Baltic Journal of Health and Physical Activity

Volume 16 | Issue 2 Article 5

2024

The acute effect of releasing the thoracolumbar facia by osteopatic technique on lower extremity functional performance on lumbar extensor endurance and mobility in soccer players

Erkan Özyılmaz
Galatasaray Sports Club, Istambul Turkey, pterkan@yahoo.com

Ömer Şenel
Gazi University, Ankara, Turkey, osenel@gazi.edu.tr

Hasan Aka
Niğde Ömer Halisdemir University, Nigde, Turkey, hasanaka06@gmail.com

Zait Burak Aktuğ
Niğde Ömer Halisdemir University, Nigde, Turkey, zaitburak@gmail.com

Recommended Citation

Ozyilmaz E, Senel O, Aka H, Aktug ZB. The acute effect of releasing the thoracolumbar facia by osteopathic technique on lower extremity functional performance, on lumbar extensor endurance and on mobility in soccer players. Balt J Health Phys Act. 2024;16(2):Article5. DOI: 10.29359/BJHPA.16.2.05

The acute effect of releasing the thoracolumbar facia by osteopatic technique on lower extremity functional performance on lumbar extensor endurance and mobility in soccer players

Abstract

Introduction: The aim of this study is to examine the acute effect of osteopathic release of the thoracolumbar fascia on lower extremity functional performance, lumbar extensor endurance and mobility in professional soccer players. Materials and Methods: 30 volunteer male athletes who professionally play soccer participated in the study, and the participants were randomly divided into experimental and control groups. The functional performance of the lower extremities, lumbar extensor endurance and mobility of the subjects were measured twice – before and immediately after the Still Technique and placebo applications. Subjects' lower extremity functional performance was determined by the Single Leg Hop Test, lumbar extensor endurance by the Beiring-Sorensen Extensor Endurance Test, and mobility skill by the Modified Schober Test. Results: According to the results of the statistical analysis, there was a significant difference between the pre-test and post-test values of the lumbar extensor endurance tests of the experimental group in favor of the post-test; however, there was no significant difference in lower extremity functional performance and mobility values, and it was determined that they improved in the post-test. Conclusions: Releasing the thoracolumbar fascia tissue with osteopathic technique before exercise in athletes can acutely increase performance by positively affecting muscle contraction.

Keywords

manual therapy, professional athlete, osteopathy, football

Baltic Journal
of Health and Physical Activity
e-ISSN 2080-9999

Article

The acute effect of releasing the thoracolumbar facia by osteopathic technique on lower extremity functional performance, on lumbar extensor endurance and on mobility in soccer players

Erkan ÖZYILMAZ[1], Ömer ŞENEL[2], Hasan AKA[3], Zait Burak AKTUĞ[4] *

[1] Galatasaray Sports Club, Istambul, Turkey; ORCID 0000-0002-4028-6184
[2] Gazi University, Ankara, Turkey; ORCID 0000-0003-0364-9799
[3] Niğde Ömer Halisdemir University, Nigde, Turkey; ORCID 0000-0003-0603-9478
[4] Niğde Ömer Halisdemir University, Nigde, Turkey; ORCID 0000-0002-5102-4331

* Correspondence: Zait Burak AKTUĞ, Associate Professor, e-mail: zaitburak@gmail.com

Abstract: Introduction: The aim of this study is to examine the acute effect of osteopathic release of the thoracolumbar fascia on lower extremity functional performance, lumbar extensor endurance and mobility in professional soccer players. Materials and Methods: 30 volunteer male athletes who professionally play soccer participated in the study, and the participants were randomly divided into experimental and control groups. The functional performance of the lower extremities, lumbar extensor endurance and mobility of the subjects were measured twice – before and immediately after the Still Technique and placebo applications. Subjects' lower extremity functional performance was determined by the Single Leg Hop Test, lumbar extensor endurance by the Beiring-Sorensen Extensor Endurance Test, and mobility skill by the Modified Schober Test. Results: According to the results of the statistical analysis, there was a significant difference between the pre-test and post-test values of the lumbar extensor endurance tests of the experimental group in favor of the post-test; however, there was no significant difference in lower extremity functional performance and mobility values, and it was determined that they improved in the post-test. Conclusions: Releasing the thoracolumbar fascia tissue with osteopathic technique before exercise in athletes can acutely increase performance by positively affecting muscle contraction.

