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The Indications and Outcome of Spine Surgery, Oghara- Experience

Medical Science

KEYWORDS : vertebral spine, spinal cord, laminectomy, disc prolapse, lumbar spondylosis.

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ABSTRACT

BACKGROUND: The vertebral spine is an important structure in the body housing the spinal cord. It is affected by trauma, degenerative and tumour conditions. Treatment of these pathologic conditions is both conservative and operative. The operative method of treatment is poorly developed in Nigeria for different reasons. The essence of this study is to highlight the indications and outcome of spine surgery in DELSUTH, Oghara. DELSUTH is a tertiary health institution in the south-south geopolitical zone in Nigeria.

PATIENTS AND METHOD: A retrospective study patients managed for spine pathology using surgery from December 2012 to September 2014. Surgeries done were laminectomy, discectomy, fusion with bone graft and stabilization with pedicle screws, lateral mass screws and connecting rods. Follow up period was 6-27months.

RESULTS: A total of 14 patients were managed. 9 males and 5 females with a M:F ratio of 9:5. The age range was 33-77 years (mean=46.8years). 5patients had hemi-laminectomy for lumbar disc prolapse(35%), 1 had thoracic laminectomy for acute traumatic paraplegia at the thoracic level(7%), laminectomy + fusion+ stabilization with pedicle screw for spondylolisthesis in 2 patients(14.3%) and laminectomy + neural foraminotomy+ partial facetectomy in 6 patients. Dural tear occurred in 2 patients (14.3%), out of which died from pulmonary embolism. Hospital stay was 5 days for uncomplicated surgical cases while those with dural tear stayed 2weeks and a month respectively. Outcome was good in 13 patients (93%).

CONCLUSION: The use of spine surgery in patients who have failed conservative treatment has very encouraging outcomes. Efforts should be made to encourage both orthopaedic and neurosurgeons to develop this aspect of treatment to reduce the present poor morbidity and mortality currently prevailing in the country. In addition, the loss of revenue to the country caused by patients seeking treatment outside the country will reduce significantly.

INTRODUCTION

The vertebral spine plays an important role in the body[1]. It houses the spinal cord and its nerve roots and provides support for the trunk and abdomen[1]. The spine is frequently plagued by several diseases that affect its daily function[1,2]. Common among these problems are spinal stenosis, disc prolapse, cervical spondylotic myelopathy and spondylolisthesis[1,2]. They compromise the spinal function of the spinal cord and its root by the compressive forces exerted by osteophytes in degenerative processes of spondylosis or shift resulting from spondylolisthesis[2]. The present practice of conservative management is not able to resolve these problems in most patients with these pathologies[3]. Surgical interventions, however, have been able solve a large proportion of these cases. The surgeries include decompressive laminectomy, discectomy, fusion and stabilization with the use of pedicle screws[2,3]. This study intends to highlight the indications and outcomes of surgical intervention for spine pathologies in Delta State University Teaching Hospital, Oghara.

PATIENTS AND METHOD

A retrospective study of 14 patients with spine pathology and managed surgically in DELSUTH from December 2012 to September 2014 was done. Clinical information of the patients was retrieved from the case notes. They included patient demographics, investigations done, indications for surgery, outcome and any complications. Findings at follow up were noted. Patients were admitted for surgery and operated after diagnosis of the spine pathology was confirmed and conservative management received for over three months had failed. Patients who did not fulfill these criteria were excluded. Surgeries done were laminectomy + discectomy for disc prolapse, laminectomy for acute traumatic thoracic paraplegia and laminectomy + fusion + stabilization with pedicle screw for spondylolisthesis. Follow up was from 6- 27months.

RESULTS

A total of 14 patients were seen in this study, 9 males and 5 females with M:F ratio of 9:5. The age range was 33-77 years (mean=46.8 years). 5 patients had disc prolapse, 2 patients had lumbar spondylolisthesis, 1 patient had traumatic thoracic lesion and 6 had spinal stenosis (1 from cervical spondylosis and 5 from lumbar spondylosis). 2 patients with disc prolapse suffered dural tear during surgery and one of them developed sepsis and later died from pulmonary embolism. The hospital stay for patients with no complication was an average of 5 days while those with CSF leakage were 2weeks and 1month. The outcome was good in 13 patients. Mortality was recorded in one patient.

