

The Italian Covid-19 Phase 2 in Piacenza: results of the first semester of 2020 and future prospective of new orthopedics surgical procedures

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Summary. *Introduction:* During the pandemic, Piacenza's Orthopedic and Traumatology Department firstly dealt with the emergency with the complete closure of all the elective surgical and outpatient activities. As general population, also healthcare workers were affected by Coronavirus, increasing difficulties of epidemic management. The aim of our study is to evaluate the activity trend of the first six months of 2020 in our hospital. Data will be compared to the two semesters of 2019, in order to have two objective samples. *Materials and Methods:* We retrospectively analyzed all the orthopedics surgical procedures performed at Guglielmo da Saliceto Hospital (Piacenza, Emilia Romagna, Northern Italy) between January 1st and June 30th 2020. 2019 semesters (January 1st - June 30th 2020 and July 1st - December 31st 2020) have been used as control group to evaluate the activity trend of the first six months of 2020, compared to the two semesters of 2019. *Results:* We noticed a significant increase of domestic and retirement houses accidents, a consistent increase in one-month mortality rate of 2020 first semester and a decrease of mean hospitalization time. About surgical procedures, we detect a drop in the total number: in the first semester of 2020 we performed 499 (-39.9%) surgeries less than the first semester of 2019 and 337 (-30.9%) then the second one. Traumatology recorded a decrease of 27.6% than the first semester of 2019 (-204 surgeries) and of 26.3% than the second one (-191 surgeries). Concerning orthopedic procedures, in comparison to the first semester of 2019 we registered a reduction of 57.6% (-295 surgeries) and of 40.2% to the second semester (-146 surgeries) *Discussion and conclusion:* Covid-19 forced a reorganization of the Italian Health System that led to a clear reduction of surgical procedures performed in the orthopedic and traumatology department. The "Phase 2" can't be consider the last step of the emergency. We surely will have to get used to live with this enemy, at least until we will find an effective cure or a vaccine. (www.actabiomedica.it)

Keywords: Covid-19, orthopedic surgery, trauma surgery

Introduction

On May 4th 2020 Covid-19 Phase 2 officially started with the re-opening of some stores, pubs, restaurants, allowing outside activities still with strict rules about public gathering and social distancing. After two months and a half of hard restrictions people

could return to a slight normality. As far as our department is concerned, planning procedures and outpatients activities could restart, even if many restriction were still in force.

In Italy, the new Coronavirus epidemic started on February 21st 2020, in a small town named Codogno (Lodi, Northern Italy) [1]. From that day on the virus

spread all over the country, forcing cities like Piacenza, Brescia and Bergamo (the most stricken by the virus) to face this terrible pandemic. Thousands of affected patients started to fill the Hospitals, pushing the Italian Health System to its limit through the called “Phase 1” (February 21st – May 3rd 2020) [2]. Our city, Piacenza, quickly became one of the epicenters of the Italian epidemic for its proximity to Codogno [3].

The Guglielmo da Saliceto Hospital has struggled to deliver regular services, also through new internal protocols drafted during the pandemic [4]. The Orthopedic and Traumatology Department dealt with the emergency first with the complete closure of all the elective surgical and outpatient activities (on February 24th), secondly moving the Department to the close Clinic “Casa di Cura Piacenza” (from March 13th), creating two separated units: one in the Hospital, managing Covid-19 positive patients, and one in the clinic, managing Covid-19 free patients [5].

As general population, also healthcare workers were affected by Coronavirus, increasing the difficulties of epidemic management. On July 9th 2020 the total amount of Covid-19 infections among healthcare workers was 29.636. While writing, according to FNOMCeO (the Italian Association of all physicians and dentists), 172 doctors lost their lives during the pandemic [6] while 40 deaths among nurses have been reported by FNOPI (the Italian Association of nurses) [7].

The establishment of the so called “Red Zone” first (from February 24th) and later the Italian national lockdown (in force from March 9th to May 3rd 2020) imposed traffic restrictions, closure of all the schools and universities, many commercial activities, companies and factories, and stopped all the sports activities, definitely reducing people’s movements and, as consequence, the risk of bone fractures [8,9]. Previous studies shows an important decrease in traumas during this period [10,11], reporting the reset of sports traumas and a very significant drop in road and work traumas. Also an unexpected reduction of retirement houses injures was registered in many hospitals, although we still can’t find the reason.