Keywords: manual therapy; professional athlete; osteopathy; soccer.

Citation: Ozyilmaz E, Senel O, Aka H, Aktug ZB. The acute effect of releasing the thoracolumbar facia by osteopathic technique on lower extremity functional performance, on lumbar extensor endurance and on mobility in soccer players. Balt J Health Phys Act. 2024;16(2):Article5. https://doi.org/10.29359/BJHPA.16.2.05

Academic Editor:
Agnieszka Skrendo-Maciejewska

Received: January 2023
Accepted: March 2024
Published: June 2024

Publisher's Note: BJHPA stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Performance in soccer depends on the harmony of many variables, especially biomechanical, technical, tactical, mental and physiological factors [1]. Athletes' need for protection during the competition season by ensuring this harmony depends on training success [2]. Training success is a result of the balance between the training load and recovery [3].

One of the different methods used to accelerate recovery and improve performance in athletes is manual therapy techniques [4–7]. These techniques include applications such as spinal manipulation, massage, manual traction, joint manipulation and osteopathy applied in the clinic by specialists [8]. The osteopathy technique, designed by Andrew Taylor Still (1828–1917), argues that the myofascial tissue that connects all parts of the body is continuous. Osteopathy, also known as osteopathic medicine, is a manual contact method for diagnosis and treatment. It focuses on the body's self-healing tendency based on both the structural and functional integrity of the body. Osteopathic practitioners use a wide variety of therapeutic manual techniques to promote homeostasis by impaired or altered

function of the vascular, lymphatic, and neural components of the somatic system related to the skeletal, arthrodial, and myofascial structures to improve physiological function [9].

It is known that manual therapy techniques [10], which are one of the oldest intervention methods in the medical field, are generally passive movements applied to the joints and soft tissues by hand [11]. These methods, which includes diagnosis and treatment methods, are used for purposes such as eliminating extremity dysfunctions, reducing pain, improving joint range of motion [12]. In addition, it has been reported that improvement in motor function and increase in motor control occur as a result of the application of this method [13].

In the literature, it is known that manual therapy techniques are generally used in athletes to accelerate treatment and recovery [14–15], while field applications are frequently used to improve athletes' performance [16]. Although it is known that manual therapy techniques decrease in the impact of the pain, improvement in motor function, and increased motor control (13), it is seen that there are limited number of studies on the effect of osteopathy Still technique on performance. From this point of view, the aim of this study is to examine the acute effect of loosening the thoracolumbar fascia for 60–90 seconds on lower extremity functional performance, lumbar extensor endurance and mobility in professional soccer players.

2. Materials and methods

2.1. Paticipants

A total of 30 male volunteer soccer players, aged 18–34, with no evident health issues, divided into two groups, the experimental (n = 15) group and the control group, (n = 15) participated in this study. The players were actively engaged in the training activities of a soccer team competing in the Turkish Football Federation 1st League. The sample size for this study was determined by means of G*Power with power set at 0.90, α at 0.05, and effect size (d) at 0.37, resulting in a minimum requirement of 12 participants [17]. Ethical approval for this study was obtained from the Gazi University Non-Interventional Clinical Research Ethics Commission under protocol number 2020/52, and the approval report, dated 22.10.2020, was issued with decision number 2020/59. This study was conducted in accordance with the Principles of the Declaration of Helsinki.

Table 1. General specifications and settings of the receivers

	n	$\overline{x}$ ± Sd
Height (cm)	30	179.00 ± 0.07
Age (year)	30	25.50 ± 4.50
Weight (kg)	30	73.90 ± 6.90
Body Mass Index (kg/m^2)	30	23.00 ± 1.20

2.2. Research procedure

The Modified Schober Test, Single Leg Hop Test, and Beiring-Sorensen Extensor Endurance Test were administered to the participants. These tests were conducted on the day following a rest day, just before the first training session of the week. An expert physiotherapist trained in osteopathy supervised these tests. After each test, participants were allowed an amount of time for sufficient recovery (5 mins) and they were instructed to proceed to the next test when they felt physically comfortable.

Additionally, a specialist with osteopathy training applied the Still technique for 60–90 seconds to a randomly selected group of 15 participants before the first training session of the following day of the coming week off. Subsequently, the same group underwent the Modified Schober Test, Single Leg Hop Test and Beiring-Sorensen Extensor Endurance Test. 15 participants in the control group also underwent these tests, but without any osteopathy technique or verbal instructions applied. Again, participants were given appropriate rest periods between tests and instructed to move on to the next test when they

felt ready. Following the tests, the results of the experimental and control groups were compared based on the data obtained.

