

# MAJOR CONSEQUENCES FOR HIP ARTHROPLASTY SERVICES IN EUROPE DURING THE COVID-19 : PANDEMIC RESULTS OF AN ONLINE SURVEY OF MEMBERS OF THE EUROPEAN HIP SOCIETY

<https://doi.org/10.71165/rjk3-qoi>

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## SUMMARY

**Background:** The emergence of the SARS-CoV-2 pandemic in early 2020 necessitated a rapid reallocation of healthcare resources across Europe to manage infected patients. This shift significantly disrupted standard orthopedic practice, particularly elective surgical services, creating a need to quantify the extent of service suspension and its impact on hip arthroplasty specialists.

**Objective:** This study aims to evaluate the impact of the initial COVID-19 pandemic wave on total joint arthroplasty (TJA) services and the professional activities of surgeons within the European Hip Society (EHS).

**Key Points:** A prospective online survey of 222 EHS members from 39 countries revealed that 26.6% of departments cancelled all surgical procedures, while 64.9% suspended elective inpatient operations. Primary total hip arthroplasty (THA) and aseptic revisions were maintained by only 6.3% and 4.7% of respondents, respectively. Conversely, high-priority procedures such as surgery for periprosthetic fractures (86.2%) and femoral neck fractures (83.2%) continued. Personal surgical volume decreased for 81.8% of surgeons, and 38.6% were reassigned to non-orthopedic duties. Postoperative follow-up and rehabilitation services were also severely restricted, with 31.5% of surgeons reporting a total cessation of physical therapy services.

**Conclusion:** The first wave of the pandemic caused a near-total cessation of elective hip arthroplasty in Europe, with surgical activity limited primarily to life-threatening or acute traumatic conditions. These findings document a historic disruption in orthopedic care that may have long-term implications for patient outcomes and healthcare economics.

## KEYWORDS

Arthroplasty, Replacement, Hip; COVID-19; Health Care Surveys; Elective Surgical Procedures; Europe

## INTRODUCTION

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In December 2019, the coronavirus disease 2019 (COVID-19) broke out in Wuhan, the capital city of Hubei Province in China. The cause of the disease was a highly contagious novel coronavirus (SARS-CoV-2) that rapidly spread around the world and in March 2020 was declared a global pandemic by the World Health Organization (WHO). The novel severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that causes the Coronavirus Disease 2019 (COVID-19), generating high numbers of COVID-19 related infected individuals and deaths in society. The first wave hit Europe between February 2020 and June 2020. During this period, a significant reallocation of health care resources with the focus on the management of COVID 19 patients was carried out in most European countries. Orthopaedic practice could not remain unaffected under these unforeseen circumstances. During the pandemic clinicians of every discipline have been forced to modify patient care, to minimise exposure for patients and health care workers.

The EHS, consisting of 510 members (328 of them are full members), was founded in 1992, and its aim is “to provide a forum for the discussion of research, advances in clinical practice and the results of predominantly surgical procedures of all types relating to the hip joint.” (Art. 2a EHS Constitution) and a special focus is on hip replacement.

In order to evaluate challenges of members of the European Hip Society (EHS) during the first wave of the pandemic we conducted a survey among members of the EHS. The aim of the survey was to measure the impact of the first wave of the COVID-19 pandemic on total joint arthroplasty (TJA) service in Europe.

## METHODS

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Members of the European hip society (EHS) were asked to participate in a prospective online survey. The EHS, is an institution that was founded in 1992. With special focus on hip replacement, its aim is ”to provide a forum for the discussion of research, advances in clinical practice and the results of predominantly surgical procedures of all types relating to the hip joint” (Art. 2a EHS Constitution). Currently the EHS consists of 510 members of which 328 are European full members.

The survey was anonymous and no patient data were included, which is why no approval was obtained from an institutional review board. Data were collected using the online data collection program of SurveyMonkey (<http://www.surveymonkey.com>).

The survey contained a mixture of 20 single, multiple choice and ranked questions, following four subtopics and was conducted from March 30, 2020 to April 14, 2020. Four questions addressing the origin and surgical experience of the participant followed by twelve questions according the disruption of hip arthroplasty surgeries, subsequently four questions addressing the influence of the COVID-19 pandemic on the particular surgeon. Finally a matrix with 14 different arthroplasty surgeries which the participant was asked to state whether dedicated intervention was stopped, delayed or cancelled.