Given the fast spread of the virus inside our country, different hospitals chose different approaches to contain the infection and, at the same time, to

maintain an adequate level of activities. In Piacenza, from over three years, there is a centralization of all surgical fractures of the province, that remained active also during the emergency. Differently, other provinces normally can manage these fractures in more than one structure, but during the pandemic there has been a reorganization of peripheral hospitals, that have been converted in “Covid hospitals”. This decision led to a centralization of surgical fractures of the province on one single center, which could determine a paradoxical increase of surgeries (for example Milano, Parma and few centers near outbreaks). Considering this, it may be difficult to elaborate a trustworthy statistical analysis comparing 2020 activity to the previous year one. In order to obtain reliable data it would be necessary to match the numbers of the entire province (or belonging area) and not of a single hospital.

The aim of our study is to evaluate the activity trend of the first six months of 2020, deeply influenced by Covid-19 epidemic, in the Orthopedic and Traumatology Department of Piacenza, one of the most stricken city in Italy. Data will be compared to the two semesters of 2019, in order to have two objective samples.

We consider data regarding specifically surgical procedures and not general characteristics of the patients (such as sex, age, clinical history), because our goal is to quantitatively determine if Covid-19 influenced the incidence of surgical fractures.

Materials and Methods

We retrospectively analyzed all the orthopedics surgical procedures performed at Guglielmo da Saliceto Hospital (Piacenza, Emilia Romagna, Northern Italy) between January 1st and June 30th 2020. 2019 semesters (January 1st - June 30th 2020 and July 1st - December 31st 2020) have been used as control group. Data comes from our internal operative room registries. These are daily filled by nurses and administrative staff and show reports of every procedure performed inside our Department. Then, every six months a summary is drafted and send to our Head of department to give a general prospective about the surgical activity.

We evaluate the difference in the number of surgeries considering elective activities and traumas, focusing on trauma typology, anatomic region of interest and procedures performed.

Furthermore, we compared the mean hospitalization time and 1 months patients mortality.

Continuous variables were expressed by the mean and standard deviation (SD) and were evaluated by Student T-test or Mann-Whitney U test. The categorical data were expressed as number and percentage (%) and were evaluated by chi-square or Fisher's exact test. The statistical test level was set as $p < 0.05$.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Results

The cohort of the first semester of 2020 is composed by 753 procedures, of which 536 (71.2%) belonging to traumatology [Figure 1] and 217 (28.8%) to orthopedics [Figure 2]. Particularly we registered 156 fractures of the upper limb (20.7%), 307 fractures of the lower limb (40.8%), 9 tendon sutures (1.2%), 64 removal of osteosynthesis devices (8.5%), 92 prosthetic surgery (12.2%), 52 arthroscopies (6.9%), 11 ligaments reconstruction (1.5%), 8 oncological surgeries (1.1%) and 54 minor surgeries (7.1%).

In the first semester of 2019 we performed 1252 surgical operations, of which 740 (59.1%) belonging to traumatology [Figure 3] and 512 (40.9%) to orthopedics [Figure 4]. In specific, 199 fractures of the upper limb (15.9%), 392 fractures of the lower limb (31.3%), 17 tendon sutures (1.4%), 132 removal of osteosynthesis devices (10.5%), 200 prosthetic surgery (16.0%), 125 arthroscopies (10.0%), 11 ligaments reconstruction (0.9%), 21 oncological surgeries (1.7%) and 155 minor surgeries (12.4%).

The second semester of 2019 was characterized by 1090 surgical procedures [Figure 2], of which 727 (66.7%) belonging to traumatology [Figure 3] and 363 (33.3%) to orthopedics [Figure 4]. We calculated 209

fractures of the upper limb (19.2%), 377 fractures of the lower limb (34.6%), 26 tendon sutures (2.4%), 115 removal of osteosynthesis devices (10.6%), 153 prosthetic surgery (14.0%), 56 arthroscopies (5.1%), 26 ligaments reconstruction (2.4%), 16 oncological surgeries (2.5%) and 112 minor surgeries (10.3%).

During the epidemic, the total number of surgeries due to domestic and retirement houses accidents has increased significantly, going from 53% in the month of March 2019 to 79.8% in March 2020. Moreover, a consistent decrease in surgeries due to roadside accidents (from 18.6% to 7.3%) and work injuries (from 15.6% to 8.3%) was recorded. Finally, sports injuries had a total reset (from 4.2% to 0.0%).

