

Original Research Article

Surgical or Non Surgical Treatment of Lumbar Spinal Stenosis (LSS) ((Compares Study))

Isam Ali Al-Sudany* Salah Mahdi Jaddoa
Hilla Teaching Hospital , Hilla, IRAQ

*E-mail: isamalsudany@gmail.com

Accepted 9 December, 2015

Abstract

This study is to assess the effectiveness of decompressive surgery as compared with non-operative measures in the treatment of patients with lumbar spinal stenosis. prospective study carried out for Forty seven patients with lumbar spinal stenosis (LSS) of one level or more categorized into 25patients with surgical group and 22patients with non operative treatment group . The surgical procedure was laminectomy of stenosed segments and undercutting ligamentum flavum while the group of non operative measurements received non steroid anti inflammatory drugs and physiotherapy. Result in both groups showed improvement in leg and back pain and walking ability in first 6 months follow up .At one year follow up the difference was clear in improvement of walking ability and pain in surgical group than non operative group. our conclusion was although the improvements appeared in both group. The outcome of surgery remain favorable in long time follow up. we recommended that more than 2 years follow up needed for evaluation of the surgical results.

Key words: lumber, laminectomy, disc prolaps, spinal stenosis, claudicating

الخلاصة

دراسة سريرية اجريت في مستشفى الحلة التعليمي شملت ٤٧ حالة تضيق القناة الشوكية للفقرات القطنية العجزية بين الاعوام ٢٠٠٢-٢٠٠٨ وكان التضيق لمعظم الحالات لاكثر من مستوى فقري. قسمت الحالات الى مجموعتين، الاولى خضعت للعلاج الجراحي وضمت ٢٥ حالة والثانية اعتمدت العلاج التحفظي والعلاج الطبيعي وتضم ٢٢ حالة. التداخلات الجراحية كانت فتح فقرات قياسي مع رفع الاربطه الضاغطة والحالات غير الجراحية استلمت علاج مضاد الالم واللاستيرويديه والعلاج الطبيعي. كانت انتائج خلال الست اشهر الاولى تحسن في المجموعتين من ناحية الم الساق والظهر وتحسن في كفاءة المشي مع فارق ملحوظ نحو الاحسن من حيث العدد والكفاءة في المجموعه الجراحية وبعد مرور سنة لاحظنا تحسن المشي في معظم الحالات الجراحية(بنسبه تصل الى ٨٠%) وتلك في المجموعه غير الجراحية في بعض الحالات وتحسن مشابه للحالات الاخرى. بالرغم من التحسن الواضح في المجموعتين تبقى النتائج الجراحية تعطي حصيلة افضل في المتابعة على مدى اطول من سنة.

Introduction

Spinal stenosis in lumbosacral area (LSS) was first described by Verbiest 1954, who reported 7 patients with a syndrome characterized by narrowing of spinal canal coexisting neurogenic spinal claudication, radicular

pain, and motor weakness in the lower limbs [1].

The clinical significance of spinal stenosis relate to a critically reduced sagittal diameter of the vertebral canal, intervertebral foramen and lateral recesses may occur as a general disorder

or as a lesion limited to one or two adjacent vertebrae [2].

Spinal stenosis classifieds as [3].

1. Central canal stenosis: narrowing of the AP dimension of the spinal canal. The decrease in canal diameter may cause local neural compression and /or compromise of the blood supply to the spinal cord [4].

Foraminal stenosis: narrowing of neural foramina .and

3. Lateral recess stenosis (lumbar spine only)

Symptomatic LSS generally occurred in patients with congenitally shallow lumbar canal (see normal LS spine measurements Table 1A and 1B). with superimposed acquired degeneration in the form of some combination of facet hypertrophy, hypertrophy of the ligamentum flavum, protruding of intervertebral disc and spondylolisthesis [4,5], (Normal *ls* spine measurements [6]

Table 1A: Normal AP diameter on lateral plain film

Average (normal)	22-25 mm
Lower limit of normal	15 mm
Sever lumber stenosis	11 mm<

Table 1B:Normal measurement on CT [7]

AP diameter	11.5 mm>
Interpediculate distance	16 mm>
Canal cross sectional area	1.45 cm ² >
Ligamentum flavum thickness	4-5 mm>
Height of lat. recess	3 mm>

Materials and Methods

47 patients with lumbar spinal stenosis (LSS) proved by clinical, radiological and neurophysiological study; were classified into surgical or non operative treatment group, 25 and 22 patients respectively in AL Hilla teaching hospital between 2001-2008 the mean follow up of both groups was two years meaning of intermediate term follow up To be involved in this study the patient had to fulfill the following criteria of a LSS:

Inclusion criteria

1) Clinical symptoms of lower backache radiculopathy to lower limbs or buttocks, sensory changes in lower limbs and walking disability

2) Persistent pain with no neurological deficit

3) Imaging technique (spinal canal narrowing) by sagittal diameter.

