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Letter to the Editor

Impact of coronavirus disease 2019 (COVID-19) on the epidemiology of orthopedics trauma in a region of central Italy



Dear Editor,

The outbreak of Corona Virus Disease 2019 (COVID-19) has had a deep impact worldwide, Italy was among the most affected countries [1].

Italian government have declared lockdown measures and a closure of shops and businesses since 9th March 2020 to reduce the risk of transmission of the virus [2].

The situation of the contagion due to the epidemic of COVID-19 in Italy on 9th April 2020 reported the following data: 143,626 total cases of which 18,279 dead, 28,470 healed, 96,877 positive cases. Of positive cases 32,004 were hospitalized in intensive care (ICU) units and COVID-19 wards. In Marche region, where the hospitals mentioned below are located, on 9th April 2020, 3401 total positive cases were reported, of which 1078 were admitted to the wards indicated [3,4].

Italian National Health Service was faced with a sudden influx of patients needing hospitalization due to the respiratory complication of COVID-19. One of the measures adopted was to reduce as much as possible surgical activity to give priority to trauma and urgent surgery by prohibiting the execution of any elective surgery and outpatient activity. The reasons are to be found in the rationalization of the personnel in favor of emergency departments, ICU and brand new departments used to treat COVID-19 affected patients, and to limit the flow of visitors in the hospital that could be a source of contagion for healthcare staff and patients. Emergency and urgent surgery (orthopedics and others) were guaranteed despite epidemic [1].

Comparing the same periods in 2019 and 2020, it can be seen how the COVID-19 outbreak had a relevant impact on orthopedic surgical treatments, its frequency, type of fracture, anatomical location involved.

From 9th March to 9th April 2019 in two hospitals of Marche region (Department of Orthopaedics and Traumatology, Ascoli Piceno, Level 1 trauma center and Clinical Orthopaedics, Ancona, Level 2 trauma center) a total of 159 orthopaedics surgeries were performed, while in 2020 a total of 74 orthopaedics surgeries were carried out.

All patients were tested for COVID-19 in accordance with protocols established by the Hospitals (pharyngeal swab, blood test). In case of positivity at COVID-19 test, the patient was hospitalized in a specialized COVID-19 ward and treated in surgical theater set up only for COVID-19 patients.

Differentiating patients who underwent surgery due to trauma (e.g. home trauma, street trauma) from those who underwent surgery due to cause of an unavoidable nature or due to other

nature – urgencies - (infection, implant failure, dynamization of implant, etc.) were recorded 73 traumas (46% of total interventions) and 31 urgencies (19%) in 2019 and 63 traumas (85%) and 11 urgencies (15%) in 2020 respectively. Furthermore, we recorded 55 elective interventions (35% of the total number of interventions) in 2019, compared to absence of elective surgery in 2020 (Table 1).

Therefore, total number of surgeries has almost halved in 2020 during the epidemic and this decrease is strongly associated with the absence of elective surgeries. Despite the drop in the number of surgeries performed, if we consider only the surgeries performed for traumatology, there is a slightly decrease in 2020. In our opinion this decrease in number of orthopedic urgent surgical treatments in the COVID-19 pandemic could be due to the decrease of car traffic and consequently to a decrease of traumas deriving from the traffic accidents - high energy traumas, pedestrian injuries -, as well as to a decrease of the recreational and sports activities that could not be held as usual (in gyms, sports fields, swimming pools, etc.) due to closure of public activities by Government order.

Taking into account only the trauma and urgencies of orthopedic surgeries, we recorded 70 lower limb surgical procedures and 34 upper limb surgical procedures in 2019 instead of 50 lower limb surgical interventions and 24 upper limb surgical interventions in 2020 (Table 2).

As showed in Table 3 comparing the anatomical locations is confirmed a decrease with equal distribution between upper and lower limb surgical procedures in the two periods. But a stable number is maintained in surgical operations of humerus, elbow and femur.

Indeed, all domestic accidents that often cause femur fractures or other fall related injuries which often require surgical treatment, have remained unchanged [5–8].

The demographics do not reveal huge differences regarding the gender or the average age of the population that underwent surgical treatment in the comparison between the same periods in 2019 and 2020.

We recorded also that 2019 waiting time for surgery was around a mean of 4.8 days, with an average stay in ward of about 11 days per patient; in 2020 mean waiting time for surgery was about 2.6 days, with an average stay of about 9 days per patient. This is probably due to the different hospital management implemented during the COVID-19 pandemic period [9,10].