The members were asked to fill out the questionnaire using a weblink to the above-mentioned survey. Frequencies and percentages were calculated using the data gathered from the online database.

## RESULTS

A total of 222 EHS members responded to the survey. The participating surgeons were on average 19.7 years (min: 1 year, max: 46 years) in practice. The majority worked at a private hospital (46.9%) and an academic center (46%), while 37.4% worked in a public hospital. Hip Arthroplasty surgeons from 39 different countries responded, with the majority living in Italy (13.6%) followed by Germany (8.6%) and France (8.6%). A specific COVID-19 training was received by 63.1%.

Around one quarter of the respondents (26.6%) responded that all surgeries were cancelled in their departments, while almost two third (64.9%) stated that only elective inpatient procedures were no longer being performed. Also, 66.2% reported that elective outpatient procedures were cancelled. Elective inpatient and outpatient surgery was selectively restricted in 21.2% and 15.3%. No changes of the routine at their department was reported by two participants (0.9%). (Figure 1) Imagining a “four-level scale” of escalating down activities, 52.7% described the last stage, treating only life-threatening diseases.

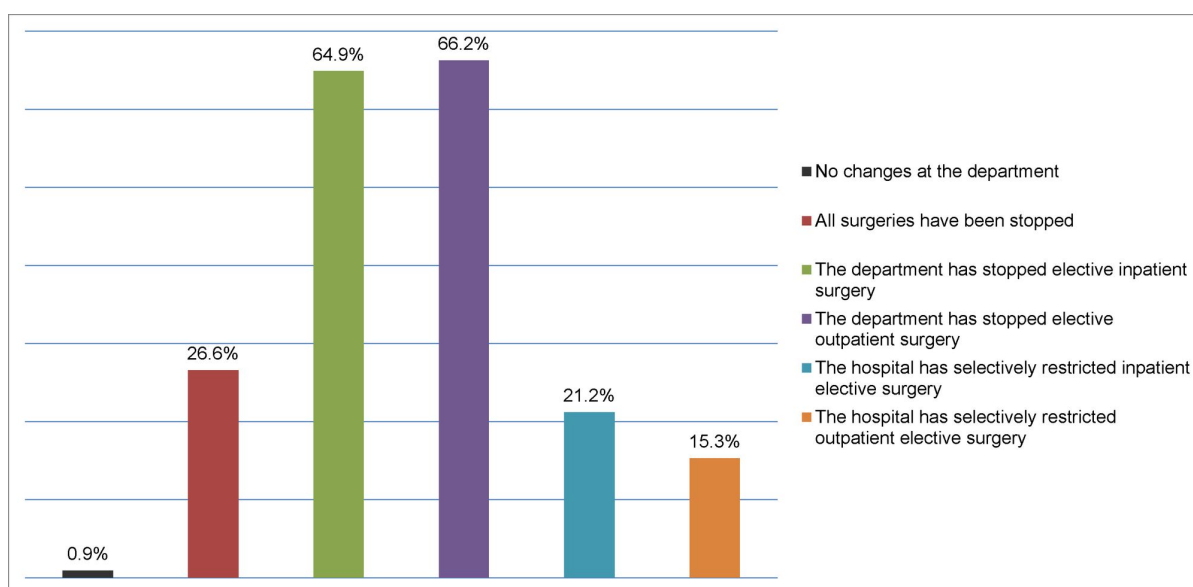


Figure 1: Participants statements to specific effects of the COVID-19 pandemic on their department.

According to the single procedures, only 6.3% were still doing primary THA. Similarly also aseptic revisions were performed by only 4.7% of the participants. Relating to life threatening pathologies, procedures for periprosthetic fractures (86.2%), THA/ hemiarthroplasty for femoral neck fractures (83.2%) and septic revisions for acute infections (76.9%) were still being performed. Thus, second-stage revisions with re-implantation of the implants were being performed only by 18.4% of the respondents. Around half (51.4%) of the participants reported that massively failed THA (collapse, dislocation, component failure, imminent dislocation) was still performed. In addition less than one third (28.2%) reported that endoprosthetic reconstruction after malignant resection was provided. (Figure 2)