Exclusion criteria: We excluded from this study the following patients:

1) Patients with herniated disc significant to urgent operation or as early as possible

2) Patients with spondylolisthesis in significant degree that need fixation

The arrangement of the patients to operative group or non operative group based on

1) severity of symptom and disability mainly the walking disability and the distance in meters to develop such disability

2) patient agreement to surgery

- 3) age and risk of surgery in association to other medical problems
 4) radiographic examination and finding the severity of stenosis by using of plan radiograph ,MRI and sometime CT scan

Interventions: In surgical group, segmental decompression and an undercutting facetectomy of affected area were done in patients with severe bony thickness and sever stenosis and done for one level only.

In non operative treatment group patients arranged to given non steroidal

antinflamatory drugs and other analgesia and were referred to physiotherapist and patients were seen in standard visit every three weeks.

Results

Forty seven patients with lumbar spinal stenosis LSS divided into 2 groups regarding the way of there management. The first group called surgical group and contained 25 patients and other 22 patients belong to second or non operative group (table 2)

Table 2 : Total no. of the patients divided into surgical and non operative groups

Surgical	25 patients
Non operative	22 patients

The age of the patients in both groups was 53 years and above and there is marked older age in non operative group.

And there was female dominant in both groups (Table 3)

Table 3: Ages and Female Sex Percentage

CHARECTERS	Non operative	surgical
Age (in years)	53-72	53-68
Female sex %	55%	72%

The lumbar level affected showed in MRI or some time in CT scan were showed in table 4 and the dominant

affected level in both groups is L4-L5 followed by L5-S1 and the L1-L2 level is the lowest incidence in both groups

Table 4: The Lumbar Level Affected By Mri Or Ct Scan And No.Of The Patients In Both Groups (Most Of The Patients With More Than One Levels)

Level affected	No. of patients in non operative	No. in surgical
L1-L2	3	1
L2-L3	10	4
L3-L4	10	11
L4-L5	21	18
L5-S1	14	14

The onset of the symptom and the presenting features in both groups nearly the same. But the walking disability was more in surgical group and this reflected

by pain in lower limbs in walking even for few steps and more severe in those who developed pain in standing . (table 5)

Table 5: Disability in walking and standing

Disability	No. in Non operative	No. in surgical
Pain in walking	22	25
Pain in standing	10	20

In surgical group the decompressive surgery was performed on 8 cases in one level, 12 patients in 2 levels and more than 2 levels only on 5 cases

The leg and back pain improved in both groups at 6 months follow up and walking ability also improved in both treatment groups during the follow-up, but was more significant in surgical cases (Figure 1).

After this period of follow up there was less leg and back pain in surgical patients than non operative cases after every follow up time but after one year visit the improvement of ability in surgical group is better than those in some patients in non operative group. The details was

20 patients fell good improvements and they returned to employment and 2 patients fell mild difference, 2 patients may need reoperation and one patients disappeared from follow up.

Last few months we have 4 patients in non operative group they asked us for surgery and we list them in operative list There were 3 patients developed peroperative complications which was lesions to the dural sac. The Dural sac lesions were treated with sutures at the same time of operation, and there was no CSF leak during all time of follow up.

The mean postoperative hospitalization was five days. The longest period of post operative hospitalization was 14 days for those patients with dural repair