2.3. Modified Schober Test

Participants stood upright while a researcher positioned behind them. The researcher marked points 5 cm below and 10 cm above the midline between the athlete's posterior superior *spina iliaca*. The athlete was then asked to lean forward, and the same points were measured again. The difference between the first and second measurements was recorded [18].

Figure 1. Modified Schober Test

2.4. Beiring-Sorensen Extensor Endurance Test

Participants assumed a prone position on the testing table, suspending their upper bodies up to the level of the superior iliac spines. The time in seconds until their horizontal position was disrupted was recorded. The test concluded when the position was broken [19].

Figure 2. Beiring-Sorensen Extensor Endurance Test

2.5. Single Leg Hop Test

Athletes balanced on one foot with their toes aligned along a drawn line on the ground. Using the same foot, they jumped forward as far as possible, and the point of ground contact was marked. The distance was measured in centimeters between the two points [20].

2.6. Osteopathic myofascial release technique

In this study, the Still technique was chosen as the osteopathic method for releasing myofascial structures. This technique was applied by a specialist trained in osteopathy. Athletes were positioned prone on a bed with their heads in a neutral position. The investigator placed hands on the lower chest, over the thoracolumbar fascia, next to the athlete at the hip level. Pressure was applied downwards, upwards, and outwards to shift the deep fascia. Pressure was maintained for 60–90 seconds at locations where resistance was encountered against the tissue [21].

Figure 3. Still technique

2.7. Statistical analysis

The data were analyzed in the SPSS 24 statistical software program. The Shapiro-Wilk test was applied to determine whether the data were normally distributed, and it was observed that data were not normally. The Wilcoxon signed-rank test, one of the non-parametric hypothesis tests, was used to determine the difference between the pretests and posttests of the data. The effect sizes of the groups were evaluated according to Cohen's d standards. The effect size results were interpreted according to the standards as small (0.2), medium (≥ 0.5), large (≥ 0.8) [22]. In addition, the increase in the percentage between the pretests and posttests of the data was determined by percentage frequency analysis. The significance level in the study was accepted as $p < 0.05$.

3. Results

Table 2. Comparison of the pre-test and post-test values of the experimental group

		Experimental group (n = 15)			Control group (n = 15)		
Measurement		$\overline{x}$ ±Sd	p	Es	$\overline{x}$ ±Sd	p	Es
Lumbar mobility	pre-test	22.46 ±0.68	0.34	4.97	22.03 ±0.77	0.17	0.23
	post-test	22.80 ±1.67			21.81 ±1.07		
Endurance	pre-test	120.33 ±38.44	0.00*	0.29	130.53 ±28.48	0.82	0.08
	post-test	134.00 ±53.53			132.60 ±19.98		
Functional performance	pre-test	177.47 ±23.40	0.09	0.26	185.52 ±14.21	0.13	0.13
	post-test	182.32 ±22.76			183.56 ±15.85		

*= $p < 0.05$ Es= Effect size $\overline{x}$ ±Sd = Arithmetic Mean ± Standard Deviation

When the chart is examined, one can see a significant difference between the endurance pre-test and post-test values of the experimental group participants in favor of the post-test ($p < 0.05$). Moreover, the table above clearly shows that there was no significant

difference between the pre-test and post-test values of the control group in terms of lumbar mobility, endurance, and functional performance.

Table 3. Percentage changes of the pre-test and post-test measurement values of the subjects

	Experimental Group (n = 15)	Control Group (n = 15)
Lumbar Mobility	2%	-1%
Endurance	11%	2%
Functional Performance	3%	-1%

4. Discussion

While manual therapy techniques are commonly employed for therapeutic purposes, they have recently gained attention for their potential in enhancing performance and expediting recovery in athletes [4–7]. These techniques, including spinal manipulation, massage, manual traction, joint manipulation, and osteopathy, are administered by experts [23]. Although manual therapy techniques are recognized for their role in reducing pain, improving motor function and enhancing motor control in athletes [13], limited research has explored their impact on performance. This study focuses on myofascial tissue relaxation through manual therapy methods, including osteopathy, a novel approach that addresses a gap in the existing literature.