TABLE 1: Clinical Information of Patients

S/N	AGE	SEX	INDICATION	OPERATION DONE	OUTCOME	COMPLICATION
1	36yrs	M	Disc prolapse (L4/5)	Laminectomy+discectomy	good	nil
2	48yrs	F	Disc prolapse (3/4.4/5)	laminectomy+discectomy	good	dural tear
3	35yrs	F	Disc prolapse (L3/4)	laminectomy +discectomy	good	nil
4.	33yrs	M	Disc prolapse (L3/4)	Laminectomy+discectomy	good	nil
5	46yrs	M	Lumbar spondylosis	laminectomy+foraminotomy+*	good	nil
6.	73yrs	M	Lumbar spondylosis	laminectomy+foraminotomy+*	good	nil
7.	47yrs	M	Lumbar spondylosis(RTA)	laminectomy(L3) laminotomy(L2,4)	good	nil
8.	22yrs	F	Thoracic trauma (T_{10-12})	laminectomy	good	nil
9.	48yrs	F	grade 4 spondylolisthesis	laminectomy + fusion	good	nil
10.	47yrs	F	Spondylolisthesis (L4/5)	Laminectomy + fusion	good	nil
11.	40yrs	M	Disc prolapse (L4/5)	Laminectomy+ discectomy	died	Dura tear+P.E
12.	47yrs	M	Lumbar spondylosis (L3,4,5)	laminectomy	good	nil
13	56yrs	M	Cervical spondylosis (C3-6)	Laminectomy + fusion	good	nil
14	77yrs	M	Lumbar spondylosis (L1-5)	Laminectomy+foraminotomy+*	good	nil

M=male, F= female, *= partial facetectomy , P.E= pulmonary embolism, yrs= years

TABLE 2: CLINICAL FEATURES

Waist pain, positive cough impulse, paraesthesia and radiculopathy +/- listing of the spine, short duration of problem for disc prolapse.

Waist pain, neurogenic claudication, paraesthesia and radiculopathy. Duration of problem is long, usually months to years for spinal stenosis in both cervical and lumbar spondylosis.

TABLE 3: HOSPITAL STAY

Patients with no complication stayed for 5 days

Patients with dural tear stayed for 2weeks and 30 days respectively.

DISCUSSION

The importance of the spine in the human body cannot be overemphasized. This can aptly be appreciated when its stability is threatened in patient with spondylolisthesis and in patients with spondylosis that are not responsive to conservative management. These patients are unable to stand or walk properly. In worst scenario, they have paraplegia and sexual dysfunction[3,4]. Some have urinary or fecal incontinence. Some patients, who are within the working class group, have been victims of road traffic accident and suffered or even died from unstable spine injuries. Timely surgical interventions have saved a lot of these patients in developed countries where these surgeries are done routinely. This was witnessed in the 22 year old female patient with acute traumatic thoracic paraplegia following RTA. Her condition improved after the laminectomy to decompress the cord at that level of the spine with a narrow spinal canal. The cord would have suffered irreversible damage from ischemia and cause permanent paraplegia and urinary and fecal incontinence. She now ambulates with a walking frame.

Disc prolapse accounted for 35.7% of surgery in this study. The age range of this group of patients was 33-55years.They comprised teachers, housewife, civil engineer and lawyer who are in the working class of the society. They presented with symptoms of low back pain, paraesthesia and painful radiculopathy in one or both lower limbs. Clinically, they had positive cough impulse. This agrees with features document in the literature5. Their symptoms did not respond to conservative treatment given to them for periods well over three months. However, with decompressive laminectomy and discectomy, their symptoms were largely resolved. They had residual muscle weakness which improved with physiotherapy. Two of the patients suffered dural tear with cerebrospinal fluid (CSF) leakage. One resolved with repair, bed rest and protection from deep vein thrombosis and pulmonary embolism using anticoagulants. The other patient developed the complication of sepsis and pulmonary embolism and died. Most authors agree that CSF resolve with bed rest[10,11]. They advise against revision surgery as this predisposes patient to infection and does not resolve the CSF most times like the bed rest does[11]. Use of anticoagulant and other deep vein thromboprophylaxis measures should be done for the patient to prevent any complication arising[10]. It was observed that the second patient did not receive adequate anticoagulants. Eyichukwu et al7 in their epidemiological study found out that low back pain (LBP) were mechanical in nature with disc prolapse contributing 20%, lumbosacral spondylosis 33.1%, osteoarthritis of the facet joint 7.5% and spondylolisthesis 5.6% and that this agreed with reports of other authors8,9.