A decrease of mean hospitalization time has been registered. We excluded from this analysis Covid-19 patients since they were transferred to other departments for the management of other clinical issues. About Covid-19 free patients, instead, the upper limb traumas mean time of hospitalization changed from 7.1 days to 5.7 days (p value < 0.05), while lower limb traumas went from 10.3 days to 7.4 days (p value < 0.05).

We recorded a consistent increase in one-month mortality rate of 2020 first semester, especially among hip fractures patients: 29 deaths out of 200 patients in 2020 (14.5 %) compared to 12 deaths out of 247 in 2019 (4.8%) with an increase of 9.7% (p value < 0.05).

Discussion

Covid-19 had a devastating effect on population, particularly on the elderly category [13]. Recent studies show how this infection causes also a more complex post-operative course, resulting in a significant percentage increase in deaths [10,11], as we recorded in our hospital. Furthermore, in our department we registered a decrease in the number of surgeries in comparison with previous months. We have to consider that from February 24th 2020 the entire elective surgical activity has been stopped because of the Covid-19 pandemic explosion. In hindsight, this decision was the wiser one, especially if we consider that the typical orthopedic patient is old and fragile, because of different comorbidities.

TRAUMA SURGERIES 2020

PROCEDURES	JAN	FEB.	MAR.	APR.	MAY	JUN
METACARPUS	16	11	6	6	8	5
WRIST (PLATE)	0	4	3	5	4	9
WRIST (EXTERNAL FIXATION)	0	0	0	0	0	0
WRIST (K-WIRE)	1	0	1	1	0	0
FOREARM	4	0	0	0	1	2
RADIAL CAPITAL	0	1	0	1	1	0
HUMERUS (K-WIRE)	5	0	0	1	0	1
HUMERUS (1 TYPE NAIL)	7	4	1	2	5	4
HUMERUS (2 TYPE NAIL)	0	4	0	0	0	3
HUMERUS (2 TPYE PLATE)	0	1	1	0	0	0
HUMERUS (EXTERNAL FIXATION)	1	0	0	1	0	0
HUMERUS (CANNULATED SCREWS)	0	1	1	0	0	0
HUMERUS (2 TYPE PLATE)	0	0	0	0	1	0
CONDYLE HUMERAL	4	0	3	0	1	5
CLAVICLE	1	1	0	0	0	3
SHOULDER REPLACEMENT	2	0	1	0	0	1
FEMUR FRACTURE (THA)	5	6	3	3	4	4
FEMUR FRACTURE (CEMENTED HHA)	1	0	0	0	0	0
FEMUR FRACTURE (UNCEMENTED HH)	16	7	6	3	2	11
PERTHROCANTERIC FRACTURE (TYP	12	4	10	8	2	10
PERTHROCANTERIC FRACTURE (TYP	1	1	1	1	0	1
PERTHROCANTERIC FRACTURE TYPE	2	1	2	0	0	0
PERTHROCANTERIC FRACTURE TYPE	1	0	0	0	0	0
PERTHROCANTERIC FRACTURE TYPE	3	1	1	0	0	0
PERTHROCANTERIC FRACTURE TYPE	0	0	0	0	0	0
PERTHROCANTERIC FRACTURE TYPE	8	3	7	3	3	5
PERTHROCANTERIC FRACTURE (1 TP	1	0	0	0	0	0
PERTHROCANTERIC FRACTURE (TYP	0	1	0	0	0	0
PERTHROCANTERIC FRACTURE (2 TF	0	1	4	6	3	0
PERTHROCANTERIC FRACTURE (CAN	5	5	5	4	1	2
FEMURAL DIAPHYSIS (PLATE)	0	0	0	0	0	0
FEMURAL DIAPHYSIS (NAIL)	1	0	1	1	0	2
FEMURAL DIAPHYSIS (EXTERNAL FIX	0	0	0	0	0	0
FEMORAL CONDYLE (PLATE)	2	0	1	1	0	1
FEMORAL CONDYLE (CANNULATED S	0	0	0	0	0	0
KNEECUP	3	0	0	0	0	4
TIBIA (NAIL)	1	0	0	0	1	4
TIBIA (EXTERNAL FIXATION)	3	1	0	3	1	2
TIBIA (PLATE)	0	0	1	0	0	0
TIBIAL PLATE (PLATE)	2	4	2	1	0	2
TIBIAL PLATE (CANNULATED SCREWS	2	0	0	0	0	0
MALLEOLUS (PLATE-SCREWS)	8	7	7	6	1	7
MALLEOLUS (K WIRE)	0	0	0	0	0	0
MALLEOLUS (CANNULATED SCREWS	3	0	1	2	0	0
METATARSUS (K-WIRE)	2	0	0	0	1	2
PELVIS (EXTERNAL FIXATION)	0	0	0	0	0	0
PELVIS (PLATE)	0	0	0	1	0	0
PERIPROSTHETICAL FRACTURE	4	1	1	1	1	1
CALCANEUS (PLATE)	0	0	0	1	0	0
CALCANEUS (K-WIRE)	0	1	0	1	0	0
QUADRICEPS TENDON	0	1	0	0	0	0
ACHILLES TENDON	0	3	0	1	2	2
OSTEOSYNTESIS DEVICE REMOVAL	23	21	3	5	5	7