The study aimed to investigate the effects of osteopathic myofascial release, specifically targeting the thoracolumbar fascia, on lower extremity functional performance, lumbar extensor endurance, and mobility in soccer players. The results showed a significant improvement in lumbar extensor endurance among participants in the experimental group, following the application of the Still technique. This suggests that myofascial tissue relaxation, achieved through the Still technique, positively influenced lumbar extensor endurance in professional soccer players. Although there were no statistically significant differences in lower extremity functional performance and mobility, an improvement trend was observed in the post-test results.

The comparison of these findings with the control group, in the part of the body where myofascial tissue was not relaxed and a placebo effect was applied, revealed no statistically significant differences in lower extremity functional performance, lumbar extensor endurance, or mobility test results. However, it was noteworthy that the pretest values in lower extremity functional performance and mobility were higher than the post-test values in the control group (Table 2). This observation suggests that professional soccer players might experience muscle tension due to excessive myofascial tissue use, and myofascial relaxation exercises applied to the experimental group may have contributed to the observed improvements.

The literature offers limited studies on the physiological effects of various manual therapy techniques. Some studies suggest that manual therapy techniques, when performed with appropriate timing, can enhance performance [24], while others have explored the impact of different massage techniques on blood pressure and various physiological responses [25]. Nevertheless, contrasting studies indicate that massage may not significantly alter blood lactate levels or that active recovery might be more effective in this regard [26–28]. Massage therapy has also been linked to autonomic, circulatory, lymphatic, and immunological functions, as well as gene expression, neuroanatomy, and cellular responses [29–35].

In conclusion, this study addresses the gap in the literature by examining the effects of osteopathy and myofascial release techniques on athlete performance. The findings suggest that myofascial relaxation, achieved through the Still technique, positively impacted lumbar extensor endurance in professional soccer players. While no statistically

significant differences were observed in lower extremity functional performance and mobility, a general trend towards improvement was noted. This trend could be indicative of the potential benefits of myofascial relaxation exercises.

It is worth noting that the control group, in the part of the body where myofascial tissue was not relaxed and a placebo effect was applied, showed no significant changes in lower extremity functional performance, lumbar extensor endurance, or mobility. However, it was interesting that the pretest values in lower extremity functional performance and mobility were higher than the post-test values in the control group. This observation raises questions about the impact of muscle tension due to excessive myofascial tissue use among professional soccer players and the potential benefits of myofascial relaxation exercises.

The literature review highlighted limited studies on the physiological effects of various manual therapy techniques. Some studies support the idea that manual therapy techniques, when properly timed, can enhance performance, while others explore the physiological responses to different massage techniques. The complex nature of these responses suggests that further research is needed to fully understand the mechanisms at play.

There are some limitations in the current study since the study examined only soccer game and male soccer players. Therefore, it can be recommended that there might be as other disciplines with different levels of competitions in order for the results to be generalized.

5. Conclusions

In this study, the acute effect of loosening the thoracolumbar fascia with an osteopathic technique in professional soccer players was examined. Then, it was found that the lumbar extensor endurance of the experimental group participants significantly improved in the post-test. Although there was no statistically significant difference in the pre-test and post-test values of the lower extremity functional performance and mobility variables of the participants in the experimental group, it was observed that there was an improvement in the post-test values. On the other hand, when the statistical analysis results of the tests of the control group in which myofascial tissue was not loosened were examined, it was found that there was no statistically significant difference between the pre-test and post-test values. It can be stated that loosening the thoracolumbar fascia tissue of the athletes before training and competitions with osteopathic technique can acutely increase performance efficiency by positively affecting muscle contraction and nerve conduction velocity.