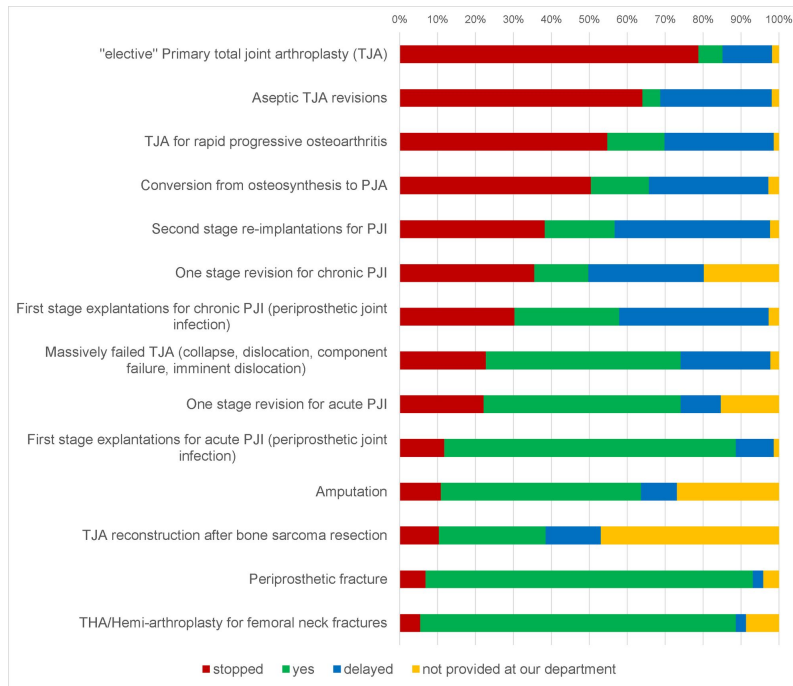


Figure 2: Arthroplasty procedures currently being performed at the respondents' departments in %.

The vast majority (81.8%) of hip arthroplasty surgeons reported a drastic reduction of their personal surgery volume. Also a delay in surgeries was reported by 52.2%. Relating to education, training or teaching of students, residents and fellows was stopped for 53.2% of the surgeons. Treatment of the patients was changed to more conservative clinical care by 20.5% of the respondents. Of the arthroplasty surgeons 44.1% stated that the workload was more outsourced to administrative work. Even 38.6% of the orthopaedic surgeons were assigned to non-orthopaedic duties. Around half of the participants (52 %) stated that they were effectively not working due to institutional or self-imposed deferral of elective surgery (Figure 3).

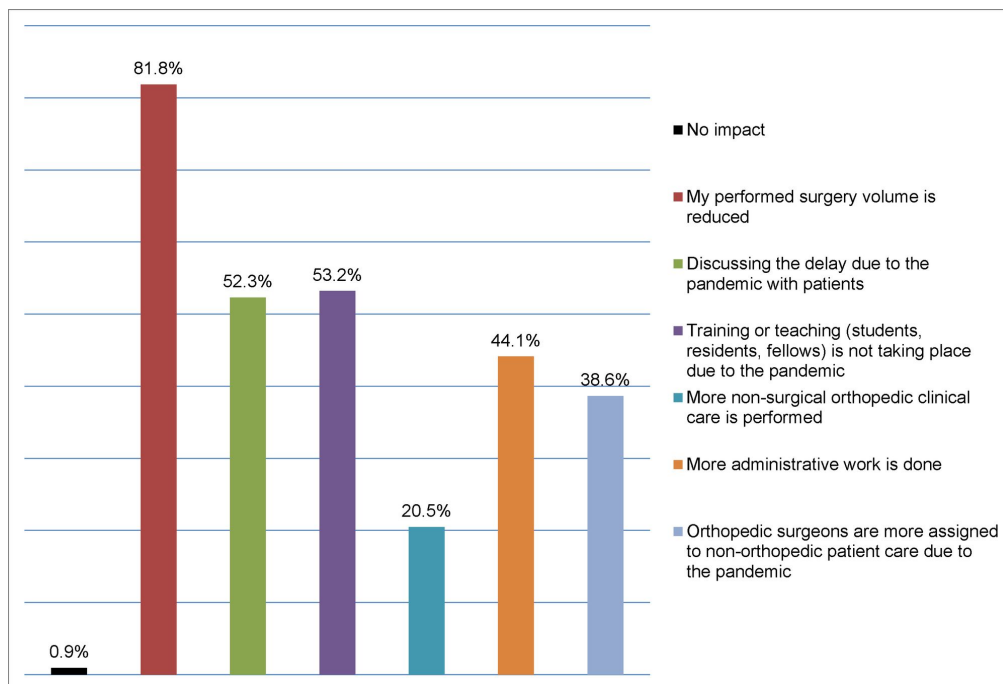


Figure 3: Respondents answers when they were asked how the COVID-19 pandemic affected their practice as an orthopedic surgeon.

