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Corresponding Author
S. Balaji,
Department of Orthopaedics, Indira Gandhi Medical College and Research Institute-Puducherry, India

Author Designation
[1,5,6]Senior Resident
[2,3]Associate Professor
[4]Assistant Professor

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Sociodemographic Variablity and Surgical Outcomes in Intervertebral Disc Prolapse: A Case Series

[1]V. Karthik, [2]Naveen Nair, [3]K. Arun, [4]S. Balaji, [5]A. Thiruselvam and [6]K. Agalya

[1-5]Department of Orthopaedics, Indira Gandhi Medical College and Research Institute-Puducherry, India
[6]Department of Physical Medicine and Rehabilitation, Indira Gandhi Medical College and Research Institute-Puducherry, India

ABSTRACT
The incidence of back pain appears to be constant. Efforts are being made to decrease the risk factors. good results in 88% of the patients with relief of back pain and leg pain those who underwent discectomy for lumbar disc degeneration. Motor and sensory deficits which had been present pre-operatively disappeared in 50% of the patients. He found that 90% or more of the patients were relieved of muscle spasm, tenderness limited motion and straight leg rising. The incidence of Age, Sex, Height, Weight, Smoking, BMI and surgical outcomes has not been studied separately at recent times. Hence this case series focuses on socio demographic variability and surgical outcomes in Lumbar Intervertebral disc prolapse.

INTRODUCTION

Eighty percent of the population is affected by this symptom at sometime of life. Impairments of the back and spine are ranked as the most frequent cause of limitation of activities in people of all age groups. Lumbar discs are responsible for well over 90% of all organic symptoms attributable to low backache. Clearly lumbar disc herniation is a significant medical and social problem.

What is less clear is the efficacy of treatment and type of treatment to choose. Either conservative or surgical treatment is followed which requires a careful and detailed approach in the anticipation, prevention and management of orthopaedic complications that are a part of surgery of the spine for disco genic disease. Svenson and Anderson noted that the incidence and prevalence of low back pain was about 61 and 31% respectively in a random sample of 40-47 years old men. In women between 38-64 years of age, the incidence was 66% and prevalence was 35%. In most reports, the average age of patients who undergone surgery for lumbar disc herniation is 38 years and twice the number of men are affected as compared to women[1,2]. This case series deals with variability, incidence and surgical outcomes based on socio-demographic pattern of our population who underwent Micro-discectomy at our institute.

Aims and Objectives: To assess Socio-demographic variability and surgical outcomes in lumbar intervertebral disc prolapse. To determine the incidence of Age distribution, sex, Height, Weight, BMI, Smoking and their surgical outcomes respectively.

MATERIALS AND METHODS

Study Site: Department of Orthopaedic surgery in a tertiary care center Puducherry.

Study Population: Patients who underwent Microdiscectomy surgery for Lumbar Intervertebral disc prolapse.

Study Design: Observational Follow Up Study of Single Group.

Sample Size: A minimum of total 28 patients were selected for this study.

Time Frame of Study: 1 year

Sampling Strategy: Samples are selected based on inclusion and exclusion criteria.

Inclusion Criteria: Patients undergoing microdiscectomy for lumbar intervertebral discprolapse.

Exclusion Criteria: Patients with intervertebral disc prolapse associated with:

- Structural scoliosis
- Spondylolysthesis
- Congenital anomalies
- Developmental dysplasia
- Infections of spine
- Cauda equina syndrome
- Multiple level disc herniation
- Tumours of spinal cord

Informed consent is taken from the patient and the patient is followed up for serial assessment at 2 weeks 6 month. The patients are assessed based on Japanese Orthopaedic Association scoring system and Visual Analogue pain scale both before and after treatment.

RESULTS AND DISCUSSIONS

In Our study we have taken 28 patients who had undergone Microdiscectomy Procedure in our hospital. Tobinick EL, Britschgi-Davoodifar S in Mar 2003 suggested about new methods that are now emerging, which directly target TNF. These TNF-targeted methods represent a highly promising new approach for patients with chronic severe spinal discogenic pain[7]. Study done by Wilco C. Peul, M.D, Hans *et al*. from 2002 to 2005, consisted of 283 patients who had

