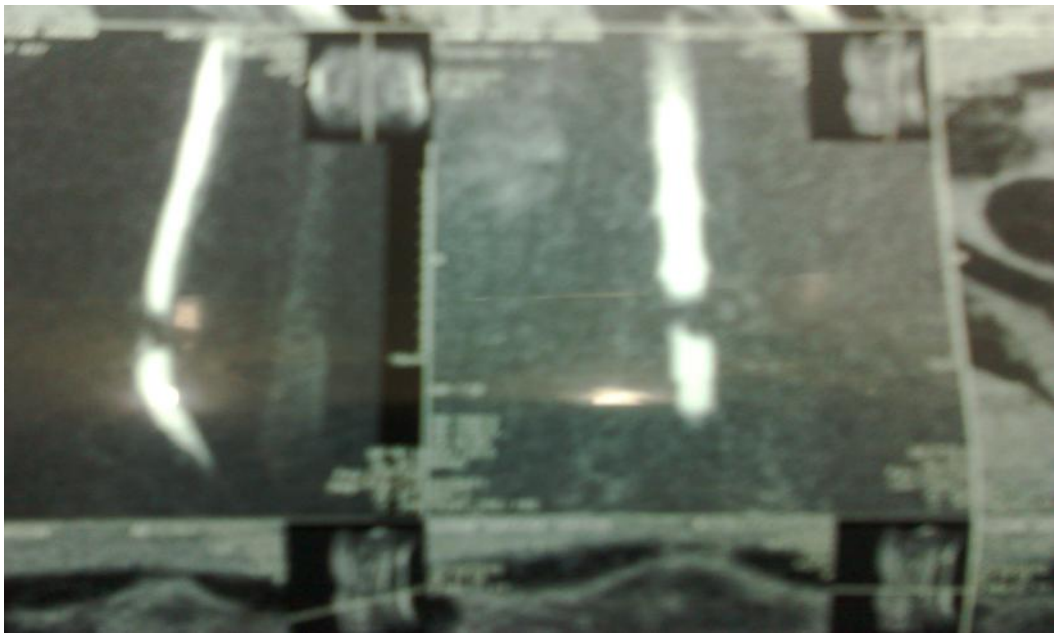
Most of the patientend with good result post operatively.

Good result mean that parasthesia or pain subside & short history neurological deficit regain.

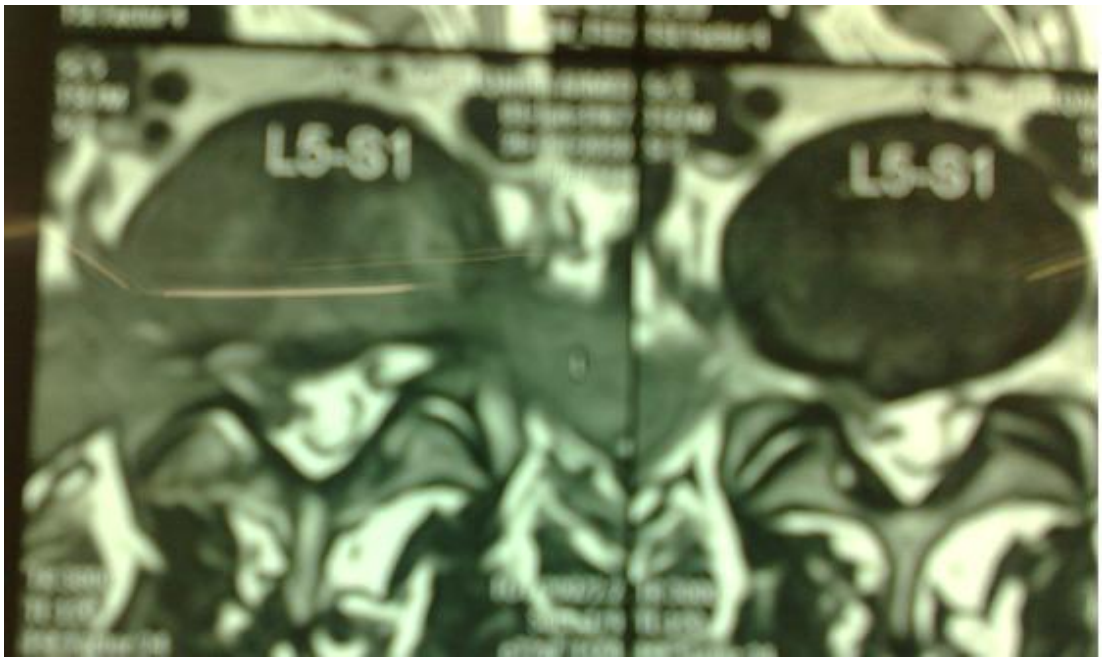
Picture (1) - LDH (L4L5), Sagittal section



