



International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958

P-ISSN: 2706-6630

IJOS 2020; 6(2): 290-292

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www.orthopaper.com

Received: 16-02-2020

Accepted: 18-03-2020

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Clinical profile of patients with degenerative spondylolisthesis

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DOI: <https://doi.org/10.22271/ortho.2020.v6.i2e.2052>

Abstract

The most common type of spondylolisthesis in adults is degenerative. The incidence of degenerative spondylolisthesis is around 8.7%. Degenerative spondylolisthesis is more commonly found in women. The overall annual age-standardized rates of degenerative spondylolisthesis are higher among women than among men. A prospective study was conducted on patients with degenerative spondylolisthesis in adults treated with posterior lumbar interbody fusion with posterolateral fusion in the Department of Orthopaedics. Clearance from the institutional ethics committee was obtained before the study was started. A detailed informed, written and video consent was obtained. About 26.67% adult patients are having symptoms since 4 years, 10.67% having since 2 years, and 16% having since 3 years. About 57.34% females were included in study.

Keywords: Degenerative spondylolisthesis, posterior lumbar interbody fusion, posterolateral fusion

Introduction

The term Spondylolisthesis was coined for the first time in 1854 by Killian' and defined as the olisthy of one vertebral body over another ^[1]. The incidence of isthmic spondylolisthesis is between 6% and 7% ^[2], and of degenerative spondylolisthesis is around 8.7% ^[3]. Both types are more commonly found in women. The incidence is continuously rising in adults ^[4, 5].

Patients with degenerative spondylolisthesis complain of pain. It starts as an incidental and worsens with repetitive rotation, extension, return from sudden activities or flexed posture. Pain is usually relieved in resting position. Some patients may complain sciatica or neurogenic claudication in one or both legs ^[6].

Spondylolisthesis is treated conservatively with pharmacological treatment and physiotherapy protocol. But sometimes this treatment is inadequate or incomplete and patients may require surgical intervention. In our study all patients are treated with posterior lumbar interbody fusion with posterolateral fusion.

Methodology

A prospective interventional study was done in the Department of Orthopaedics in Post Graduate Institute of Swasthiyog Pratishthan Miraj, from January 2017 to December 2019. Adult patients with degenerative spondylolisthesis were admitted to the tertiary care hospital, were included in the study after obtaining informed, written and video consent. Clearance from the institutional ethics committee was obtained. A total 75 patients with degenerative spondylolisthesis treated with posterior lumbar interbody fusion with posterolateral fusion attending the Department of Orthopaedics, constituted the sample size. The inclusion and exclusion criteria were as follows.

Inclusion criteria

1. The patients with type III degenerative spondylolisthesis
2. Meyerding classification⁸ grade I-V
3. Cases include both females and males
4. Prospective study between January 2017 – December 2019
5. Minimum follow up 12 months
6. Recalcitrant to conservative treatment

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7. Chronic pain with neurological symptoms for 1-year minimum.

Exclusion criteria

1. active or remote source of infection
2. type I: congenital, type II: isthmic, type IV: traumatic, type V: pathological and type VI: iatrogenic
3. Past history of previous discectomy
4. psychological disorder
5. fail to give consent for surgery

All patients are treated with posterior lumbar interbody fusion with posterolateral fusion who were included in our study after satisfying inclusion criteria. Patients were examined clinically then radiologically. In all patients, surgery was performed by the same surgeon team by using the same surgical technique. Patients were evaluated functionally and radiologically preoperatively and postoperatively at 3 months, 6th months and 12 months. Functional result was estimated with VAS and the Kirkaldy-Wyllis criteria. Radiological fusion result was determined according to the criteria described by brantigan *et al.* and lenke *et al.*

Results

Table 1 shows that about 28% of the patients belonged to 61-65 years. About 24% of the patients belonged to 56-60 years, 17.34% belonged to 51-55 years and 16% belonged to 66-70 years.

Table 1: Distribution of the study group according to age group

Age	Frequency	Percent
51-55	13	17.34
56-60	18	24
61-65	21	28
66-70	12	16
71-75	7	9.34
>76	4	5.34
Total	75	100

Table 2 the sex wise distribution had shown that, 42.67% were males and 57.34% were females.

Table 2: Distribution of the study group according to sex group

Sex	Frequency	Percent
Male	32	42.67
Female	43	57.34
Total	75	100

Table 3 according to spinal level involved distribution had shown that, 50.67% patients had L4-L5 level and 33.34% patients had L5-S1 level.

Table 3: Distribution of the study group according to spinal level involved

Level	Frequency	Percent
L3-L4	5	6.67
L4-L5	38	50.67
L5-S1	25	33.34
L4-L5 + L5-S1	7	9.34
Total	75	100

Table 4 according to number of spinal level involved in a patient distribution had shown that, 90.67% patients had single level and 9.34% patients had double level.