Figure 1

ORTHOPEDIC SURGERIES 2020

PROCEDURES	JAN	FEB.	MAR.	APR.	MAY	JUN
THR	20	17	0	0	4	18
TKR	6	5	0	0	2	8
UNICOMPARTIMENTAL KNEE ARTRHOPLASTY	0	0	0	0	1	0
ACETABULAR CUP REVISION	1	1	0	0	0	0
HIP STEM REVISION	1	1	0	0	0	0
TOTAL THR REVISION	0	1	0	0	0	1
TOTAL TKR REVISION	1	0	0	0	0	1
ACL SEMITENDINOSUS TENDON	1	2	0	0	1	1
ACL ARTIFICIAL	3	2	0	0	0	1
SHOULDER ARTHROSCOPY	3	1	0	0	1	0
KNEE ARTHROSCOPY	17	13	0	1	7	8
WRIST ARTHROSCOPY	0	0	0	0	0	0
ANKLE ARTHROSCOPY	0	0	0	0	1	0
SHOULDER MINIOPEN	0	2	0	0	0	1
PERCUTANEUS HALLUX VALGUS	7	2	0	0	1	2
BOSCH HALLUX VALGUS	2	0	0	0	0	1
CARPAL TUNNEL SYNDROME - TRIGGER FINGER	3	1	0	0	0	0
DE QUERVAIN - DUPUYTREN	4	3	0	0	1	0
LIPOMA/CYST/TUMORS	8	4	0	0	3	3
ENDORTHESIS	0	0	0	0	0	0
PEDIATRIC SURGERY	3	0	0	0	0	0
ONCOLOGICAL SURGERY	3	4	0	0	0	1
WRIST ARTHRODESIS	0	0	0	0	0	0
ANKLE ARTHRODESIS	0	0	0	0	0	0
ANKLE PROSTHESIS	0	0	0	0	0	0
ELBOW PROSTHESIS	0	0	0	0	0	0
SHOULDER PROSTHESIS	0	0	0	0	0	0
HALLUX PROSTHESIS	0	0	0	0	1	2
METATARSAL PROSTHESIS	0	0	0	0	0	0
DENERVATION / RADIOTHERAPY	1	1	0	0	0	1

Figure 2

From that day and for all the Phase 1, we only performed procedures that couldn't be postponed. Theoretically, the elective surgical activity could restart from that date, but in practice it was not immediately possible. We needed more time to reorganize, considering the massive amount of procedures that had to be performed and the need of separate access paths (Covid-19 free and Covid-19 positive), both for orthopedic

and traumatology patients. Consequently we planned the first surgery on May 18th 2020, starting from the most urgent ones. In the end, we lost three months of elective surgical activity.

Government Decrees and the consequent limitations of movements and allowed activities led to a redistribution of traumatic dynamics. The 2020 trend is characterized by a significant increase in the number