Picture 2. LDH (L4L5), axial section



Picture 3. myloghraphic picture



Picture (4)- LDH(L5S1), axial section

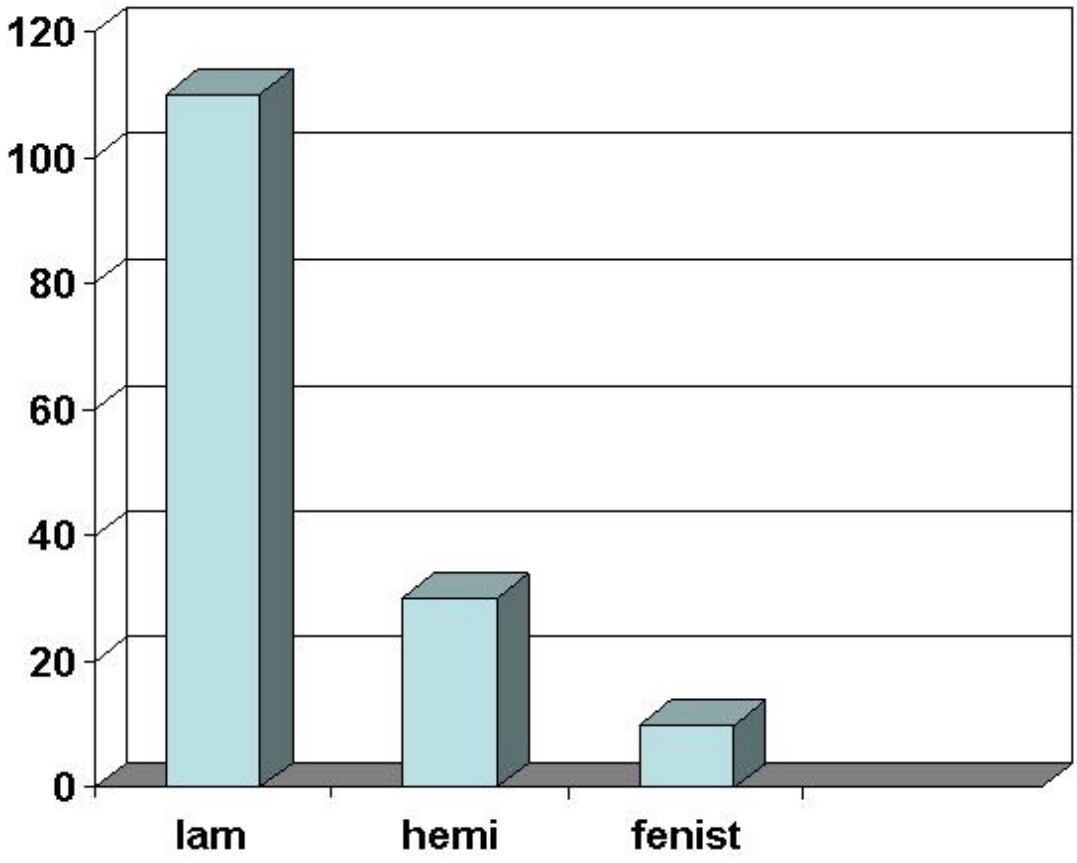


Figure 1 .Type of surgery

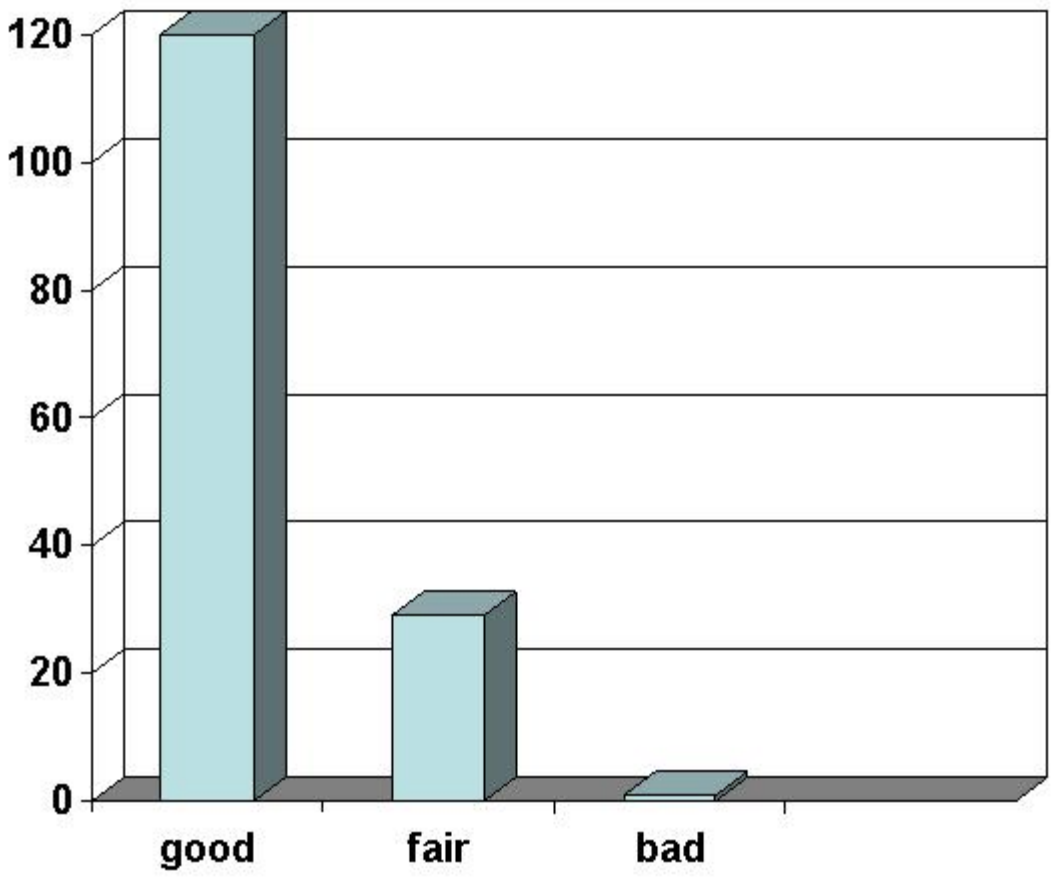


Figure 2. Result of Surgery

Table (1)- patient Complain

Complain	L4L5 (105)	L5S1 (45)
Pain	78	9
Neurological deficit	20	34
Sphincters disorders	7	2

Discussion

Nachemson estimate that 80 % of individuals will experience back pain at some time of their lives.
Low back pain ranks second only to respiratory infections in terms of hours lost from works, as reported in Rowes study.

In USA, back pain affected male (60 %) more than female.

Regarding surgery, laminectomy done more frequent than others (hemilaminectomy or fenestration) as reported in Nachemson study.

In conclusion: our study said that Lumbar Disc Herniation is common disease & treatment by laminectomy & discectomy end with good results.

Recommendation

Back pain was so common that need large effort to prevent and treat it.

The choice of type of surgery depend on age , weight and work of the patient .

Most of the patients get benefit from surgery

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