Regarding post-operative follow-up investigations, only high-risk patients after THA were examined by 45.5% of the participants. One third of arthroplasty surgeons (33.2% and 27.7%) were still doing regular clinical and radiologic follow-ups, respectively.

Rehabilitation and physical therapy for patients after THA were available for selected cases (37.4%), for inpatient patients (18.5%) and outpatient patients (27.9%). Thus, no physical therapy or rehabilitation after THA was reported in 31.5%.

For prevention of infection, 19.4% stated to keep a distance to their families or avoid physical contact with family members (20.7%). Surface disinfection at home was performed by 23.4%. Likewise, 5.4% lived in separate rooms at home or avoided going home (2.7%) Thirty seven participants stated that they took off from work during the pandemic (16.7%) (Figure 4).

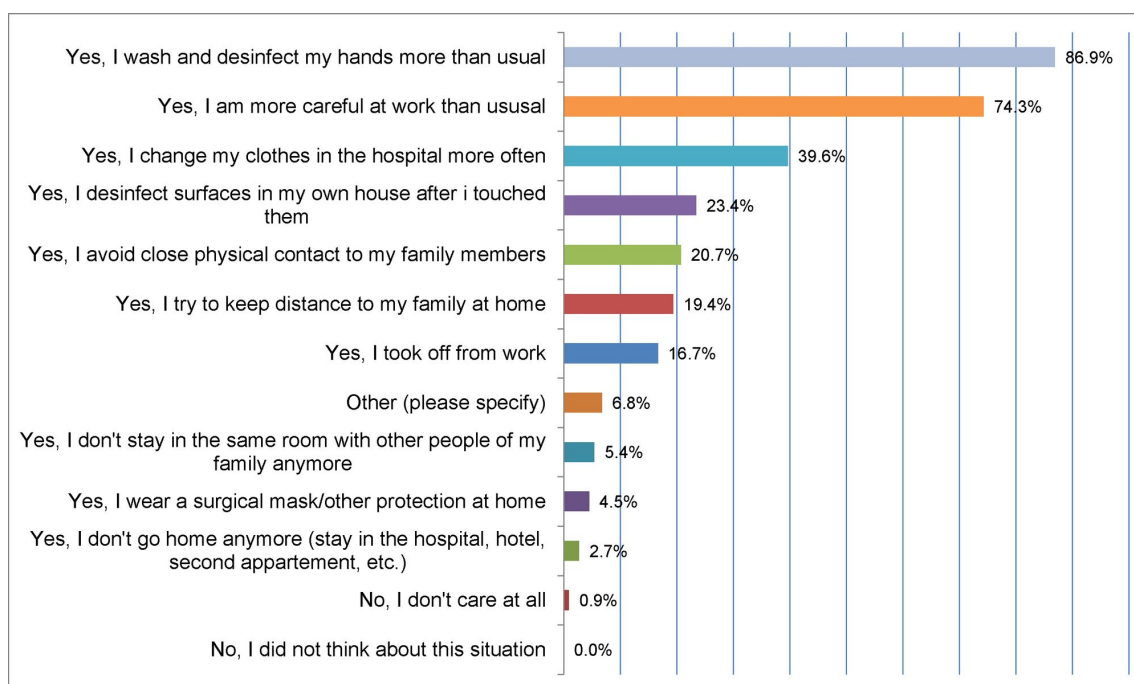


Figure 4: Answers of surgeons on fear to infect friends or family and their approach for prevention.

The majority of respondents knew either patients and/ or hospital staff with a positive COVID-19 test.

