

Frequency of Piriformis Syndrome in Patients with Post Decompression Lumbar Surgeries

Muhammad Idrees Khan¹, Zohaib Khalid², Muhammad Adnan³, Faiza Rashid^{2,4}, Qazi Farhan Ullah⁵, Sudhair Abbas Bangash⁶, Gulalai⁷, Shakeel Ahmad⁶, Faisal Ghafoor⁶, Muhammad Jawad Ullah^{4,8*}

1. Government of Khyber Pakhtunkhwa Health Department
2. Department of Health Sciences, City University of Science and Information Technology Peshawar Pakistan.
3. Khyber Teaching Hospital Peshawar Pakistan.
4. Center of Biotechnology and Microbiology University of Peshawar Pakistan.
5. NCS University System Peshawar Pakistan
6. Sarhad University of science and Information Technology Peshawar Pakistan
7. . Lecturer occupational therapy, Institute of physical medicine and rehabilitation, Khyber medical university Peshawar
8. Department of Allied Health sciences, Iqra National University Peshawar Pakistan.

Abstract

Objective: To determine the frequency of piriformis syndrome in patients with post decompression lumbar surgeries.

Methods:

A cross sectional study was carried out from March 2019 to August 2019 at lady reading hospital Peshawar, Pakistan. Total 60 patients were included in the study by using simple random sampling. Information was collected using an interview schedule. Data was analyzed through SPSS version 20.

Results:

The frequency of piriformis syndrome in patients with post decompression lumbar surgeries is 36.5%. The majority of the participants in the study were male (85%) and their age is between 20 to 65 years. 46.6% of the participants belong to urban areas.

Conclusion:

It can be concluded that less than half of the patients having post decompression surgeries have

piriformis syndrome. Moreover, piriformis syndrome is not significantly associated with post decompression lumbar surgeries.

Keywords:Frequency, Piriformis Syndrome, post decompression lumbar surgery.

Introduction:

Piriformis syndrome (PS) is characterized as a neuromuscular disorder in which the sciatic nerve is compressed or it become irritated by the piriformis muscle which causes burning pain, numbness in the buttock and along the way of the sciatic nerve toward the lower thigh and leg(1, 2). It has been variously recognized that anatomical change is the main cause of piriformis syndromebut yetthere are other reasons bywhich it can also be occurred, such as trauma, vascular and biomechanical problems(3). Usually considered causes of sciatica is physical stress dependent pathogenicity which compresses the sciatic nerve (SN) throughpiriformis muscle(4). lumbar decompression surgery is a progressively common invasive intervention which is done for the treatment of lumbar spinal stenosis while it is expected that good relief from leg pain take place after surgery(5, 6).

In Literature, the prevalence of PS among patients with low back pain ranges from 5 to 36 %(7). Similarly, another study reported that PS occur most frequently in the fourth and fifth decades of life.PS is more common in women than man because of the biomechanics associated with the wider quadriceps femoris muscle angle (Q angle) of hip bone(8, 9). Other factors that cause PS, such as age, sex or overuse of the piriformis muscle during walking or running(10, 11). The pre-existing problems of the hip and knee also increases the chances of PS among patients. Nervousness and fear during surgery may also be the factor to increase the piriformis muscle tension and spasm(12, 13). The non-operated contralateral discproblems may seldom contribute in the development of the contralateral PS(14).

The lumbar decompression surgeries are performed to relieve the pressure on the nerves or spinal cord to decrease discomfort of the patient(15, 16). The lumbar decompression surgeries are carried out through laminectomy,discectomy and spinal fusion(17, 18). Piriformis syndrome increases dependency, depression and decreases patient quality of life(19). literature search

revealed that no study is reported on PS after lumbar decompression surgeries in Peshawar. So, this study was designed to evaluate the frequency of PS in patients with post decompression lumbar surgeries.

Materials and Methods

A cross sectional study was carried out at lady reading hospital Peshawar, Khyber Pakhtunkhwa, from March 2019 to August 2019. This hospital is a tertiary care hospital located at the center of Khyber Pakhtunkhwa, Pakistan. Ethical approval was obtained from the Research Ethical Committee of City University, Peshawar. Then permission was taken from the medical director of lady reading hospital Peshawar. Written informed consent was taken from all the participants. Patients were screened by inclusion and exclusion criteria for the eligibility to be in the study. A consent form was provided to the patients before subjective history taken and medical reports and charts was also reviewed. If needed, medical team and physical therapist of lady reading hospital, Peshawar was consulted to confirm whether the patients fulfill the eligibility criteria. Clinical and demographic characteristics from each patient will be recorded. After demographic data collection, 13 different questions were asked about piriformis syndrome, and at the end, a Fair test is performed on the patient for the conformation of PS. For the analysis of data SPSS version 20 was used. Percentages and frequencies were calculated for all categorical variables including variables regarding frequency of PS in patients with post decompression lumbar surgeries.

