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Original Article

Retrospective Evaluation of Complications Associated with Lumbar Spine Surgery at a Tertiary Care Teaching Hospital

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ABSTRACT

Background: An improvement has been seen in relation to the mean life expectancy of human population in the past few decades. Various degenerative pathologies of the lumbar spine results in the compression of the various neural elements which often results in radicular pain and neurogenic claudication along with weakness and numbness in the lower back region. Various complications associated with spine surgeries, as recognized by previous data include wound infection, thrombo-embolism and unintended durotomy. Hence; we planned the present retrospective study for assessing various complications in patients undergoing lumbar spine surgeries.

Materials & Methods: The present study included assessment of data of 20 patients who underwent lumbar surgical procedures. The mean age of the patients was 63.4 years. Data of all the patients was collected and classification of all the cases was done according to age, time duration of stay in the intensive care unit, surgical time duration, etc. Incidence of complications was divided into major complications and minor complications. All the data of the patients were evaluated and compiled accordingly. All the data were analyzed by SPSS software.

Results: Out of 20 patients, complications were observed in 12 patients who underwent lumbar spine surgery. Among major complications, Ictus cerebri was seen only in 1 subject while deep vein thrombosis was seen in 2 subjects. Pulmonary embolism was seen only in one patient. Most commonly encountered minor complication was urinary infection. It was encountered in 6 subjects.

Conclusion: For avoiding the incidence of complications in various surgical procedures, special emphasis should be made on several factors.

KEYWORDS: Complications, Lumbar, Spine Surgery.

INTRODUCTION

From the recent few decades, an improvement has been seen in relation to the mean life expectancy of human population. However, various epidemiological data also indicates that there has been a significant increase in the incidence and prevalence of various of degenerative disorders encountered in clinical practice.[1]

Various degenerative pathologies of the lumbar spine results in the compression of the various neural elements which often results in radicular pain and neurogenic claudication along with weakness and numbness in the lower back region. Along with creating lots of discomfort, these complications results in significant restriction in the mobility and function of the individual.[2,3] With the advancement of the age, there is an increase in the age-associated decline in the functions of the musculo-skeletal system. This further results, in impairment in the patient's ability to perform activities of daily living and a threat to his/her independence.[4,5] It is important to recognize that whether the peri-operative complications are important in predicting the long term clinical outcome of the treatment in patients undergoing lumbar spine surgeries. Various complications associated with spine surgeries, as recognized by previous data include wound infection, thrombo-embolism and unintended durotomy.[3,4,6]

Hence; we planned the present retrospective study for assessing various complications in patients underwent lumbar spine surgeries.

MATERIALS & METHODS

The present study was conducted in the department of Orthopaedic surgery, Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra (India) and included assessment of data of 20 patients who underwent lumbar surgical procedure. The mean age of the patients was 63.4 years and all the patients were between 48 to 81 years of age. The patients underwent one of the following orthopaedic surgical procedures, for which, the prevalence of complications was assessed.

- Decompression in lumbar stenosis,
- Microdisectomy,
- Pathological fracture treatment,
- Spondylolisthesis,
- Surgical treatment for the correction of kyphotic and scoliotic deformities.

Data of all the patients was collected and classification of all the cases was done according to age, time duration of stay in the intensive care unit, surgical time duration, etc. Incidence of compilations was divided into major and minor complications. Complications were also classified as intra and perioperative complications.

Following complications were considered under the group of major complications: [7]

- Ictus cerebri,
- Deep vein thrombosis,
- Vascular lesion,
- Pulmonary embolism.