TYPE OF TRAUMA SURGERIES 2019

PROCEDURES	JAN	FEB.	MAR.	APR.	MAY	JUN	JUL	AUG	SEP	OCT	NOV.	DEC
METACARPUS	10	6	9	10	12	6	9	13	6	12	9	9
WRIST (PLATE)	10	3	3	2	7	5	4	2	4	6	4	2
WRIST (EXTERNAL FIXATION)	0	0	0	0	0	0	2	1	0	0	0	0
WRIST (K-WIRE)	2	0	2	1	1	2	7	1	3	3	3	1
FOREARM	0	2	4	3	2	3	1	2	5	1	1	1
RADIAL CAPITAL	0	0	0	2	1	0	0	2	0	0	0	2
HUMERUS (K-WIRE)	0	1	0	0	0	1	1	2	0	0	2	1
HUMERUS (1 TYPE NAIL)	5	6	8	10	6	9	5	6	6	0	6	5
HUMERUS (2 TYPE NAIL)	3	2	0	0	0	0	0	0	1	0	1	3
HUMERUS (2 TPYE PLATE)	0	1	0	0	0	0	0	0	0	0	0	0
HUMERUS (EXTERNAL FIXATION)	0	1	0	3	0	0	1	0	0	1	0	0
HUMERUS (CANNULATED SCREWS)	0	0	0	0	0	1	1	1	0	2	1	0
HUMERUS (2 TYPE PLATE)	0	0	0	1	0	0	0	0	2	0	1	1
CONDYLE HUMERAL	1	2	3	5	2	3	5	3	0	1	6	10
CLAVICLE	4	2	2	5	2	1	1	6	3	6	0	1
SHOULDER REPLACEMENT	0	0	0	0	0	1	0	1	0	0	0	0
FEMUR FRACTURE (THA)	1	7	7	1	8	4	6	7	1	2	3	8
FEMUR FRACTURE (CEMENTED HHA)	1	0	3	0	0	0	0	0	0	0	0	0
FEMUR FRACTURE (UNCEMENTED HHA)	5	3	4	12	15	6	8	5	10	9	7	12
PERTHROCANTERIC FRACTURE (TYPE 1 NAIL)	12	7	4	5	7	5	6	9	9	11	8	9
PERTHROCANTERIC FRACTURE (TYPE 1 LONG NAIL)	2	2	4	2	1	2	2	1	1	3	1	0
PERTHROCANTERIC FRACTURE TYPE 2 NAIL)	2	5	0	3	4	2	1	2	5	2	4	3
PERTHROCANTERIC FRACTURE TYPE 2 LONG LON)	0	0	0	2	0	1	0	0	0	0	0	0
PERTHROCANTERIC FRACTURE TYPE 3 NAIL)	2	4	6	3	2	1	2	2	0	5	1	3
PERTHROCANTERIC FRACTURE TYPE 4 NAIL)	0	0	0	1	3	1	3	2	2	3	1	0
PERTHROCANTERIC FRACTURE TYPE 5 NAIL)	7	5	8	6	7	3	3	5	2	5	10	3
PERTHROCANTERIC FRACTURE (1 TPYE PLATE)	3	1	0	3	0	2	2	0	0	0	0	0
PERTHROCANTERIC FRACTURE (TYPE 6 NAIL)	0	0	1	0	2	2	1	0	0	2	0	0
PERTHROCANTERIC FRACTURE (2 TPYE PLATE)	0	0	0	0	0	0	4	0	1	0	0	0
PERTHROCANTERIC FRACTURE (CANNULATEED SC)	6	3	5	6	5	2	5	6	4	6	1	8
FEMURAL DIAPHYSIS (PLATE)	1	0	0	1	0	0	0	0	0	0	0	1
FEMURAL DIAPHYSIS (NAIL)	2	1	0	0	0	0	0	3	1	0	0	0
FEMURAL DIAPHYSIS (EXTERNAL FIXATION)	1	0	0	0	0	1	0	0	0	0	0	0
FEMORAL CONDYLE (PLATE)	1	0	3	2	1	2	2	3	2	0	1	1
FEMORAL CONDYLE (CANNULATED SCREWS)	0	0	0	0	0	0	0	1	0	0	0	0
KNEECUP	0	1	2	0	2	1	1	2	1	1	1	0
TIBIA (NAIL)	2	0	1	4	2	0	1	0	0	1	1	0
TIBIA (EXTERNAL FIXATION)	4	0	1	3	2	2	4	1	2	2	1	4
TIBIA (PLATE)	0	0	0	1	0	1	0	0	0	0	0	0
TIBIAL PLATE (PLATE)	2	0	4	0	2	5	0	1	2	0	3	5
TIBIAL PLATE (CANNULATED SCREWS)	0	1	4	1	1	1	1	1	2	1	1	0
MALLEOLUS (PLATE-SCREWS)	6	10	11	9	4	6	9	8	2	8	9	5
MALLEOLUS (K WIRE)	0	0	0	1	0	0	1	0	0	1	1	0
MALLEOLUS (CANNULATED SCREWS)	0	0	2	2	1	7	3	0	3	4	2	1
METATARSUS (K-WIRE)	1	2	0	0	3	1	0	2	1	2	1	0
PELVIS (EXTERNAL FIXATION)	0	0	0	0	0	0	0	0	0	0	0	0
PELVIS (PLATE)	0	0	1	0	0	1	0	0	0	0	0	2
PERIPROSTHETICAL FRACTURE	0	0	0	4	1	2	1	0	0	2	0	0
CALCANEUS (PLATE)	0	0	0	1	0	0	0	0	0	0	0	0
CALCANEUS (K-WIRE)	0	0	0	1	0	0	1	1	2	3	0	0
QUADRICEPS TENDON	0	0	0	2	1	1	2	1	0	1	0	1
ACHILLES TENDON	1	3	1	1	3	4	3	5	4	3	4	2
OSTHEOSYNTESIS DEVICE REMOVAL	31	24	22	7	31	17	24	13	15	31	24	8