Summarizing COVID-19 has had an impact on orthopaedics surgery management in public hospitals. Most of the surgeries performed were traumas while urgencies have been delayed, whenever possible. Elective surgery has been abolished during lockdown period. It is also interesting to note that the epidemiology of orthopedic trauma has decreased with equal distribution between the

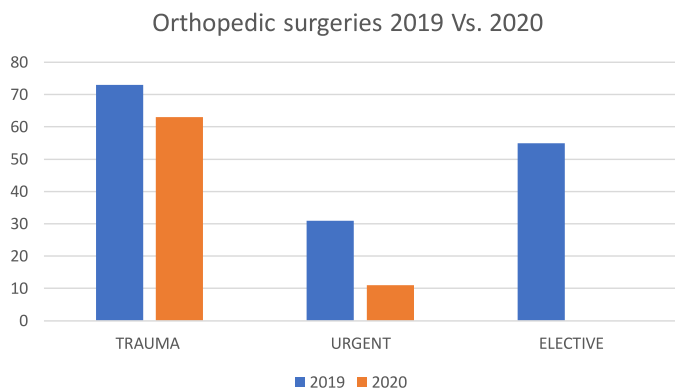


Table 1. – Ortopedic surgeries performed in 2019 and 2020 sorted by trauma, urgent and elective surgery.

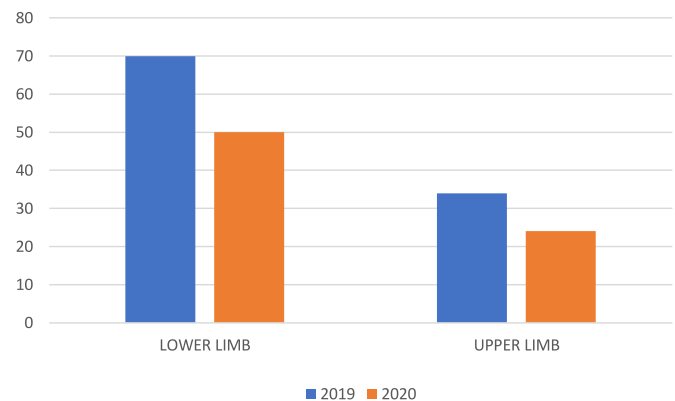


Table 2. – Orthopedic surgeries performed in 2019 Vs. 2020 Lower and Upper limb.

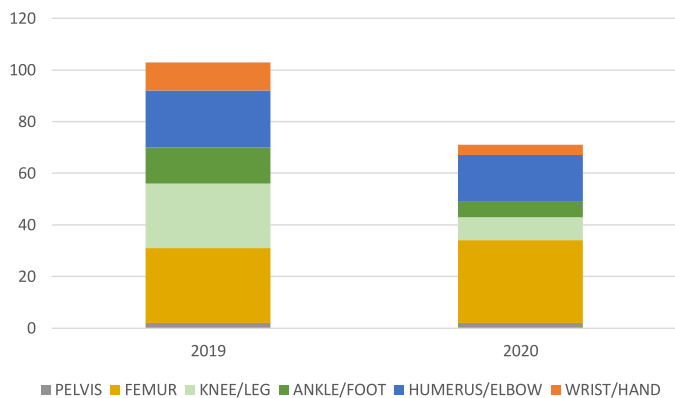


Table 3. – Orthopedic surgeries sorted by anatomical locations.

upper and lower limbs, but fractures of femur, elbow and humerus that often are due to domestic accidents, have remained stable. Finally, there was a decreased duration of both waiting times for surgery and post-operative hospitalization.

Future studies with a larger number of patients and a longer observation period are needed to evaluate the real impact of COVID-19 on the epidemiology of orthopedic trauma surgery.

Declaration of Competing Interest

The authors declare that there are no conflicts of interest.

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References

- [1] Remuzzi A, Remuzzi G. COVID-19 and Italy: what next? *Lancet* 2020;395:1225–8.
- [2] Signorelli C, Scognamiglio T, Odone A. COVID-19 in Italy: impact of containment measures and prevalence estimates of infection in the general population. *Acta Biomed* 2020;91:175–9.
- [3] Regional Operative Group for Sanitary Emergency update: 4/9/2020 <http://www.regione.marche.it/portals/0/Salute/CORONAVIRUS/GoresGiallo9Aprile.pdf>
- [4] Italian government report update 04/09/2020 http://www.salute.gov.it/imgs/C_17_notizie_4431_0_file.pdf
- [5] Court-Brown CM, Duckworth AD, Clement ND, McQueen MM. Fractures in older adults. A view of the future? *Injury* 2018;49:2161–6.
- [6] McClure RJ. Population-based interventions for the prevention of fall-related injuries in older people. *Cochrane Library* 2020. doi:10.1002/14651858.CD004441.pub2.
- [7] Velpula S, Gummadi LP, Vallepu N, Dasari BK, Anchuri SS. Epidemiology of orthopedic trauma admissions in a multispecialty hospital in Warangal-A retrospective study. *Clinical Practice* 2019;16:1423–8.
- [8] The changing epidemiology of open fractures in vehicle occupants, pedestrians, motorcyclists and cyclists -. *ScienceDirect* 2020. doi:10.1016/j.injury.2017.11.009.
- [9] Taylor A, Young A. Epidemiology of Orthopaedic Trauma Admissions Over One Year in a District General Hospital in England. *Open Orthop J* 2015;9:191–3 2015.
- [10] Coccolini F, et al. Surgery in COVID-19 patients: operational directives. *World J Emerg Surg* 2020:15.

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