Following complications were considered under the group of minor complications:

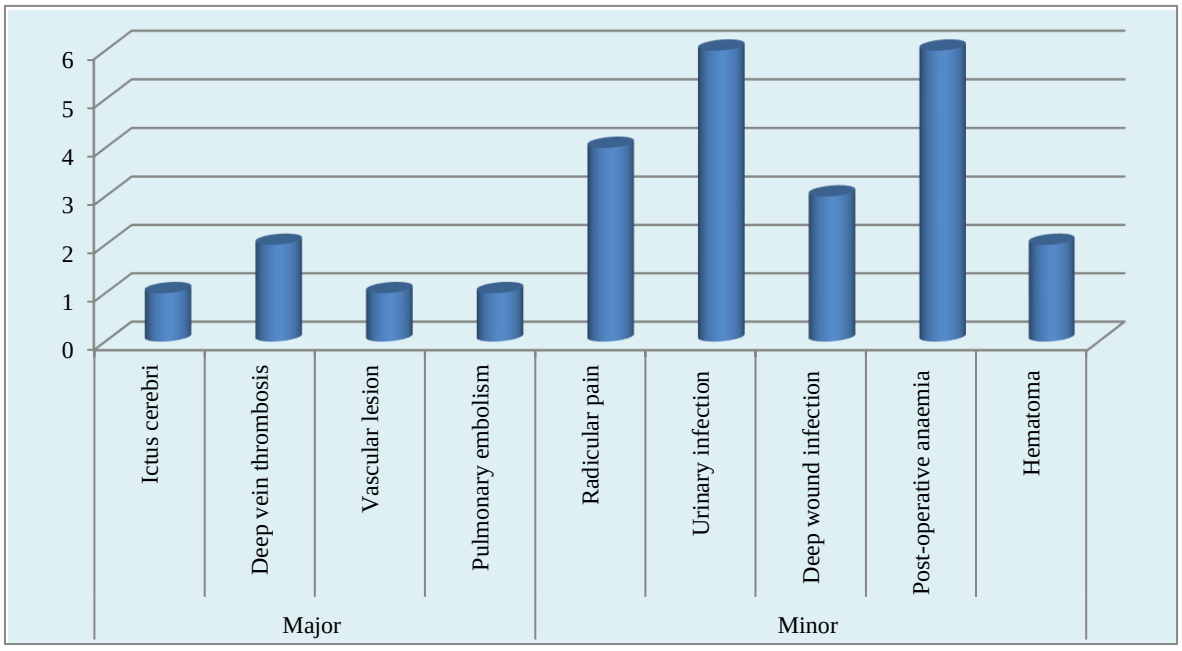
- Misplacement of the screw,
- Unintended durotomy
- Urinary infection,
- Post-treatment anaemia,
- Local infection.

Infections that occurred within the time period of two days after the surgical procedure were categorized as Perioperative complications. All the data of the patients were recorded and compiles. Data was stratified on the basis of various age groups. All the data were analyzed by SPSS software. Chi-square test and student t test were used for the assessment of level of significance. P- Value of less than 0.05 was taken as significant.

Table 1: Incidence of various complications in all the patients

Complications		Incidence (N)
Major	**Ictus cerebri**	1
	Deep vein thrombosis	2
	Vascular lesion	1
	Pulmonary embolism	1
Minor	**Radicular pain**	4
	Urinary infection	6
	Deep wound infection	3
	Post-operative anaemia	6
	Hematoma	2

Graph 1: Incidence of various complications occurring in present study



RESULTS

Out of 20 patients, complications were observed in 12 patients who underwent lumbar spine surgery. Incidence of various complications in all the patients is shown in Table 1 and Graph 1. Among major complications, Ictus cerebri was seen only in one subject while deep vein thrombosis was seen in two subjects. Pulmonary embolism was seen only in one patient. Most commonly encountered minor complication was urinary infection. It was encountered in six subjects. Other minor complications encountered were radicular pain, deep wound infection, post-operative anaemia and hematoma. Comparison of complications based on different predisposing factors is shown Table 2. Significant results were obtained while comparing various risk factors among the control group and complication group (p-value < 0.05).

Table 2: Comparison of complications based on different predisposing factors

Parameter	Complication group (N=12)	Control (without complication) group (N=8)	P-value
Age of more than 65 years of age	7	2	0.02*
Surgical time of more than four hours	9	5	0.03*
Post operative stay in ICU	5	3	0.01*

*: Significant

DISCUSSION

There is always associated risk of post-operative and intra-operative complications associated with surgical treatment of adult lumbar spinal disorders.[1] Recognition of complications at the earliest level is necessary for controlling the prognosis of the surgical treatment.[8,9] Hence; we planned the present retrospective study for assessing various complications in patients undergoing lumbar spine surgeries.