Figure 3

ORTHOPEDIC SURGERIES 2019												
PROCEDURES	JAN	FEB.	MAR.	APR.	MAY	JUN	JUL	AUG	SEP	OCT	NOV.	DEC
THR	18	16	20	22	28	22	6	11	20	29	15	16
TKR	10	7	10	12	10	8	3	1	7	13	7	7
UNICOMPARTIMENTAL KNEE ARTRHOPLASTY	0	0	0	0	0	0	0	0	0	0	0	0
ACETABULAR CUP REVISION	0	1	2	1	0	0	0	1	1	1	1	2
HIP STEM REVISION	0	1	1	0	0	1	1	1	1	1	0	1
TOTAL THR REVISION	0	0	0	1	0	1	1	0	0	0	1	1
TOTAL TKR REVISION	0	1	0	0	1	0	0	0	0	0	1	1
ACL SEMITENDINOSUS TENDON	0	2	1	1	1	2	2	0	3	2	1	4
ACL ARTIFICIAL	0	0	2	0	2	0	2	0	5	2	2	3
SHOULDER ARTHROSCOPY	1	3	3	3	6	2	2	1	0	2	1	0
KNEE ARTHROSCOPY	17	17	17	18	16	19	10	7	10	7	13	3
WRIST ARTHROSCOPY	0	0	0	0	0	0	0	0	0	0	0	0
ANKLE ARTHROSCOPY	1	1	0	0	1	0	0	0	0	0	0	0
SHOULDER MINIOPEN	4	2	1	1	1	0	0	0	3	0	0	1
PERCUTANEUS HALLUX VALGUS	6	12	10	8	10	5	3	3	9	6	10	1
BOSCH HALLUX VALGUS	2	3	2	0	1	2	0	0	0	0	3	0
CARPAL TUNNEL SYNDROME - TRIGGER FINGER	1	0	3	1	0	2	0	0	3	2	0	2
DE QUERVAIN - DUPUYTREN	2	1	2	3	2	0	0	0	2	3	7	2
LIPOMA/CYST/TUMORS	3	6	11	6	3	2	5	5	5	5	2	1
ENDORTHESIS	0	1	0	0	0	1	4	1	0	0	1	0
PEDIATRIC SURGERY	2	2	3	3	5	4	0	0	4	0	0	4
ONCOLOGICAL SURGERY	4	2	3	4	4	4	4	0	3	4	3	2
WRIST ARTHRODESIS	0	0	0	0	0	0	0	0	0	4	5	0
ANKLE ARTHRODESIS	0	0	1	0	0	0	0	0	0	0	0	0
ANKLE PROSTHESIS	0	0	0	0	0	0	0	0	0	0	0	0
ELBOW PROSTHESIS	0	0	0	0	0	0	0	0	0	0	0	0
SHOULDER PROSTHESIS	1	0	1	0	0	0	0	0	0	0	1	0
HALLUX PROSTHESIS	0	0	0	0	0	1	0	0	0	0	0	1
METATARSAL PROSTHESIS	0	1	1	0	1	0	0	0	0	0	0	0
DENERVATION / RADIOTHERAPY	2	3	2	1	5	2	0	2	3	1	0	0

Figure 4

of domestic and retirement houses accidents, coherent with the restrictions of the lockdown. While we register a consistent reduction of roadside accident, work injuries and a total reset of sport injuries, as other studies have already demonstrated [10].

Covid-19 forced changes in post-operative management of patients. As we saw in our department, the mean hospitalization time deeply reduced because of many reasons: first of all patients and relatives were scared of the possibility of contracting the virus inside the hospital and preferred faster dismissions. They were also more prone to manage the post-operative rehabilitation at home instead of long-term care structures. Finally, due to the department reorganization the lower number of available beds forced us to frequent turnovers.