## DISCUSSION

The results of our study show that there was a significant impact of the first phase of the COVID-19 pandemic on health care service in Europe, which resulted in a significant reduction of health care for TJA patients. The most important finding of the present study was the massive cutback in primary as well as revision TJA service in Europe during the first wave of the 2020 COVID-19 pandemic. Primary TJA was reported by only a small amount of survey participants as still being carried out. In addition, only a few participants stated that they were still performing aseptic TJA revisions and TJA reimplantation after previous removal of septic implants (2nd stage) (Figure 2). In addition, postoperative follow-up visits and rehabilitation were also reported to be drastically impaired by the pandemic.

Similar to our findings, many studies were published presenting a massive impact on health care in almost every medical discipline and cutback on health care service in Europe. During the study period, the first wave of the Coronavirus disease (COVID-19) pandemic was evolving rapidly in Europe, widely disrupting the personal, social, economic and professional life of healthcare workers. The overall goal of most national authorities in Europe was to “flatten the curve” of new COVID cases and to avoid a collapse of the national healthcare systems. This resulted in a reallocation of resources for patients suffering from COVID-19. Affected by the catastrophic consequences of the pandemic, orthopaedic healthcare was substantially cut back on the whole continent. This drastic disruption has had a massive impact on joint arthroplasty service, which is currently the international standard of care for surgical treatment of degenerative and rheumatologic joint diseases, as well as for certain fractures adjacent to the joint, like femoral neck fractures. It is well proven that postponing TJA in patients with high-stage osteoarthritis leads to more opioid use and poorer overall outcome regarding revision rate and readmission rate after TJA. However, at least life-threatening pathologies such as periprosthetic fractures and first-stage revisions of acute infected TJA were still operated during the first wave of the pandemic.

Every year more than 3.1 million total hip arthroplasties are performed every year in Europe to improve patients' quality of life and mobility. This increase also consequently leads to an enhancement of life expectancy of affected patients. Hence, the described shutdown in arthroplasty services during the first wave also has severe economic consequences for implant companies and their employees, as well as the families of the employees. TJA outcome is outstanding, and total hip arthroplasty has been reported by several reports as “the operation of the century”.

The beneficial impact of primary total hip arthroplasty regarding mobility, social life, work capability, prevention of cardiovascular diseases, general health, patient satisfaction, decreasing pain and increasing joint function, especially in elderly persons, but nowadays in young active people as well, is undisputed. Hence, if access to TJA is restricted, the direct and indirect costs to a nation's society are enormous, because of early retirement, inability to work, direct costs to the healthcare systems caused by the immobility of people and indirect costs to the healthcare system, like employment status, earnings, time missed from work (or absenteeism), and disability payments.

Several limitations of the study have to be acknowledged. First, the findings of members of the EHS cannot be 100% extrapolated to all surgeons with other healthcare systems, like the US or China. Second, our survey may not be absolutely well balanced, because all participants were members of the EHS. However, the members of the EHS are experts in total hip arthroplasty and therefore the study results can be regarded as providing robust information on the situation of TJA healthcare disruption during the first wave of the COVID-19 pandemic.

Arthroplasty healthcare services in Europe suffered a drastic cutback due to COVID-19 pandemic in the first wave. A drastic reduction revision surgery and an almost total shutdown of elective primary total joint arthroplasty were reported. As well as a drastic cutback in revision surgeries even in massively failed TJA with collapse, dislocation, component failure or imminent dislocation was found. Only life-threatening pathologies like periprosthetic fractures and acute septic TJA were still treated. Long-term consequences cannot be predicted yet. The described disruption in arthroplasty healthcare services has to be viewed as historic. Nowadays, the COVID-19 pandemic still poses unprecedented challenges for patients, clinicians and healthcare systems.