Results

Table 1: Demographic profile of the participants of the study (patients)

	Frequency	Percentage
Gender		
Male	51	85 %
Female	9	15. %
Residence		
Urban	28	46.6%
Rural	32	53.4%
Marital Status		
Married	90	73.2
Unmarried	33	26.8

Age		
20-35	36	60%
36-50	17	28.4 %
51-65	7	11.6 %
Occupation		
Labor	14	23.3%
House wife	9	15%
Govt Servants	13	21.7%
Student	5	8.4%
Others	19	30.7%

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Table 2: piriformis syndrome in patients with post decompressionlumbar surgeries.

Piriformis Syndrome	Number	Percentage
Patients with piriformis syndrome	22	36.6%
Patients without piriformis syndrome	38	63.4%

Overall, 63 patients included in the study in which 3 patients quit to take part in the study. All the patients have lumbar decompression surgeries done at leady reading hospital Peshawar, Khyber Pakhtunkhwa. The mean age of the patients were 33.3 ± 8.1 years. Nearly half (46.6%) of the patients belong to the urban areas. Table 1 shows all the demographic data of the patients. About 13 different questions were asked from the patients about piriformis syndrome: Do you had a trauma in the past, your pain in the back radiates to the surrounding areas, the pain in your back radiates below the knee, Is your discomfort during prolong standing and prolong sitting is aggravating, Do you have pain in all sleeping positions during sleep, Do you feel pain after long walking, Is this pain disturb you at night, In the morning do you experience any discomfort or stiffness, Do you have some prior low back surgery, Do you have any problem after your surgery, After surgery do you feel pain in the buttock area, After surgery do you feel the same pain. About 36.6 % patients answered yes about above questions while 63.4 % patients answered

no about above questions.

Discussion

Piriformis syndrome is one of the major health issues in patients with post decompression lumbar surgeries. In Peshawar, Pakistan, there is no literature present on the prevalence and incidence of piriformis syndrome in patients with post decompression lumbar surgeries. The result of our study shows that nearly half of the patients have piriformis syndrome which is similar to the results (50 %) of the study conducted at America in 2012(20). Another study conducted in Europe in which the frequency of piriformis syndrome in patients with post decompression lumbar surgeries is comparable to the result of our study(21).

Similarly another study performed at Malaysia to find out the prevalence of piriformis syndrome in patients having chronic low back pain whose results shows similarity to this current study conducted at Peshawar(22). Hence, the current study also supports the health care provider and patient's anxiety about the development of piriformis syndrome after decompression lumbar surgeries.

Conclusion

It can be concluded that this study can reduce functional disability and anxiety in patients or health care provider about the development of piriformis syndrome after decompression lumbar surgeries. Moreover, piriformis syndrome development can be minimize through adopting comfortable position or posture, proper rest and educating patient after post decompression lumbar surgeries.

References:

1. Robinson DR. Piriformis syndrome in relation to sciatic pain. *The American Journal of Surgery*. 1947;73(3):355-8.
2. Kim J-E, Kim K-H. Piriformis syndrome after percutaneous endoscopic lumbar discectomy via the posterolateral approach. *European Spine Journal*. 2011;20(10):1663-8.
3. Bashir, Z., Ahmad, S. U., Kiani, B. H., Jan, Z., Khan, N., Khan, U., ... & Mahmood, T. (2021). Immunoinformatics approaches to explore B and T cell epitope-based vaccine designing for SARS-CoV-2 Virus. *Pakistan Journal of Pharmaceutical Sciences*, 34.
4. Anwar, F., Tayyab, M., Salman, M., Abdullah, Din, M., Khan, J., & Haq, I. (2020). Dengue outbreak 2018 in district Shangla KPK; clinical features and laboratory markers of dengue virus infection. *Future Virology*, 15(10), 693-699.
5. Qamar, Z., Anwar, F., Ahmad, R., Haq, I., Khan, A. M. K., Hussain, R., ... & Khan, J. (2021).