Table 4: Distribution of the study group according to number of spinal level involved in a patient.

Levels	Frequency	Percent
Single	68	90.67
Double	7	9.34
Total	75	100

According to duration from initial symptoms, 26.67% patients got operated in 4th year, 13.34% got operated in 6th year, and 10.67% got operated in 2nd year and 5th year.

Table 5: Distribution of the study group according to duration from initial symptoms to surgery.

Duration	Frequency	Percent
1 YEAR	15	20
2 YEAR	8	10.67
3 YEAR	12	16
4 YEAR	20	26.67
5 YEAR	8	10.67
6 YEAR	10	13.34
7 YEAR	2	2.67
Total	75	100

About 81.33% patients are having Meyerding scale I, 17.33% are having Meyerding scale type II.

Table 6: Distribution of the study group according to Meyerding Scale

Scale	Frequency	Percent
I	61	81.33
II	13	17.33
III	1	1.34
IV	0	0
V	0	0
Total	75	100

About 37.34% of the patients in our study had hypertension, 18.67% had diabetes mellitus, 9.34% had hypertension and diabetes mellitus, and 29.33% had no condition.

Table 7: Distribution of the study group according to Co-morbidities

Co-morbidities	Frequency	Percent
Diabetes	14	18.67
Diabetes + hypothyroid	1	1.34
Hypertension	28	37.34
Hypertension + asthma	2	2.67
Hypertension + diabetes	7	9.34
Hypertension +hypothyroid	1	1.33
No condition	22	29.33
Total	75	100

Discussion

The management of degenerative spondylolisthesis is a great challenge to the orthopaedic surgeon. Differential diagnosis of clinical instability associated with spondylolisthesis requires several clinical and diagnostic tests. No study has shown a decision-making process examining nonoperative treatment patients who go on to seek surgical treatment [6]. The Spine Patient Outcomes Research Trial (SPORT) examined patients undergoing surgical treatment for degenerative spondylolisthesis compared with conservative care. SPORT established recommendations in favor of surgery, with superior outcomes compared with nonoperative care following both short and long-term follow-up. Conservative therapy such as opioid use, antidepressant use, NSAID use,

and physiotherapy did not predict crossover. However, a higher injection rate was noted for patients who crossed over to pursue surgery. Further research is needed to quantify the effect of nonoperative measures on long-term outcomes. The literature available has shown a number of surgical procedures vary from an anterior approach, lateral approach to posterior approach with anterior lumbar interbody fusion, posterior lumbar interbody fusion, and total lumbar interbody fusion with decompression. Our study was mainly undertaken to study the functional and radiological outcome of the postero-lateral fusion with posterior lumbar interbody fusion in adult degenerative spondylolisthesis. The most important prognostic factors for the outcome of surgery are the age of the patient undergoing intervention, duration of symptoms and grade of spondylolisthesis.

A total 75 patients with degenerative spondylolisthesis attending the Department of Orthopaedics constituted the sample size.

About 28% of the patients belonged to 61-65 years. About 24% of the patients belonged to 56-60 years. In our study mean age was 62.1 years. In a study by Alunima *et al.* [7] the mean age was 57.1 years. In a study by Ekman *et al.* [8], the mean age of the patients was 40 years. In a study by Abdu *et al.* [9], the mean age was 59.7 years. In a study by Kim *et al.* [10], the mean age of the patients was 53.4 years. In a study by La Rosa *et al.* [11], the mean age of the patients was 57.2 years. The sex-wise distribution had shown that, 57.34% were females and 42.67% were males. In a study by Alunima *et al.* [7], 22 females' patients and 14 males' patients were present. In a study by Ekman *et al.* [8], 53 females' patients and 33 males' patients were present. In a study by Abdu *et al.* [9], 50 females' patients and 13 males' patients were present. In a study by Kim *et al.* [10], 35 females' patients and 13 males' patients were present.

In our study all patients are having degenerative spondylolisthesis. In a study by Alunima *et al.* patients having Isthmic or Degenerative spondylolisthesis are included. In a study by Ekman *et al.* patients having Isthmic spondylolisthesis are included. In a study by Abdu *et al.* patients having Degenerative spondylolisthesis are included.

Conclusion

Our study shows

- About 28% of the patients belonged to 61-65 years, and about 24% of the patients belonged to 56-60 years.
- About 57.34% were females and 42.67% were males.
- About 50.67% patients had L4-L5 level and 33.34% patients had L5-S1 level.
- About 90.67% patients had single level and 9.34% patients had double level.
- About 26.67% patients got operated in 4th year, 13.34% got operated in 6th year.
- About 81.33% patients are having Meyerding scale I.

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