References

1. Stølen T, Chamari K, Castagna C, Wisløff U. Physiology of soccer. Sport Med. 2005;35(6):501–536. DOI: 10.2165/00007256-200535060-00004
2. Schwellnus M, Soligard T, Alonso JM, Bahr R, Clarsen B, Dijkstra HP, et al. How much is too much? (Part 2) International Olympic committee consensus statement on load in sport and risk of illness. Br J Sport Med. 2016;50(17):1043–1052. DOI: 10.1136/bjsports-2016-096572
3. Kellmann M. Preventing overtraining in athletes in high-intensity sports and stress/recovery monitoring. Scand J Med Sci Sport. 2010;20:95–102. DOI: 10.1111/j.1600-0838.2010.01192.x
4. Tak I, Langhout R, Bertrand B, Barendrecht M, Stubbe J, Kerkhoffs G, et al. Manual therapy and early return to sport in soccer players with adductor-related groin pain: A prospective case series. Physiother Theory Pract. 2020;36(9):1009–1018. DOI: 10.1080/09593985.2018.1531096
5. Davis HL, Alabed S, Chico TJA. Effect of sports massage on performance and recovery: A systematic review and meta-analysis. BMJ Open Sport Exerc Med. 2020;6(1):000614. DOI: 10.1136/bmjsem-2019-000614
6. Mine K, Lei D, Nakayama T. Is pre-performance massage effective to improve maximal muscle strength and functional performance? a systematic review. Int J Sport Phys Therapy. 2018;13(5):789–799. DOI: 10.26603/ijspt20180789

7. Poppendieck W, Wegmann M, Ferrauti A, Kellmann M, Pfeiffer M, Meyer T. Massage and performance recovery: A meta-analytical review. Sport Med. 2016;46(2):183–204. DOI: 10.1007/s40279-015-0420-x
8. Bialosky JE, Bishop MD, Price DD, Robinson ME, George SZ. The mechanisms of manual therapy in the treatment of musculoskeletal pain: a comprehensive model. Man Ther. 2009;14(5):531–538. DOI: 10.1016/j.math.2008.09.001
9. WHO. Benchmarks for training in osteopathy. Benchmarks for training in osteopathy. 2010.
10. Lennard TA, Vivian DG, Walkowski SD, Singla AK. Pain procedures in clinical practice e-book: Elsevier Health Sciences; 2011.
11. Rowe R, Tichenor C, Bell S, Boissonnault W, King P, Kulig K. Orthopaedic manual physical therapy: description of advanced specialty practice. American Academy of Orthopaedic Manual Physical Therapists: Baton Rouge; 2008.
12. Shamus E, Duijn van A. Manual therapy of the extremities. Jones Bartlett Learning: Burlington; 2016.
13. Cleland JGF, Daubert JC, Erdmann E, Freemantle N, Gras D, Kappenberger L, et al. The effect of cardiac resynchronization on morbidity and mortality in heart failure. NEng J Med. 2005;352(15):1539–1549. DOI: 10.1056/NEJMoa050496
14. Best TM, Hunter R, Wilcox A, Haq F. Effectiveness of sports massage for recovery of skeletal muscle from strenuous exercise. Clin J Sport Med. 2019;18(5):446–460. DOI: 10.1097/JSM.0b013e31818837a1
15. Hart JM, Swanik CB, Tierney RT. Effects of sport massage on limb girth and discomfort associated with eccentric exercise. J Athletic Train. 2005;40(3):181–185.
16. Akyuz O. Examination of basic motoric characteristics with different stretching exercises in soccer players. J Human Sci. 2017;14(2):1255–1262. DOI: 10.14687/jhs.v14i2.4547
17. Faul F, Erdfelder E, Buchner A, Lang AG. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behav Res Method. 2009;41:1149–1160. DOI: 10.3758/BRM.41.4.1149
18. Griefahn A, Oehlmann J, Zalpour C, Piekart Hv. Do exercises with the foam roller have a short-term impact on the thoracolumbar fascia? A randomized controlled trial. J Bodyw Mov Ther. 2017;21(1):186–193. DOI: 10.1016/j.jbmt.2016.05.011
19. Kabul EG, Çalık BB, Baş Aslan U, Ünver F. Sağlıklı gençlerde kısa dönem dinamik stabilizasyon eğitiminin esneklik, kassal endurans ve dinamik denge üzerine etkileri: rastgele kontrollü çalışma. J Exerc Ther Rehabil. 2018;5(1):1–8.
20. Swearingen J, Lawrence E, Stevens J, Jackson C, Waggy C, Davis DS. Correlation of single leg vertical jump, single leg hop for distance, and single leg hop for time. Phys Ther Sport. 2011;12(4):194–198. DOI: 10.1016/j.ptsp.2011.06.001
21. Choi DM, Jung JH. The clinical efficacy of thoracolumbar fascia release for shoulder pain. Phys Ther Rehabil Sci. 2015;4(1):55–59. DOI: 10.14474/ptrs.2015.4.1.55
22. Cohen J. Statistical power analysis for the behavioral sciences: Lawrence Erlbaum Associates Publishers: New York; 2013. DOI: 10.4324/9780203771587
23. Di Fabio RP. Efficacy of manual therapy. Phys Ther. 1992;72(12):853–864. DOI: 10.1093/ptj/72.12.853
24. Özyılmaz E, Şenel Ö, Kılıç RT, Uysal E, İnce AE. Sporcularda kullanılan manuel terapi tekniklerinin performans ve toparlanma üzerine etkilerinin incelenmesi: sistematik derleme. Kırıkkale Üniversitesi Tıp Fakültesi Dergisi. 2022;24(1):83–92. DOI: 10.24938/kutfd.1010424
25. Cambron JA, Dexheimer J, Coe P. Changes in blood pressure after various forms of therapeutic massage: A preliminary study. J Altern Complement Med. 2006;12(1):65–70. DOI: 10.1089/acm.2006.12.65
26. Zebrowska A, Trybulski R, Roczniok R, Marcol W. Effect of physical methods of lymphatic drainage on postexercise recovery of mixed martial arts athletes. Clin J Sport Med. 2019;29(1):49–56. DOI: 10.1097/JSM.0000000000000485
27. Dolgener FA, Morien A. The effect of massage on lactate disappearance. J Strength Condition Res. 1993;7(3):159–162. DOI: 10.1519/00124278-199308000-00006
28. Robertson A, Watt JM, Galloway S. Effects of leg massage on recovery from high intensity cycling exercise Br J Sport Med. 2004;38(2):173–176. DOI: 10.1136/bjsm.2002.003186
29. Spurgin KA, Kaprelian A, Gutierrez R, Jha V, Wilson CG, Dobyns A, et al. A calibrated method of massage therapy decreases systolic blood pressure concomitant with changes in heart rate variability in male rats. J Manipulative Physiol Ther. 2017;40(2):77–88. DOI: 10.1016/j.jmpt.2016.10.010