In agreement with the Health Direction we split the activity: traumatology surgeries and emergency room (E.R.) are now performed at the Hospital,

while orthopedic procedures and outpatients visits are planned at Casa di Cura Piacenza (exception for those complex patients with high anaesthesiological risk that we still prefer to perform in the Hospital since there isn't an Intensive Care Unit at the Clinic in case of emergency). Furthermore, we maintain a unit in both facilities, with 34 beds at the Hospital and 21 at the Clinic. Many meetings have been required to clearly settle the new organization, since several problems needed to be solved (managing of operating rooms, two departments, planning of elective activities, elaboration of new informed consent). Aware of the high risk of a new outbreak, we kept a back-up plan to be constantly ready to reconvert the hospital in Covid-19 emergency structure.

Taking into account this dramatic experience, we have also created specific routes for patients accessing E.R.. Now patients have to firstly pass through a pre-triage area, where a nurse checks possible risk factors

for Covid-19 and a specialist performs lung ultrasound. Basing on the results of these preliminary evaluations, patients undergo lung CT or lung X-rays. In addition, every patient is tested with 2 nasopharyngeal swabs. The negativity of the first one allows hospitalization in a passage area of our ward, where patients remain until we receive the result of the second one. At the end of this procedure, they are transferred into our orthopedic department. Also, an informed consent has been created to explain to patients the consisting risk of contracting Covid-19 during the recovery.

Another issue we encountered was the inevitable expansion of the user base, due to the conversion of peripheral hospitals (Fiorenzuola and Castel San Giovanni) into "Covid hospitals". The consequence of this scenario was a significant increase in the number of patients we have to manage and, in addition, orthopedics where remarkably less than usual, because of the spread of the virus among us (10 doctors out of 18 were infected and forced to remain at home). Currently, all patients in the province of Piacenza, as well as many inhabitants of the nearby provinces of Lodi and Cremona, belong to our hospital.

Analyzing data of the first six months of 2020 and the previous 12 months, we detect a consistent drop in the total number of surgeries: in the first semester of 2020 we performed 499 (-39.9%) surgeries less than the first semester of 2019 and 337 (-30.9%) than the second one.

In specific, traumatology recorded a decrease of 27.6% in comparison to the first semester of 2019 (-204 surgeries) and a decrease of 26.3% in comparison to the second semester (-191 surgeries).

- Compared to the first semester of 2019, we register a reduction in surgical lower limb fractures of 21.7% (-85 surgeries), in surgical upper limb fractures of 23.6% (-43 surgeries) and in removal of surgical devices of 51.5% (-68).

- Compared to the second semester of 2019, we register a reduction in surgical lower limb fractures of 18.6% (-70 surgeries), in surgical upper limb fractures of 25.4% (-53 surgeries) and in removal of surgical devices of 44.3% (-51).

- Femur surgery is the most performed in our department. Analyzing data concerning these specific procedures, we detect a drop of 24.5% respect to the

first semester of 2019 (-49 surgeries) and of 23.5% respect to the second one (-47 surgeries).

Concerning orthopedic procedures, in comparison to the first semester of 2019 we registered a reduction of 57.6% (-295 surgeries) and of 40.2% to the second semester (-146 surgeries). In our department the most performed surgeries are total hip arthroplasty (THA), total knee arthroplasty (TKA), hallux valgus (HVA) and arthroscopic knee surgery (AKS). Analyzing data about these procedures we noticed:

- Compared to the first semester of 2019, we performed 207 procedures less (-59.5%), with a drop of 53.2% for THA, 63.2% for TKA, 75.4% for HVA and 55.8% for AKS.

- Compared to the second semester of 2019, we performed 79 procedures less (-35.9%), with a drop of 39.2% for THA, 44.7% for TKA, 34.6% for HVA and 8% for AKS.

However, we need to clarify that in the second semester of every year we record a decrease in number of operated patients, especially in July and August because of summer season and related holidays [13]. In fact, comparing the total amount of orthopedic surgeries performed in the two semesters of 2019 we detect a reduction of 29.1%.

The results describing the elective activity aren't unexpected, considering the obligated stop we had to undergo. Anyway, we need to better clarify those regarding the traumatology data. Probably two variables played a decisive role in this trend. First of all, the lockdown imposed by the Government to control the epidemic deeply restricted people's daily life (elderlies forced to stay home, closure of commercial activities, stores, factories and massive limitations to movements which reduce work and road-side injuries, ban of any sport activity) leading to a natural reduction of dangerous dynamics. Moreover, people were so scared of getting in touch with the infection that refuse the surgical treatment we indicated, asking for a conservative one (especially for upper limb fractures). During "Phase 1" weeks, some patients even avoided the access to the E.R. managing traumas such as upper limb or hand fractures by themselves. This behavior, particularly adopted by the elderlies, led to nonunion and malunion, we got to diagnose in May and July (Figure 5).

