Abant Tıp Dergisi

Abant Medical Journal

Abant Med J 2022;11(1):71-76, doi:10.47493/abantmedj.1085359

How Did The Covid-19 Pandemic Affect Surgically Treated Fractures?

Covid-19 Pandemisi Cerrahi Tedavi Uygulanan Kırıkları Nasıl Etkiledi?

Tacettin AYANOĞLU [1], Mahmut KURTBOĞAN [1], Toygun Kağan EREN [2]

Hüseyin Anıl ÜNAL [1], Çağlar ÖZDEMİR [1], Mahmut Timur TURHAN [1]

[1] Department of Orthopedics and Traumatology, Medical Faculty of Bolu Abant Izzet Baysal University, Bolu, Türkiye

[2] Department of Orthopaedics and Tarumatology, Ankara Training and Research Hospital, Ankara, Türkiye

Geliş Tarihi (*Received*): 09.03.2022 **Kabul Tarihi (*Accepted*):** 28.03.2022 **Yayın Tarihi (*Published*):** 29.04.2022

Abstract

Objective: The aim of the study is to investigate the effect of the Coronavirus disease (COVID-19) pandemic on fractures requiring orthopedic surgery by comparing it with the same 6-month period last year.

Materials and Methods: Patients who underwent orthopedic surgery for fractures between April 2020 and October 2020 were retrospectively scanned and 211 patients were included in the study. As the control group, 184 patients who underwent surgery in the same 6-month period of 2019 were included in the study. Demographic data, number of fractures and distribution of the patients were examined.

Results: While 111 of the patients in the control group were male, 73 were female. In the study group, 121 patients were male and 90 patients were female. There was no statistically significant difference in fractures caused by traffic accidents and occupational accidents (p=0,742, p=0,602 respectively). There was a statistically significant difference between the under 20 age group and the over 65 age group (p=0,015, p=0,026 respectively). It was observed that the numbers of patients with multitrauma increased from 16 to 30. In addition, a statistically significant increase was observed in the number of femur subtrochanteric and tibia distal tip fractures (p=0,042, p=0,029 respectively).

Conclusion: Compared to the same period last year, although there was no increase in the number of patients requiring surgical treatment, the number of subtrochanteric femur and distal tibia fractures increased.

Keywords: Covid-19, Fracture, Surgery, Trauma

&

Öz

Amaç: Çalışmanın amacı, COVID-19 pandemisinin ortopedik cerrahi gerektiren kırıklar üzerindeki etkisini, geçen yıl aynı 6 aylık dönemle karşılaştırarak araştırmaktır.

Gereç ve Yöntemler: Nisan 2020 ile Ekim 2020 arasında kırık nedeniyle ortopedik cerrahi geçiren hastalar geriye dönük olarak tarandı ve 211 hasta çalışmaya dahil edildi. Kontrol grubu olarak 2019 yılının aynı 6 aylık döneminde ameliyat olmuş 184 hasta çalışmaya dahil edildi. Hastaların demografik verileri, kırık sayısı ve dağılımı incelendi.

Bulgular: Kontrol grubundaki hastaların 111'i erkek, 73'ü kadındı. Çalışma grubunda 121 hasta erkek, 90 hasta kadındı. Trafik kazaları ve iş kazalarından kaynaklanan kırıklarda istatistiksel olarak anlamlı bir fark yoktu (p=0,742, p=0,602 sırasıyla). 20 yaş altı grubu ile 20-65 yaş grubu arasında istatistiksel olarak anlamlı bir fark vardı (p=0,015, p=0,026 sırasıyla). Multitravmalı hastaların sayısı 16'dan 30'a çıktığı görüldü. Ayrıca femur subtrokanterik ve tibia distal uç kırıkları sayısında istatistiksel olarak anlamlı artış gözlendi (p=0,042, p=0,029 sırasıyla).

Sonuç: Geçen yılın aynı dönemine göre cerrahi tedavi gerektiren hasta sayısında artış olmamasına rağmen subtrokanterik femur ve distal tibia kırıkları arttı.

Anahtar Kelimeler: Covid-19, Kırık, Cerrahi, Travma

Atıf/Cite as: Ayanoğlu T. , Kurtboğan M., Eren T. K. , Ünal H. A. , Ozdemir C. , Turhan M. T. How Did The Covid-19 Pandemic Affect Surgically Treated Fractures? Abant Med J. 2022; 11(1): 71-76. doi:10.47493/abantmedj.1085359

*Sorumlu Yazar (Corresponding Author): Tacettin Ayanoğlu, **e-mail**: drtacettin@gmail.com

Introduction

The COVID-19 pandemic continues to spread rapidly around the world. As of December 2020, the number of patients were 1800000 in Turkey. The effects of the pandemic were not only in the field of health, but also had social, psychological and economic effects (1).