30. Miller BF, Hamilton KL, Majeed ZR, Abshire SM, Confides AL, Hayek AM, et al. Enhanced skeletal muscle regrowth and remodelling in massaged and contralateral non-massaged hindlimb. J Physiol. 2018;596(1):83–103. DOI: 10.1113/JP275089
31. Zhu Y, Yang Y, Guo J, Zhang W, Zhu Z, Xie B, et al. Abdominal manual therapy repairs interstitial cells of cajal and increases colonic c-Kit expression when treating bowel dysfunction after spinal cord injury. Biomed Res Int. 2017;1492327. DOI: 10.1155/2017/1492327
32. Jiang L, Wang L, Wang M, Wu H, Zou Y, Yuan X, et al. Pinching spine: a potential treatment for depression. Chin J Integr Med. 2014;20(4):272-9. DOI: 10.1007/s11655-012-1028-8
33. Raza S, Harker A, Richards S, Kolb B, Gibb R. Tactile stimulation improves neuroanatomical pathology but not behavior in rats prenatally exposed to valproic acid. Behav Brain Res. 2015;282:25–36. DOI: 10.1016/j.bbr.2014.12.055
34. Bove GM, Delany SP, Hobson L, Cruz GE, Harris MY, Amin M, et al. Manual therapy prevents onset of nociceptor activity, sensorimotor dysfunction, and neural fibrosis induced by a vo-litional repetitive task. Pain. 2019;160(3):632–644. DOI: 10.1097/j.pain.0000000000001443
35. Sowa G, Agarwal S. Cyclic tensile stress exerts a protective effect on intervertebral disc cells. AJPM&R. 2008;87(7):537–44. DOI: 10.1097/PHM.0b013e31816197ee

Author Contributions: Study Design, EÖ and ÖŞ; Data Collection, EÖ and ÖŞ; Statistical Analysis, HA and ZBA.; Data Interpretation, EÖ, ÖŞ and HA; Manuscript Preparation, EÖ, HA and ZBA; Literature Search, EÖ, ÖŞ, HA, and ZBA. All authors have read and agreed to the published version of the manuscript.

Funding: The research obtained no external funding.

Institutional Review Board Statement: Ethical approval for this study was obtained from the Gazi University Non-Interventional Clinical Research Ethics Commission under protocol number 2020/52, and the approval report, dated 22.10.2020, was issued with decision number 2020/59.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data available from the corresponding author on request.

Conflicts of Interest: The authors declare no conflict of interest.