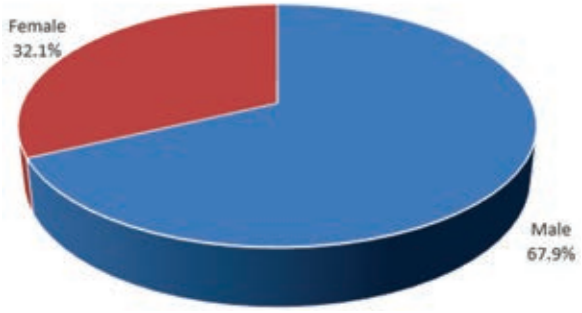

Fig. 1: Sex

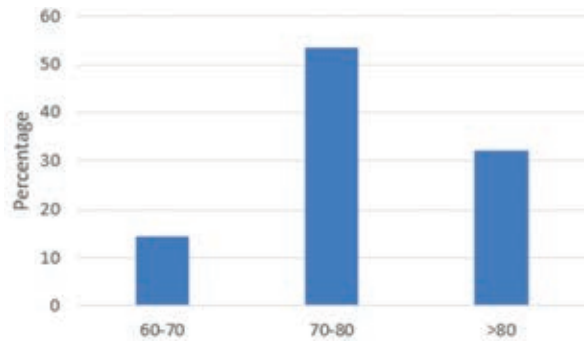

Fig. 2: Weight

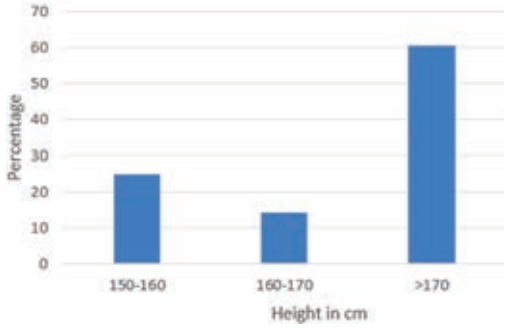

Fig. 3: Height

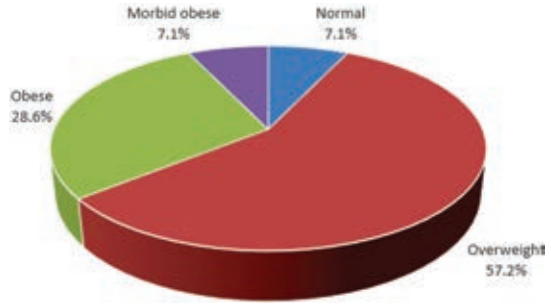

Fig. 4: BMI

Table 1: Comparison with age

Age	Frequency	Percent
<20	1	3.6
20-30	2	7.1
30-40	8	28.6
40-50	11	39.3
>50	6	21.4
Total	28	100

Table 2: Compared to young patients

	Treatment outcome of pain as per vas								
	Not Improved		Improved		Total				
Age	N	%	N	%	N	%	χ^2	df	p
<20	1	100.0	0	0.0	1	100.0			
20-30	1	50.0	1	50.0	2	100.0			
30-40	0	0.0	8	100.0	8	100.0			
40-50	1	9.1	10	90.9	11	100.0	13.270	4	.010
>50	0	0.0	6	100.0	6	100.0			
Total	3	10.7	25	89.3	28	100.0			

Table 3: Sex

Sex	Frequency	Percent
Male	19	67.9
Female	9	32.1
Total	28	100

Table 4: Treatment outcome of pain as per vas

	Not Improved		Improved		Total				
Sex	N	%	N	%	N	%	χ^2	df	p
Male	2	10.5	17	89.5	19	100.0			
Female	1	11.1	8	88.9	9	100.0	.002	1	.963
Total	3	10.7	25	89.3	28	100.0			

Table 5: Weight

Weight	Frequency	Percent
60-70	4	14.3
70-80	15	53.6
>80	9	32.1
Total	28	100

Table 6: Height

Height	Frequency	Percent
150-160	7	25
160-170	4	14.3
>170	17	60.7
Total	28	100

Table 7: BMI

BMI	Frequency	Percent
Normal	2	7.1
Overweight	16	57.1
Obese	8	28.6
Morbid obese	2	7.1
Total	28	100

Table 8: Treatment outcome of pain as per vas

	Not Improved		Improved		Total				
BMI	N	%	N	%	N	%	χ^2	df	p
Normal	0	0.0	2	100.0	2	100.0			
Overweight	0	0.0	16	100.0	16	100.0			
Obese	2	25.0	6	75.0	8	100.0			
Morbid obese	1	50.0	1	50.0	2	100.0	7.093	3	.069
Total	3	10.7	25	89.3	28	100.0			

Table 9: Smoking

Smoking	Frequency	Percent
no	22	78.6
Yes	6	21.4
Total	28	100

severe sciatica for 6-12 weeks were subjected to early surgery or to prolonged conservative treatment. The 1-year outcomes were similar for patients assigned to early surgery and those assigned to conservative treatment with eventual surgery if needed, but the rates of pain relief and of perceived recovery were faster for those assigned to early surgery[8].

Rolf Hargen 1977 in his study concluded that bilateral partial laminectomy affords a good view of the disc pathology and a greater possibility for obtaining relief of the symptoms without reducing the stability of the column[9]. In 1980 S.Sharma and B.Sankaran conducted a study in 117 patients with prolapsed lumbar discs, 57 were treated with laminectomy and excision of the disc. They found that the operation yielded good outcome of about 81.6% and there were no poor outcomes. Myelography was very useful in establishing the diagnosis and localizing the level of the lesion[9]. Jeffrey Lewis 1987 in his study found that 62% of the patients had complete relief of back pain and 62% had complete relief of leg pain, 96% were pleased that they has submitted to surgery and 93% were able to return to work. The results of lumbosacral discectomy appear favorable as evaluated in this study[10]. The work of Gordon Waddell in 1988 assessed results postoperatively by pain, disability physical impairment and return to work. He found success rates in 90% of them[11].

