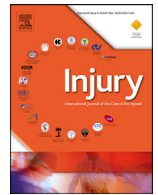




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Letter to the Editor

“Flattening the Curve” of COVID-19 pandemic in Orthopaedics and Trauma: the Greek perspective.**Introduction**

Coronavirus disease (COVID-19) pandemic has altered the needs and provision of health care around the world [1]. The rapid spread of the new severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) worldwide has forced all countries around the world to collaborate against the “common enemy” [2]. The emerging crisis, however, was variably managed from the health authorities of different countries; others were implementing early and strict measures of isolations levelling from social distancing to lock-down and others delaying such measures with the hope of early herd immunity [3]. Eventually the former approach was adopted by most of the countries, the effectiveness of which, along with the cooperation of the citizens playing a pivotal role in the outcome in morbidity and mortality from COVID-19. The COVID-19 pandemic had a more moderate impact in Greece compared to other countries [4]. The Greek experience concerning Orthopaedic and Trauma care is further presented in this letter.

Initial Measures and Results

As early as the end of February 2020, the Greek Government in close cooperation with the National Public Health Authorities took a plethora of measures to reduce the impact of the pandemic and to reduce the “workload” on the National Health Services and in particular the Intensive Care Units thus effectively protecting the wellbeing of the citizens [5]. As a result, COVID-19 had a moderate spread in the country, and subsequent the stretch on the healthcare system was avoided keeping the casualties at a deficient level. At the time of composing this communication, a total of 2,591 COVID-19 cases and 140 deaths (5.4% of all confirmed cases) have been recorded in Greece [5]. The prevalence of the disease was slightly higher in men than women (55% vs 45%), the mean age of COVID-19 cases was 49 years, while the mean age of those who lost their lives was 74 years [5]. The spread of the disease in Greece was higher in large and heavily populated urban areas but very limited in rural areas or islands as expected [5]. As the daily rate of confirmed cases has been critically reduced, and Greece is now planning the careful exit from the lock-down and return to normality, we can critically evaluate the two months elapsed between the beginning and the flattening of the pandemic curve, concerning Orthopaedic and Trauma services, in Greece.

Orthopaedic and Trauma Department organisation

Since the onset of COVID-19 pandemic, all Greek NHS rearranged its activity in order to admit and hospitalise with prior-

ity COVID-19 patients. Orthopaedic and Trauma Departments were also radically reorganised. The wards of our hospital have been amalgamated to free staff and beds for COVID wards. All elective surgeries were cancelled in order to reduce admission load and the possibility of in-hospital transmission of the disease. Only oncological and trauma cases were admitted for surgery since the onset of the pandemic. The admission criteria of trauma and oncological cases were also modified; multidisciplinary oncology team approved patients and those with life, or limb-threatening injuries were admitted for surgery. Patients with non-life or limb-threatening injuries that required surgery were admitted if surgery was planned to happen soon. In any other case, patients were sent home and re-admitted for day-surgery when there was operating room availability. A large number of patients were treated conservatively.

All patients were undergone an initial COVID-triage and classified as COVID-19 suspected, non-suspected or confirmed; then, they were guided through the dedicated hospital pathways. Non-suspected patients were managed in the emergency department and, if necessary, were admitted to the regular Orthopaedic Non-COVID-19 ward (NCO) and surgery was performed in the standard Non-COVID-19 operating rooms (NCO-OR). COVID-19 confirmed patients were directed through the isolated COVID-19 pathway to the COVID-19 (CO) negative pressure ward. A specially organised COVID-19 OR (CO-OR) near the CO ward was dedicated for surgical management. CO-OR was isolated, away from the regular NCO-OR, and operating with specific nursing, surgical, and anaesthetic experienced staff with a nearby satellite radiology suit organised explicitly for this purpose. Suspected COVID-19 (SCO) patients were isolated in a dedicated SCO-ward nearby but separate to the emergency department, where the deep pharyngeal sample for real-time polymerase chain reaction (RT-PCR) test was received, and a chest x-ray was taken to determine the presence or not of the disease. When admission was deemed necessary, suspected COVID-19 patients remained to the SCO ward until the test result was available usually within 8-24 hours and then transferred to COVID or Non-COVID ward accordingly.

First Phase of the Epidemic-reduced trauma slowdown of hip fractures

During the first lock-down month, a significant reduction of admission rate to the Orthopaedic and Trauma Departments of our hospital was recorded. The decrease in admission rate reached almost 90% compared to the admission rate of the same month of the previous year. The decreased admission rate was, to some extent, expected due to the imposed lock-down and social distancing measures as both limited physical and road traffic activity. The admission rate of the geriatric hip fractures was also reduced similarly; the latter however was not expected as the majority of them are domestic low energy injuries. It was speculated that the

impact on lifestyle and psychology of the elderly citizens during the first phase of the epidemic was so critical that even indoors mobility and/or around the house was limited, reducing falls and osteoporotic hip fractures.

2nd. Phase of Epidemic-increased trauma

During the second month of the pandemic, the admission rate of the geriatric hip fractures gradually returned to pre-pandemic rates. The latter was anticipated as people became familiar with the restrictive measures and realised the modest and controlled spread of COVID-19 in the country. However, the admission rate of all the other traumatic injuries remained extremely low up to date due to the continuation of lock-down and traffic control measures.

Lock-down exit plan

As the Greek Health Authorities and Central Government are on the verge of the abolition of the lock-down measures, the eventual full reoperation of Orthopaedic and Trauma Departments is approaching but remains challenging. Slow implementation, proper adaptation and the gradual return of citizens and medical staff to the new "living with the COVID-19" reality has been announced giving priority to safety and protection against pandemic relapse. Early instructions from the Greek Ministry of Health made the use of a face mask legally bounding in public space and hospitals [5]. Patients scheduled for elective surgery and all emergency trauma cases will be admitted in an isolated preadmission ward where a thorough preoperative evaluation will be executed; including clinical examination, RT-PCR molecular test in all cases, chest X-ray and if necessary, a chest CT scan. Antibody testing is not suitable for COVID-19 diagnostic screening and will only be used for epidemiological purposes and for the monitoring of immune status of the hospital staff. During the immediate post lock-down period and up to July 2020, only the 50% of the Orthopaedic cases including trauma, compared to the same months of 2019, will be allowed to be performed thus restricting the surgical activity in numerical order for protection purposes [5]. Inside OR induction and recovery schedule and the one-hour interval between cases will be necessary for thorough disinfection, changing and cleansing the anaesthesiology tubing and apparatuses. The outpatient clinics will also gradually return to normality and speed. In our hospital, 20 patients per clinic, comprising of ten follow-ups and ten new appointments, will be allowed for the first month. Admission to the clinics through a controlled entrance with temperature monitoring, one at the time and keeping two meters distance between the patients will be required. In addition, waiting areas outside the hospital will be developed to avoid in-hospital overcrowding.

Operation of Orthopaedic and Trauma Departments are necessary as they provide first-line emergency and elective surgical care. Some ambiguity still exists regarding the speed of return to full function that entirely depends upon the course of COVID-19 curve in Greece and around the world. We believe that we have flattened the curve of disease in Greece and we hope to improve the performance our NHS Orthopaedic and Trauma services during the forthcoming autumn if SARS-CoV-2 returns or until treatments and primarily prophylactic vaccines are available.

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Declaration of Competing Interest

None

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