All measures similar to those taken in the world were taken in Turkey. The government restricted the movement of people except for emergencies and the manufacturing sector. People under 20 and over 65 were banned from leaving the house, schools were closed, sporting or other purposes were canceled and flexible working hours were implemented from time to time (2). Therewithal, arrangements were also made in hospitals. While some hospitals in the cities were dedicated to coronavirus cases, elective surgical procedures were stopped and only emergency surgical procedures were performed in others. As a result of the regulations in social life and hospitals, the number and distribution of patients admitted to the emergency department for trauma inevitably changed. During the pandemic process, the number of elective surgeries continued in our hospital by decreasing them. Besides, for the patients with fractures requiring emergency surgery, it was operated without any restrictions and delay (3).

The aim of the study is to investigate the effect of the COVID-19 pandemic on fractures requiring orthopedic surgery by comparing it with the same 6-month period in 2019.

Materials and Methods

Patients operated for fractures in 2019 and 2020 were retrospectively analyzed from digital hospital records. Patients who underwent orthopedic surgery for fractures between April 2020 and October 2020 were retrospectively scanned and 211 patients were included in the study. As the control group, 184 patients who underwent surgery in the same 6-month period of 2019 were included in the study. Some of these patients had multiple fractures, all of those fractures were evaluated separately. Patients with pathological fractures, patients with periprosthetic fractures, patients operated for pseudoarthrosis were excluded from the study.

Patients' information was obtained from hospital archives. Patients' age, gender and the type of trauma, number of fractures and distribution of the patients were recorded. The first intervention of the patients was conducted by the emergency specialist. In addition, the definitive treatment planning and surgical procedures were carried out by an orthopedist.

Statistical Analysis

Data analysis was performed using SPSS statistical package version 25.0 (SPS Statistics for Windows, Armonk, NY; IBM Corp.). Shapiro-Wilk test was used to define normality. Quantitative variables were presented as mean and standard deviation. Chi-square test was used to compare categorical variables. Increase or decrease of the fracture frequency was expressed as percentage of change. P value of less than 0.05 was regarded as statistically significant.

Results

The average age of the study group was 46 years, while the average age of the control group was 49. While 111 of the patients in the control group were male, 73 were female. In the study group, 121 patients were male and 90 patients were female. There was no statistically difference between two groups according to age and gender distribution (p=0,480, p=0,548 respectively) (Table 1).

Considering the distribution of patients under 20 years of age, there were 35 patients (16,6%) in the study group and 50 patients (27,2%) in the control group. It was determined that there was a statistical difference between both groups in terms of the number of patients under 20 years old (p=0,015). Likewise, a statistical difference was also observed in the comparison of patient groups over 65 years of age (p=0,026). There were

85 patients (38.4%) in the study group and 56 patients (30,4%) in the control group. On the other hand, no statistical difference was observed in terms of patients between the ages of 20-65 (p=0,936) (Table 1).

While 13 fractures (6,2%) occured as a result of occupational accidents in the study group, there were 9 (4,9%) occupational accidents in the control group. Likewise, while there were 35 patients (16,6%) who developed fractures after traffic accidents in the study group, there were 27 patients (14,7%) in the control group. There was no statistically significant difference in fractures caused by traffic accidents and occupational accidents (p=0,742, p=0,602 respectively) (Table 1).

When the distribution of the fracture type was examined, it was seen that there was a statistical difference particularly in the two regions. Especially, subtrochanteric femoral fractures increased 3 times while distal tibia fractures increased 2 times in the study group compared to the control group (p=0,042, p=0,029 respectively) (Table 2). No such increase has been observed in other fracture types.

Table 1

Distribution of Demographic Data of Patients

		2019 (Control group)		2020 (Study group)		
		Number	%	Number	%	p
Gender	Male	111	603	121	573	0.548
	Female	73	397	90	427	
Age	Under 20 y	50	272	35	166	0.015
	20-65 y	78	424	91	45	0.936
	Over 65 y	56	304	85	384	0.026
Occupational accidents	+	9	49	13	62	0.742
	-	175	951	198	938	
Traffic accidents	+	27	147	35	166	0.602
	-	157	853	176	834	

Table 2
Distribution of Fractures

	2019	2020
Scapula	0	2
Clavicle	9	9
Proximal humerus	6	8
Humerus shaft	3	1
Distal humerus	14	19
Proximal Radius/ulna	5	3
Radius/ulna shaft	16	12
Distal Radius/ulna	25	26
Carpal	0	2
Metacarpal/phalanx	0	2
Femoral neck	4	5
Femoral intertrochanteric	35	31
Femoral subtrochanteric	8	24
Femoral shaft	16	15
Distal femural	6	6
Patella	2	2
Proximal tibia	19	11
Tibia shaft	14	17
Distal tibia	9	18
Malleolar	12	10
Talus/kalkaneus/tarsal	4	10
Metatarsal/phalanx	2	1

Discussion

The results of the study provided important informations. The most important of these is that while the number of patients under 20 years of age who were operated for fractures decreased, the number of patients over 65 years old increased compared to the control group. We attribute this result to the curfew. Because, in our country, the curfew is mostly applied under 20 and over 65 years. Therefore, the number of patients under 20 years of age who were injured mostly as a result of high-energy trauma decreased compared to the control group. The number of patients over the age of 65 who developed low-energy osteoporotic fractures has increased as expected. We think that osteoporosis is aggravated as these patients cannot exercise enough and receive less sunlight. The literature also supports our findings. a consequence of stay-at-home policies has been a decline in bone fractures for young and middle-aged adults; but an increase for the elderly (4-6).