## REFERENCES

- 1. Thaler M, Kort N, Zagra L, Hirschmann MT, Khosravi I, Liebensteiner M, Karachalios T, Tandogan RN.** Prioritising of hip and knee arthroplasty procedures during the COVID-19 pandemic: the European Hip Society and the European Knee Associates Survey of Members. *Knee Surg Sports Traumatol Arthrosc.* 2021 Jan 12;1-5. doi: 10.1007/s00167-020-06379-6.
- 2. Klocker J, Frech A, Gratl A, Thaler M, Khosravi I, Liebensteiner M, Kluckner M, Hofmann W, Assadian A;** Operate, cancel, postpone or select? *Österreichische Gesellschaft für Gefäßchirurgie (ÖGG). Gefasschirurgie.* 2020 Sep 2;1-6. doi: 10.1007/s00772-020-00686-5.
- 3. Kort NP, Barrena EG, Bédard M, Donell S, Epinette JA, Gomberg B, Hirschmann MT, Indelli P, Khosravi I, Karachalios T, Liebensteiner MC, Stuyts B, Tandogan R, Violante B, Zagra L, Thaler M.** Resuming elective hip and knee arthroplasty after the first phase of the SARS-CoV-2 pandemic: the European Hip Society and European Knee Associates recommendations. *Knee Surg Sports Traumatol Arthrosc.* 2020 Sep;28(9):2730-2746. doi: 10.1007/s00167-020-06233-9.
- 4. Kort NP, Barrena EG, Bédard M, Donell S, Epinette JA, Gomberg B, Hirschmann MT, Indelli P, Khosravi I, Karachalios T, Liebensteiner MC, Stuyts B, Tandogan R, Violante B, Zagra L, Thaler M.** Recommendations for resuming elective hip and knee arthroplasty in the setting of the SARS-CoV-2 pandemic: the European Hip Society and European Knee Associates Survey of Members. *Knee Surg Sports Traumatol Arthrosc.* 2020 Sep;28(9):2723-2729. doi: 10.1007/s00167-020-06212-0.
- 5. Donell ST, Thaler M, Budhiparama NC, Buttaro MA, Chen AF, Diaz-Ledezma C, Gomberg B, Hirschmann MT, Karachalios T, Karpukhin A, Sandiford NA, Shao H, Tandogan R, Violante B, Zagra L, Kort NP.** Preparation for the next COVID-19 wave: The European Hip Society and European Knee Associates recommendations. *Knee Surg Sports Traumatol Arthrosc.* 2020 Sep;28(9):2747-2755. doi: 10.1007/s00167-020-06213-z.
- 6. Liebensteiner MC, Khosravi I, Hirschmann MT, Heuberer PR;** Board of the AGA - Society of Arthroscopy and Joint-Surgery, Saffarini M, Thaler M. It is not 'business as usual' for orthopaedic surgeons in May 2020- the Austrian-German-Swiss experience. *J Exp Orthop.* 2020 Aug 8;7(1):61. doi: 10.1186/s40634-020-00272-4.
- 7. Megaloikonomos PD, Thaler M, Igoumenou VG, Bonanzinga T, Ostojic M, Couto AF, Diallo J, Khosravi I.** Impact of the COVID-19 pandemic on orthopaedic and trauma surgery training in Europe. *Int Orthop.* 2020 Sep;44(9):1611-1619. doi: 10.1007/s00264-020-04742-3.
- 8. Kort NP, Zagra L, Barrena EG, Tandogan RN, Thaler M, Berstock JR, Karachalios T.** Resuming hip and knee arthroplasty after COVID-19: ethical implications for wellbeing, safety and the economy. *Hip Int.* 2020 Sep;30(5):492-499. doi: 10.1177/1120700020941232.
- 9. Thaler M, Khosravi I, Leithner A, Papagelopoulos PJ, Ruggieri P.** Impact of the COVID-19 pandemic on patients suffering from musculoskeletal tumours. *Int Orthop.* 2020 Aug;44(8):1503-1509. doi: 10.1007/s00264-020-04636-4.
- 10. Thaler M, Khosravi I, Hirschmann MT, Kort NP, Zagra L, Epinette JA, Liebensteiner MC.** Disruption of joint arthroplasty services in Europe during the COVID-19 pandemic: an online survey within the European Hip Society (EHS) and the European Knee Associates (EKA). *Knee Surg Sports Traumatol Arthrosc.* 2020 Jun;28(6):1712-1719. doi: 10.1007/s00167-020-06033-
- 11. Liebensteiner MC, Khosravi I, Hirschmann MT, Heuberer PR;** Board of the AGA-Society of Arthroscopy and Joint-Surgery, Thaler M. Massive cutback in orthopaedic healthcare services due to the COVID-19 pandemic. *Knee Surg Sports Traumatol Arthrosc.* 2020 Jun;28(6):1705-1711. doi: 10.1007/s00167-020-06032-2.