Majority of patients in my study come under middle age category (30-50)-(69.9%) others (30.1) and hence middle aged people had higher incidence in getting this condition. p-value for outcome of pain is statically significant, that the improvement of pain is

Table 10: Joa score

	Treatment outcome of pain as per vas								
	Not Improved		Improved		Total				
Smoking	N	%	N	%	N	%	χ^2	df	p
no	1	4.5	21	95.5	22	100.0			
Yes	2	33.3	4	66.7	6	100.0	4.084	1	.043
Total	3	10.7	25	89.3	28	100.0			

Table 11: Compared with our study

	Group 1	Group 2	p-value
Age	51.09±7.24	51.78±6.78	0.515
Sex (F/M)	45/56	31/47	0.545
BMI	27.68±3.48	27.36±3.18	0.523
DM	10	15	0.074
Smoking	25	29	0.100
Symptoms duration	28.82±17.930	27.96±17.727	0.749

better in middle aged patients when compared to young patients. There is no significant differences in improvement of pain and neurology in relation to Gender, BMI and Level of Prolapse in my study. There is significant difference in Improvement of Pain in Nonsmokers when compared to Smokers(p value 0.43) and Type of Prolapse (Sequestration and extrusion improved lot more compared to Protrusion)(p value 0.006). There is significant difference in improvement of pain and neurology in relations to Age, young patients had less favorable outcomes compared to middle aged patients.(p value-0.01). The percentage of Males(67%) who got this disease we more when compared to females (32%) Which is statistically significant. Males are likely to get this disease more common than females. There was no significant difference in improvement of Pain post surgery related to sex of the patient when assessed by p value. There is significant increase in incidence of this condition in patients who are weighing >70kg (75.7%) when compared with patients less than 70kg (14.3). There is significantly higher incidence of this disease in patients who are >170cm (60.7%). There is significant increase in patients who are overweight(57.2%) and obese (28.6) and morbid obese 7.1% when compared to who having normal BMI. The improvement of Pain post surgery with BMI was not significant as the p>0.05.

There was a significant reduced improvement post surgery in pain and neurologic deficit in smokers when compared to non smokers. p-value 0.43. Majority of our patient population comprised of males which were in accordance with studies by Weber *et al*. Spengler *et al*. Davis *et al*. and Pappas *et al*. In our study there was highest incidence of disc prolapse i.e 11 (39.3%) in patients of 40-50 yr age and most common level of involvement in our study was L4-L5 (71.4%)followed by L5-S1. However in the surgical study there was a decrease in the outcome with Young age which was contrary with finding of Mathi Hueme *et al*. who found that age order more than forty years, was associated with fair to poor outcome[3]. Radha Mehta and Himanshu Sharma study shows there was no statistical difference in smoker and non smokers in improvement following surgery which was on contrary to our study, which showed smokers had significant reduced improvement when compared to non smokers[4].

In study by Madsbu MA[5] Obese and nonobese patients experienced similar improvement in Euro-Qol-5 scores (0.48 vs. 0.49 points, P = 0.441), it was comparable to our study were there was no significant difference in obese and non obese patients with improvement after surery (p value = 0.69). In a study by Hossein Mashhadinezha[6], group 1 showed good results and group 2 showed poor results, which was compared with our study. p value of our study shows for age 0.10 which is significant when compared to the above mentioned study, smoking had inclunce in improvement in pain which shows smokers have poorer results compared to non smokers, the p value for our study 0.69 which is comparable to the above mentioned study, influence on sex difference were not significant 0.91 which was comparable to the above mentioned study. Roy Silvers in 1988 compared 270 patients treated with standard discectomy with 270 patients treated with micro lumbar discectomy. He found 98% success rate in the micro surgical group as compared to 95% success rate in the standard discectomy group. The postoperative hospital stay and the time before return to work was significantly shorter in patients undergoing microdiscectomy[12]. In 1989 Sadashisa Hijinata described a new concept of discectomy i.e., percutaneous nucleotomy showing success rate in the first 500 patients was 432 (86%) of 500 good/excellent[13]. R. Bhalla conducted study upon 111 operated cases of prolapsed lumber intervertebral disc in 1989 in C.M.C Ludhiana, presented his results with satisfactory outcome in 80.38% and unsatisfactory in 19.62%[14].

CONCLUSION

Etiology for getting the disease are a lot and understudy but Obesity, Smoking, occupation type can affect the natural course of this disease and treatment. So the treatment includes life style modification also for better clinical outcomes. Patients who are obese and overweight must be encouraged to reduce weight, as it is a risk factor for recurrence and a important etiology of this condition.

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