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A four year results of posterior open laminectomy for spinal stenosis in a specialist hospital

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ABSTRACT

Lumbar spinal stenosis (LSS) is a reduction in the volume of the central spinal cord, the lateral recesses and/or neuroforamina that decreases the space available for thecal sac and/or exiting nerve root(s). Both empiric and randomized evidence exist, providing superior efficacy of surgery compared to medical management for lumbar spinal stenosis. Traditionally, lumbar spinal stenosis is decompressed with open laminectomy that is removal of the spinous process, lamina and the posterior musculo-ligamentous complex (posterior tension band). However, it is also associated with potential postoperative complications, including spinal instability; this may result in the future need for spinal fusion. In Northern Ghana, there exist no scientific data on lumbar spinal stenosis, and its surgical management. The objective of this study was to report on 27 conservative patients with symptomatic lumbar spinal stenosis, from January, 2010 to December, 2013, who underwent posterior open laminectomy in Tania specialist Hospital, Tamale, Ghana. Most of the subjects were within the age group of 20 to 50 years. The study was a retrospective one involving 27 conservative patients with diagnostic image confirmed LSS cases, who had posterior open laminectomy done over a four year period. Data regarding patient's age, sex, cause of injury, duration of complaint(s), nature of complaint(s), presence of associated disease and patient's medication(s) among others, from January, 2010 to December, 2013 were recorded. The incidence of symptomatic lumbar spondylolithias is over the study period was 6.02% (289/4,800) of all orthopaedic cases within the study period. Twenty-seven cases(9.34%) out of the 289 patients who had spondylolithiasis and spinal canal stenosis with / without nerve root compression or patients with failed conservative therapy had posterior open decompression laminectomy done. Of the 27 patients who were operated 8 (29.63%) were females and 19 (70.37%) were males.160 females(55.36%) reported within the study period with symptomatic spondylolithiasis, and a male to female ratio of 1:1.2 was recorded. There were no postoperative complications. Only one (3.7%) patient developed haematoma. In conclusion, posterior open spinal decompression (laminectomy) is relevant for symptomatic lumbar spinal stenosis in developing countries, like Ghana, where minimal invasive spine surgery cannot be done.

Key words: Lumbar Spinal Stenosis, Posterior, Open Laminectomy, Patient Outcomes, Northern Ghana.

INTRODUCTION

Lumbar spinal stenosis (LSS) is a reduction in the volume of the central spinal cord, the lateral recesses and /or neuroformina that decreases the space available for the thecal sac and/ or exiting nerve root(s).Narrowing in LSS consist of central stenosis (narrowing of the entire canal), for animal stenosis (narrowing of the foramen through which the nerve roots exist the spinal cord) and then severe narrowing of the lateral portion of the canal termed

"lateral recess stenosis"; absolute stenosis of the lumbar spinal canal exists anatomically when the anterio-posterior measurement is 10mm or less [1, 2, 3].Lumbar spinal stenosis may be caused by mechanical factors and /or biochemical alterations within the intervertebral disc that lead to disc space collapse, facet joint hypertrophy, soft tissue in-folding of ligamentum flavum and osteophytes formation, which narrow the spaces available for thecal sac and existing nerve roots. Other causes of LSS include congenital short pedicles and laminae, dics herniation, osteoporosis, congenital spinal defects (malformations), spinal tumors, ankylosing spondylitis, spondylolithiasis, spondylolysis, vertebra fractures and infections, previous skeletal dysplasias(pseudoachondroplasia and achondroplasia)[3,4,17].The clinical consequence of this compression is neurogenic claudication of the leg(s) and the lower back pain. Symptoms are most commonly bilateral and symmetrical, but they may be unilateral: leg pain is usually more troubling than the low back pain. Pseudoclaudication or neurogenic claudication, typically worsen with standing or walking but improve with sitting. LSS associated low back pain, radiates to the thigh(s), buttock(s), leg(s), or tingling sensation in leg(s),leg(s) weakness or loss of urinary bladder and/or bowel functions[1,2,3].LSS is generally managed by conservative and/or operative therapy. Adult patient whose condition worsen 3-to-6 months after conservative therapy or LSS caused by spinal tumor or infection or spondylolithiasis with spinal stenosis require laminectomy as the most effective method for spinal stenosis. Literature states that spine surgery leads to improvement of patients' condition in60-70% of cases [4,5,6, 7].The post-operative complications are rare, in experienced hands and generally surgical prognosis is good [8,9].

The condition is mainly diagnosed clinically, by means of clinical history, physical examination and supported with various imaging techniques. Plain radiographs (anterior-posterior& Lateral views), may demonstrate spondylolithiasis, disc space narrowing, end-plate sclerosis, osteophytes, and facet hypertrophy. Lateral-flexion and extension stress radiograph may proof if spondylolithiasis is mobile or fixed. The degree of spinal stenosis is best evaluated on MRI (magnetic resonance image) but this is not usually available in less develop countries.