In the present study, we observed that deep vein thrombosis was the most commonly encountered major complication while urinary infection and post-treatment anaemia were the most commonly encountered minor complications respectively. Proietti L et al[7] assessed various complications in patient who underwent various lumbar surgical procedures. For the assessment of predisposing role, multivariate statistical analysis was carried out. They observed that microdisectomy for lumbar disc hernia was carried out in one hundred thirty three patients. They observed that in twenty six patients, percutaneous screw fixation method was used for treating lumbar fracture. They observed that fifty five patients out of total of 338 patients, showed the presence of complications. Relative risk for the occurrence of complications was increased depending upon the type of surgical treatment followed. They observed that in patients undergoing complex surgical treatment modalities, there was increase in incidence of major complications. From the results, the authors concluded that age doesn't remain the sole factor for taking the decision of surgery. Mannion AF et al[10] examined the 5-year outcome of lumbar decompression surgery without fusion. They analyzed a total of 159 patients who underwent decompression for degenerative spinal disorders. Leg pain and back pain intensity (0–10 graphic rating scale), self-rated disability (Roland Morris), global outcome of surgery (5-point Likert scale) and re-operation rates were assessed 5 years post-operatively. Ten patients had died before the 5-year follow-up. Of the remaining 149 patients, 143 returned a 5-year follow-up (FU) questionnaire. Their mean age was 64 years and 92/143 was men. In the 5-year follow-up period, 34/143 patients underwent re-operation. In patients who were not re-operated, leg pain decreased significantly from before surgery to 2 months FU, after which there was no significant change up to 5 years. Low back pain also decreased significantly by 2 months FU, but then showed a slight, but significant, gradual increase of <1 point by 5-year FU. Disability decreased significantly from pre-operative to 2 months FU and showed a further significant decrease at 5 months FU. Thereafter, it remained stable up to the 5-year FU. Pain and disability scores recorded after 5 years showed a significant correlation with those at earlier follow-ups. Patients who were re-operated at some stage over the 5-year period showed significantly worse final outcomes for leg pain and disability ($p < 0.05$). In conclusion, pain and disability showed minimal change in the 5-year period after surgery, but the re-operation rate was relatively high. Re-operation resulted in worse final outcomes in terms of leg pain and disability. At the 5-year follow-up, the "average" patient experienced frequent, but relatively low levels of, pain and moderate disability. From the results, the authors concluded that this knowledge on the long-term outcome should be incorporated into the pre-operative patient information process.

Zencica P et al[11] evaluated a group of patients with adjacent segment disease (ASD) developed after 360-degrees lumbar fusion for spondylolisthesis. Radiographic examinations were focused on the origin or progression of degenerative changes at the adjacent segments after the operation, with statistical evaluation

of some parameters. Clinical evaluations included back pain or neurologic symptomatology which emerged later in the post-operative period in patients with adjacent segment degeneration. Seven patients had isthmic, two had degenerative and one had dysplastic spondylolisthesis. The data for the patients with ASD were obtained retrospectively, based on radiographic examinations and clinical sequential follow-up examinations. The following sagittal parameters were measured and compared: lumbar lordosis (L1-S1); distal lordosis (L4-S1) segmental lordosis -the slip angle (SA) at the fused and the adjacent segment, respectively; sacral slope (SS) and slippage (SLIP). Functional disability was measured by the Oswestry disability index (ODI) questionnaire and pain was assessed using a 100-mm VAS. Of the 91 patients, symptomatic adjacent segment disease developed from a previously asymptomatic level in 10 (11%) patients. From the results, the authors concluded that permanent reduction in physical activity after lumbar or lumbosacral spinal fusion is recommended.

CONCLUSION

From the above results, the authors concluded that for avoiding the incidence of complications in various surgical procedures, special emphasis should be made on several factors. However, future studies are recommended for better exploration of this field of orthopaedic surgery.

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