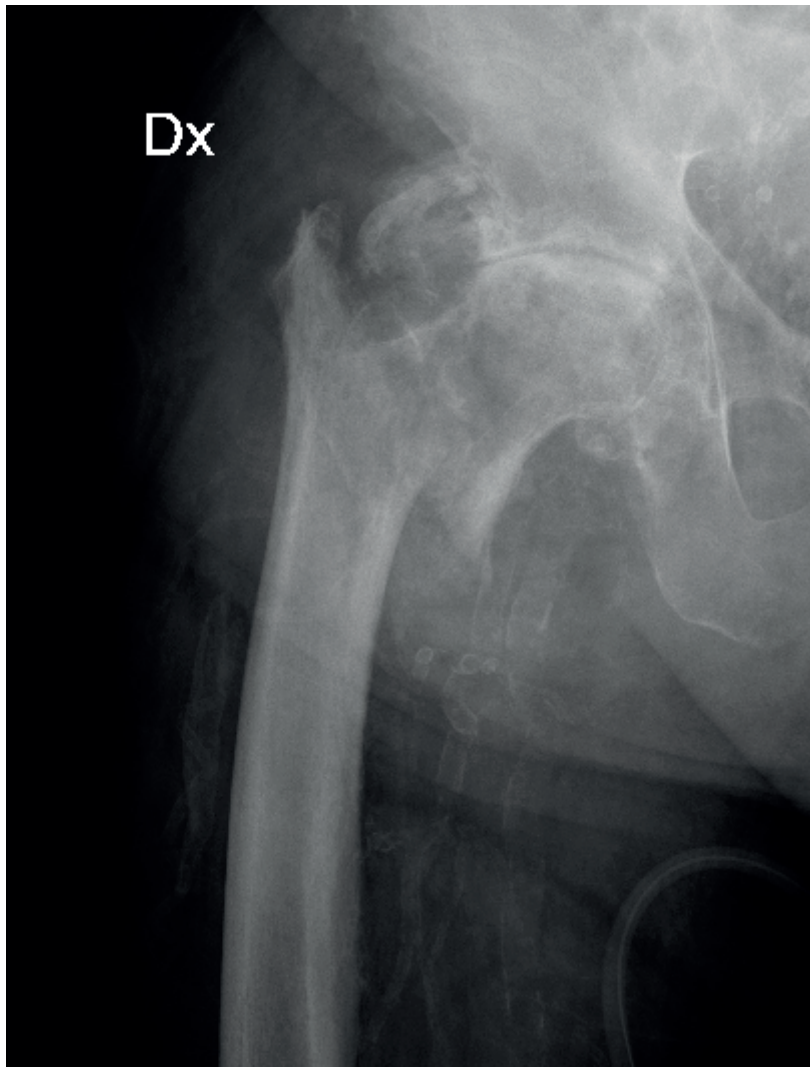


Figure 5

Conclusion

Last months events forced a reorganization of the Italian Health System that has never been seen before. After long weeks of meetings and important decisions, today we can look forward and think about a restart. In addition to our usual job, now we must at the same time stem the spread of this virus and be ready for a possible rebound, using new protocols and arrangements.

Covid-19 pandemic caused a clear reduction of surgical procedures performed in the orthopedic and

traumatology Department of Piacenza (-499 operations than the first semester of 2019 and - 337 than the second). This was mainly due to the stop of the elective surgery activity for about three months and to the consistent drop of traumas determined by both the restriction imposed by the lockdown and people's fear of acceding the E.R..

The "Phase 2" can not be consider the last step of the emergency. We surely will have to get used to live with this enemy, at least until we will find an effective cure or a vaccine.

Conflict of Interest

The authors, their immediate families, and any research foundations with which they are affiliated have not received any financial payments or other benefits from any commercial entity related to the subject of this article

Statement

This statement is to certify that all Authors have seen and approved the manuscript being submitted. We warrant that the article is the Authors' original work. We warrant that the article has not received prior publication and is not under consideration for publication elsewhere. On behalf of all Co-Authors, the corresponding Author shall bear full responsibility for the submission.

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