There are empirical evidence to show that there is superior efficacy when the condition is treated surgically compared to medical management for lumbar spinal stenosis. Traditionally, lumbar spinal stenosis is decompressed with open laminectomy that is removal of the spinous process, lamina and the posterior musculo-ligamentous complex (posterior tension band). However, it is also associated with potential postoperative complications, including spinal instability; this may result in the future need for spinal fusion. In Northern Ghana, there exist no scientific data on lumbar spinal stenosis, and its surgical management. The objective of this study was to report on 27 conservative patients with symptomatic lumbar spinal stenosis, from January, 2010 to December, 2013, who underwent posterior open laminectomy in Tania specialist Hospital, Tamale, Ghana.

MATERIALS AND METHODS

Patients with symptomatic lumbar spinal stenosis, from January, 2010 to December, 2013, who underwent posterior open laminectomy in Tania specialist Hospital, Tamale, Ghana. Most of the subjects were within the age group of 20 to 50 years. The study was a retrospective one involving 27 conservative patients with diagnostic image confirmed LSS cases, who had posterior open laminectomy done over a four year period. Data regarding patient's age, sex, cause of injury, duration of complaint(s), nature of complaint(s), presence of associated disease and patient's medication(s) among others, from January, 2010 to December, 2013 were recorded. Posterior open laminectomy was performed with the patient positioned prone while under general anesthesia on a supportive frame that allows the abdomen to hang freelyto decrease epidural venous pressure and surgical site bleeding. Posterior soft-tissues were exposed from the midline to the lateral pars-interarticularis and facets with great care taken to avoid damage to the facet joint or pars-articularis. After resection of the spinous processes, and superficial dorsal lamina, central decompression was performed with removal of the midline lamina and underlying ligamentum flavum. In some cases [15 (55.55%) cases in this study] partial medial facetectomies were performed to decompress the lateral recesses and exposed the neuroforaminae and exiting nerve roots. Post-operatively, only one (3 .7%) case of haematoma was recorded, that was immediately managed, out of the total 27 cases done. No other post-operative complications were recorded.

RESULTS AND DISCUSSION

This study subjects consisted of 27 patients of which 8(29.63%) were females and 19 (70.37%) were males. All patients underwent posterior open lumber laminectomy. One patient (3 .7%) developed post-operative haematoma, which was resolved. In the study, the causes of lumbar spinal stenosis were hypertrophy of ligamentumflavum,2

(7.41 %),osteophytes, 1 0(37.04%),disc herniation,3(1 1.11%), spondylolithiasis,7 (25.93%) and spondylolysis 5 (18.52%);the three main indications for the operations were osteophytes, spondylolithiasis and spondylolysis giving a sum total of 22 patients(8 1.49). The male to female ratio was 2,4:1. All these 22 patients were in the age bracket of 20-to-50 years.

Lumbarspinalstenosis (LSS) is a world-wide known chronic and debilitating condition. LSS incidences vary from place to place, age, sex, occupation or profession among others. Following confirmation of the disease state, conservative therapy mostly is the treatment of choice. It consist of the use of NSAID (non-steroidal anti-inflammatory drugs), physical therapy and epidural steroid injections [3,10,11]. However, failure of conservative therapy, with progressive neurologic deficit or development of cauda-equina syndrome, an urgent surgical operation (decompression)laminectomy is indicated [3,10,12]. Trial (SPORT) study, has demonstrated with evidence that decompression relief and functional improvement in patients with degenerative lumbar spinal stenosis[3]. All 27 patients in the study recovered fully and returned to their normal work places 3 to 6 months after operation, though monitoring reviews were done till the end of one year for each patient.

Postoperative complications are rare, virtually negligible in any good surgeon's hands. This study recorded only one case(3.7%) haematoma formation, postoperatively. This was however resolved.

There were no deaths, no postoperative chronic back pain syndrome or infection registered, as contrarily reported in the literature [13,14]. No case of postoperative spinal instability was recorded in this study may be because of our careful removal of the midline laminae and underlying ligamentum flavum, and whenever it was necessary, only partial medical facetectomy was done to decompress the lateral recess and then exposed the neuroforamina and nerve roots. This was done for 15 patients (55.55%) out of the total 27 cases.

In this study the male: female ratio for the posterior open laminectomy procedure was 2,4:1 .This was because more men than women could afford for the operation. At the moment the surgical cost for LSS is not covered by the national health insurance scheme (NHIS).The inclusion of the surgical therapeutic cost for LSS into the NHIS disease list, may solve the problems of many patients, especially the poor rural women in Ghana.

Majority of the specific indications for spine surgery for LSS were spinal osteophytes formation 10(37.04%), spinal spondylolithiasis 7(25.93%), and spondylolysis 5(18. 52%), constituting a total of 22 patients (8 1 .49%).This represented patients in the age bracket of 20 to 50 years who are most active and economical age groups in every society. Public health practitioners should step up efforts to prevent or minimized LSS occurrence. In conclusion, posterior open spinal decompression (laminectomy) is relevant for symptomatic lumbar spinal stenosis in developing countries, like Ghana, where minimal invasive spine surgery cannot be done. Lumbar spinal stenosis (LSS) is real in Northern Ghana. It has a multifactorial causes. Posterior open decompression(laminectomy) is recommended for failed conservative therapy cases or patients with cauda-equina syndrome.

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