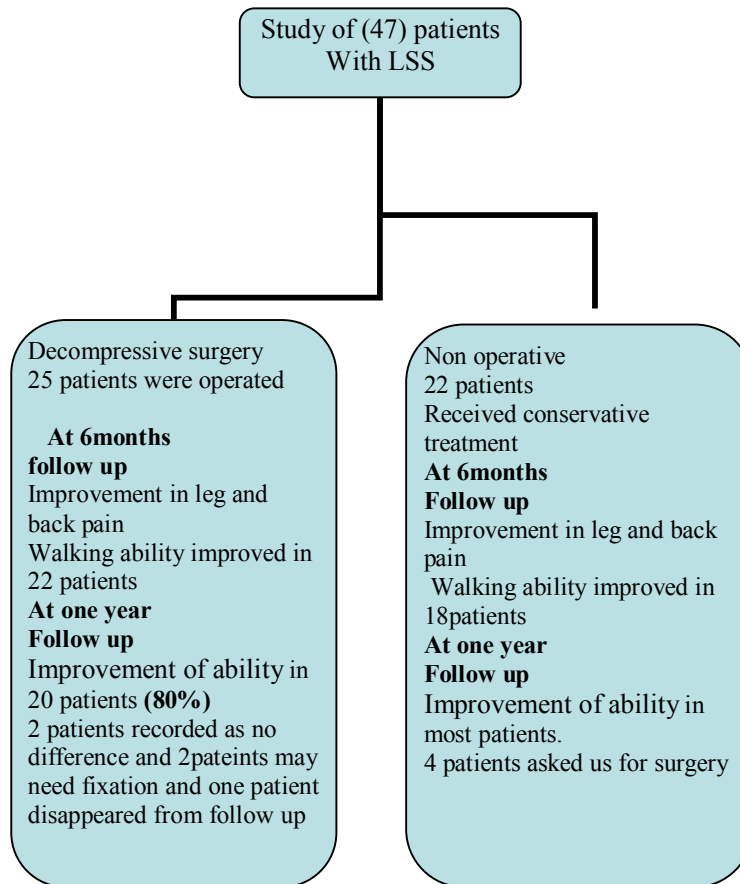


Figure 1 : summary of follow up of patients in each group

Discussion

The condition of spinal stenosis remain asymptomatic until critical reserve space for enclosed neural elements becomes compromised by degenerative changes associated with aging or trauma, such as thickening of ligaments or arthritic facets [8].

Gibson JN et al mentioned in their study that a recent review did not find any randomized controlled trials assessing the efficacy of surgical decompression or fusion for spinal stenosis. The lack of

Information on the natural course of the disease, as compared

With surgical decompression or conservative treatment, was underlined [9].

Literature review patients with long term follow up found good or excellent outcome after surgery with a mean of 64% (range 26-100%) [10].

A post operative study of Javid and his coworker [11] found a success rate of 78%-88% at 6 weeks and 6 months which drop to 70% at one year and 5 years so the long term follow up is needed in such

study. In our study the lack of long term follow up is the main problem.

Greenberg and Ganz [2,12] in two separated studies exist comparing surgery to conservative treatment and found patients with postural module (patients with no disability in standing) had better results (95% good result) than those without a postural module (52% good result) and relief of leg pain was much more successful than of back pain

when we compare our study with the finding of Ganz and Greenberg we found that our patients without disability in standing and only in walking as seen in table 5 get good result in both groups and reach to 80% in surgical group and this result is near to their results but the higher percentage is related to use of lumbar instrumentation in some patients in their studies and we mentioned that 2 patients in our study need such interference as we expected

Bigos and his colleagues summarized their result by that the surgery is most likely to reduce leg pain and improve walking [13].

From the findings of above studies and in compare these findings with our trial we see that the results is near and sometime well-matched to some studies; Our trial shows that operative treatment is more effective in reducing pain and disability than nonoperative treatment in LSS, and that the effect sustains the 1-year follow-up however, that the non operated patients showed recovery and their walking ability improved during the 6months follow-up in both the conservative and surgical group.

Finally, In order to further assess the clinical significance of such results we need long term follow up (more than 2 years) as reported in some studies and this appeared in our follow up after one year, 4 patients in non operative group they asked about surgery and further four patients in surgical group need reassess of their result.

Conclusion

Laminectomy (decompressive surgery) In patients presenting with spinal stenosis has a good effect both on leg and low back pain and on overall disability. As a notable recovery also occurred in the nonoperative treatment group, we propose that surgical decompression should be recommended with caution and only after appropriate conservative treatment of the patients

References

1. Verbiest H.A radicular syndrome from developmental narrowing of the lumbar vertebral canal. *J Bone Joint Surg Br* 1954; 36:230; in: Surgical Treatment for Lumbar Spinal Stenosis by Malmivaara et al Spine.
2. Joseph A.Epstein .lumber spondylosis and spinal stenosis .neurosurgery by WilkinsRH:3831-39;1996
3. Mark S. Greenberg. Degenerative disc and spinal diseases. Handbook of neurosurgery by Greenberg 325-30;sixth edition 2006
4. Epstein NE .symtomatic lumber spinal stenosis .surgical neurology .50:3-10;1998
5. Duggal N.Sonntag V.K.H fusion options and indication in lumbosacral spine. *J neurosurgery*.2001; 23:18
- 6-Ehni G. significance of small lumber spinal canal. *J neurosurgery*. 31: 94-4; 2001.
7. Ullrich CG. Binet EF. et al .Quantitive assessment of the lumber spinal canal by CT. *Radiology* 134:137-43;1980
- 8- Epestein BS .Epstein JA. Lumber spinal stenosis, diagnosis and treatment of painful neurological disorder. *J neurosurgery* 7: 362- 76; 1973
- 9- Gibson JN, Grant IC, Waddell G. The Cochrane review of surgery for lumbar disc prolapse and degenerative lumbar spondylosis. *Spine*, 1999; 24: 1820–32.
10. Turner MJ. Ersek. Herron L, et al :surgery for lumber spinal stenosis, meta analysis of the literature. *Spine*17: 1-8; 1992

11. Javid MJ. Hadar EJ: long term follow up review of patients underwent Laminectomy for spinal stenosis .a post-operative study, J.neurosurgery 89:1-7; 1998.
12. Ganz JC: lumber spinal stenosis, postoperative result in term of pr operative posture-related pain. J neurosurgery .72: -71-74;1990.
13. Bigos, Bowyer O, Braen G. et al. Acute low back problems, clinical practice guide line.1998 (puplic health service-USA).