Another important result is the significant increase in some fracture types. Especially, subtrochanteric femoral fractures increased 3 times while distal tibia fractures increased 2 times in the study group compared to the control group. Subtrochanteric femoral fractures are usually caused by high-energy trauma in the young and low-energy trauma in the elderly. Also, pathological fractures and atypical femoral fractures are common in this area, but these fractures were excluded from the study. Increased subtrochanteric fractures may be attributed to the aggravation of osteoporosis due to prolonged immobility of the patients at home (7,8). Additionally, most of the distal tibia fractures have occured due to falling from the tree. The reason for this may be psychological disorders due to being stuck at home for a long time (9,10).

The measures taken by the government during the pandemic period caused significant changes in social life. Especially the curfew has reduced the mobility in social life, people's contact with each other and traffic density. In most studies on this subject, orthopedically related trauma cases decreased during the covid-19 pandemic period and had different mechanisms and features (11,12). In this study, the number of patients operated for fractures in the same 6-month period of both years did not change. During the pandemic process, while the number of trauma patients in some hospitals is decreasing, in others it is increasing due to the density of covid - 19 patients. However, while elective surgeries were reduced in hospitals in our city, fracture patients who presented to the emergency and polyclinic were operated similar to the previous year. Therefore, we think that the number of fracture patients operated every two years has not changed for this reason.

Our study has some limitations and strengths. The most important limitation of the study is that the data of the study were obtained retrospectively. In addition, soft tissue trauma and fractures that do not require surgical treatment were not evaluated in the study. However, the fact that our hospital is the most advanced hospital in the region provides a variety of cases. In addition, on the ground that all kinds of trauma patients were accepted during the pandemic is also the strength of the study.

Conclusion

Compared to the same period last year, although there was no increase in the number of patients operated for fractures, the number of subtrochanteric femur and distal tibia fractures increased. We believe that the this study will provide a reference especially in terms of orthopedic trauma surgery in order to prevent the formation of similar fractures that may occur during the pandemic process.

Ethics Committee Approval: The study was approved by the Ethics Committee of Bolu Abant Izzet Baysal University (date: 08.02.2021 and approval number: 2021/24).

Informed Consent: Written consent was obtained from the participants.

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

References

1. The circular of the Turkish Ministry of Interior regarding curfew in 31 cities in Turkey, numbered 6253 and dated April 03, 2020. www.icisleri.gov.tr.
2. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. Gen Psychiatr 2020;33:100213.
3. Umeda-Raffa S, Pergolizzi JV Jr, Raffa RB. Bone fractures during the time of coronavirus. J Clin Pharm Ther. 2020;00:1-4

4. Loomba RS, Aggarwal G, Aggarwal S, Flores S, Villarreal EG, Farias JS, Lavie CJ. Disparities in case frequency and mortality of coronavirus disease 2019 (COVID-19) among various states in the United States. Ann Med. 2021;53(1):151-9.
5. Sato C, Miyakoshi N, Kasukawa Y, Nozaka K, Tsuchie H, Nagahata I, Yuasa Y, Abe K, Saito H, Shoji R, Shimada Y. Teriparatide and exercise improve bone, skeletal muscle, and fat parameters in ovariectomized and tail-suspended rats. J Bone Miner Metab. 2021 Jan 3. doi: 10.1007/s00774-020-01184-0
6. Atik OŞ, Sezgin EA, Tepedelenlioğlu HE. The role of biomarkers in osteoarthritis and osteoporosis for early diagnosis and monitoring prognosis. Eklem Hastalik Cerrahisi. 2019;30(2):175-6.
7. Lorentzon M, Cummings SR. Osteoporosis: The evolution of a diagnosis. J Intern Med. 2015;277(6):650-61.
8. Donovan RL, Tilston T, Frostick R, Chesser T. Outcomes of Orthopaedic Trauma Services at a UK Major Trauma Centre During a National Lockdown and Pandemic: The Need for Continuing the Provision of Services. Cureus. 2020;12(10):e11056.
9. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Xu Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. Gen Psychiatr 2020;33:e100213.
10. Riaz M, Abid M, Bano Z. Psychological problems in general population during covid-19 pandemic in Pakistan: role of cognitive emotion regulation. Ann Med. 2021;53(1):189-96.
11. Bhat AK, Kamath K S. Comparative study of orthopaedic trauma pattern in covid lockdown versus non-covid period in a tertiary care centre. J Orthop. 2021;23:1-7
12. Lim MA, Mulyadi Ridia KG, Pranata R. Epidemiological pattern of orthopaedic fracture during the COVID-19 pandemic: A systematic review and meta-analysis. J Clin Orthop Trauma. 2020; Dec 30. doi: 10.1016/j.jcot.2020.12.028 [Epub ahead of print]