- Prevalence of Hepatitis C virus and determination of its genotypes in subjects of Tehsil Daggar District Buner, KP, Pakistan. *Clinical Epidemiology and Global Health*, 12, 100809.
6. Asif, A., Asghar, M., Khan, H. U., Haq, I., Shuaib, S. L., Khalid, F., ... & Rehman, N. (2021). Antibiotic susceptibility pattern of clinical isolates of methicillin resistant staphylococcus aureus in Peshawar, Pakistan. *Annals of the Romanian Society for Cell Biology*, 25(6), 20116-20131.
 8. Rehman, A. U., Anwar, F., Tayyab, M., Haq, I., Haq, M., Ahmed, A., ... & Khan, A. S. (2022). Incidence of Dengue fever, serotypes, clinical features, and laboratory markers: a case study of 2019 outbreak at district Shangla, KP, Pakistan. *African Health Sciences*, 22(1), 521-31.
 9. Zahir, F., Haq, I., Haq, M., Khan, A. S., Naushad, W., Rajab, H., ... & Munir, I. (2021). Epidemiological characteristics and genetic diversity of clinically isolated dengue vector in Khyber Pakhtunkhwa, Pakistan. *Clinical Epidemiology and Global Health*, 12, 100863.
 10. Sajjad, W., Haq, M., Haq, I., Khan, H. A., Basir, N. U., Mazhar, R., ... & Ahmad, Z. (2022). Epidemiological Features of Cutaneous Leishmaniasis in Hilly and Plot Areas of Tribal Districts, Khyber-Pakhtunkhwa Province Pakistan. *Pakistan Journal of Medical & Health Sciences*, 16(02), 1132-1132.
 11. Windisch G, Braun EM, Anderhuber F. Piriformis muscle: clinical anatomy and consideration of the piriformis syndrome. *Surgical and radiologic anatomy*. 2007;29(1):37-45.
 12. Ro TH, Edmonds L. Diagnosis and management of piriformis syndrome: a rare anatomic variant analyzed by magnetic resonance imaging. *Journal of clinical imaging science*. 2018;8.
 13. Lee EY, Margherita AJ, Gierada DS, Narra VR. MRI of piriformis syndrome. *American Journal of Roentgenology*. 2004;183(1):63-4.
 14. Anwar, F., Tayyab, M., Haq, I., & Shah, O. U. (2021). Viral overload of COVID-19 pandemics: Overweight people a soft target to get an infection. *International Journal of Clinical Virology*, 5(2), 070-071.
 15. Haq, I., Ullah, R., Din, M., Ahmad, S., Anwar, F., Ali, M., & Khan, H. U. (2020). Unrecognized HIV infection in asymptomatic volunteer blood donors at district Peshawar, Khyber Pakhtunkhwa, Pakistan. *New Microbes and New Infections*, 35, 100685.
 16. Carreon LY, Puno RM, Dimar JR, Glassman SD, Johnson JR. Perioperative complications of posterior lumbar decompression and arthrodesis in older adults. *JBJS*. 2003;85(11):2089-92.
 17. Murphy ME, Gilder H, Maloney PR, McCutcheon BA, Rinaldo L, Shepherd D, et al. Lumbar decompression in the elderly: increased age as a risk factor for complications and nonhome discharge. *Journal of Neurosurgery: Spine*. 2017;26(3):353-62.
 18. Kim BD, Smith TR, Lim S, Cybulski GR, Kim JY. Predictors of unplanned readmission in patients undergoing lumbar decompression: multi-institutional analysis of 7016 patients. *Journal of Neurosurgery: Spine*. 2014;20(6):606-16.
 19. Shih P, Wong AP, Smith TR, Lee AI, Fessler RG. Complications of open compared to minimally invasive lumbar spine decompression. *Journal of clinical neuroscience*. 2011;18(10):1360-4.
 20. Asif, A., Asghar, M., Khan, H. U., Haq, I., Shuaib, S. L., Khalid, F., ... & Rehman, N. (2021). Antibiotic susceptibility pattern of clinical isolates of methicillin resistant staphylococcus aureus in Peshawar, Pakistan. *Annals of the Romanian Society for Cell Biology*, 25(6), 20116-20131.
 21. Ahmad, S. U., Khan, M. S., Jan, Z., Khan, N., Ali, A., Rehman, N., ... & Zahir, F. (2021). Genome wide association study and phylogenetic analysis of novel SARS-COV-2 virus among different countries. *Pakistan Journal of Pharmaceutical Sciences*, 34(4).
 22. Kean Chen C, Nizar AJ. Prevalence of piriformis syndrome in chronic low back pain patients. A clinical diagnosis with modified FAIR test. *Pain Practice*. 2013;13(4):276-81.