Lumbar spondylosis accounted for 35.7% and cervical spondylosis 7.1% in this study. The proportion of lumbar spondylosis in the aetiology of LBP is similar to that of Eyichukwu[7] and other author[8,9]. The age range of patients seen in this study was 46-77years. They had their problem for over two years. They all had features of spinal stenosis viz a viz neurogenic claudication, paraesthesia and radiculopathy in their lower limbs for patients with lumbar spondylosis and in the upper limb for the patient with cervical spondylosis. Spondylosis is a disease of the aging population[4,5]. It starts after 40 years and worsens with age[4,5]. Surgery is usually done for the sixth and seventh decade when conservative treatment is no longer effective[5]. Cervical spondylotic myelopathy results from several pathologic processes[3]. These are static-mechanical, dynamic-mechanical, spinal cord ischemia and stretch-associated injury[3]. Ventral osteophytes also narrow the spinal canal3. These changes also occur in the lumbar area. Following decompressive laminectomy and partial facetectomy of up to 30% medially in the lumbar area, the cord and nerve roots were completely decompressed. Numerous studies have shown that surgical intervention has higher success rate in treating lumbar spinal stenosis (LSS) than non-surgical modalities[4]. SPORT[4] (Spine Patient Outcome Research Trial) clearly showed that surgery is superior to non-surgical treatment of LSS at 2years. The Maine[4] lumbar spine study shows that 80% of patients are happy with the surgical results 8-10 years after surgery[4]. This was the case in this study where all the patients felt complete relieve of their presenting symptoms even the patient that died from pulmonary embolism.

Spondylolisthesis accounted for 14.3% of surgery in this series. These patients had Meyerding's grade IV spondylolisthesis at L4/5[13]. They were obese housewife and trader that were involved in a lot of bending down and lifting of heavy load activities. L4/5 and L5/S1 are motion segments that are worse affected by spondylolisthesis[7]. In this study the spine was very unstable and they had features of spinal stenosis viz a viz neurogenic claudication and, paraesthesia and radiculopathy. The surgery done was laminectomy, discectomy, fusion and stabilization with pedicle screws and connecting rods. The symptoms were largely resolved except muscle weakness and slight paraesthesia. These, however, improved with physiotherapy. Roca et al[14] did a retrospective study of 14 patients with severe spondylolisthesis, severe radicular pain and neurologic deficit treated with one-stage decompression and an anterior-posterior fusion. The procedure was found to successful in eliminating the symptoms in 13 of the 14 patients.

The hospital stay of the patients was averagely 5 days for those that did not have any complication. Those that experienced dural tear stayed up to 2 weeks and 1month respectively while the patient with thoracic trauma stayed longer because she developed paraplegia from the trauma. Power gradually improved with physiotherapy and she now ambulates with a walking frame. This was possible because of the timely surgical intervention. Previously when surgery was not done, such patient would have been paralyzed for life. For patients with no complication, they were very happy with the outcome and the less money spent on hospital stay. Efforts should be made to avoid any complication arising and when they do occur, all that is necessary to resolve problem of CSF leak like dura patch[11] and durasil[11] should be made available. This will go a long way to reduce cost treatment, morbidity and mortality. It will boost patient acceptance of surgical method of treatment that is presently dreaded. As the learning curve improves and surgeons go for more training, this will be achievable.

The challenges experienced in the management of spine patients in our environment include the lack and high cost of investigations like magnetic resonance imaging (MRI) and CT-scan needed to confirm diagnosis[7]. Patients have to travel outside the state most times to do these investigations. Most centres do not have C-arm in their theatres for trained surgeons to embark on spine surgeries. For those that do have, the C-arm is sub-optimal in function and do not have good technical support when faults develop in them. Government ,as a matter of urgency, must do all that it can to change this situation for the better by providing MRI and CT-scan in every tertiary health centres. Doctors must be encouraged to go into spine surgery. This will reduce the number of Nigerians travelling out of the country for medical treatment for these conditions and the cash flow out of the country.

CONCLUSION

The use of spine surgery in the treatment of spine pathologies has brought much relieve to patients in situations where conservative treatment has failed. There is need to exploit this area

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of treatment by encouraging both orthopaedic and neurosurgeons to focus on this area by providing the enabling environment for their practice. This will reduce the morbidity and mortality currently prevailing.

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