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Original article

## Organization of outpatient consultations at a hand surgery department in a French university hospital during the COVID-19 lockdown

*Organisation des consultations externes dans un centre hospitalo-universitaire de chirurgie de la main français pendant la période de confinement de la crise sanitaire due à la Covid-19*

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### ARTICLE INFO

#### Article history:

Received 29 April 2020

Received in revised form 28 September 2020

Accepted 9 October 2020

Available online 29 October 2020

#### Keywords:

Outpatient consultations

Coronavirus

COVID-19

Teleconsultation

Telework

COVID-19 patient

#### Mots-clés:

Consultations externes

Coronavirus

Covid-19

Téléconsultations

Télétravail

Covid-19 patients

### ABSTRACT

The COVID-19 health crisis has greatly impacted the organization of outpatient consultations, especially in hand surgery. Five reorganization stages were described during the crisis (from week 11 to week 21 in 2020): preparatory stage, 1st organizational stage, wait-and-see stage, 2nd organizational stage, and progressive return stage. The number of patients seen on-site decreased 64% in 2020 compared to 2019, while 78% of consultations were canceled. The logistics (teleconsultation, dedicated COVID-19 patient pathways) and human resources (sick leave, telework, reassignment to other departments) were adapted to ensure that patients who are usually seen in our hand surgery department received adequate care.

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### R É S U M É

La crise sanitaire COVID-19 a fortement impacté l'organisation des services de consultations externes, notamment en chirurgie de la main. Cinq phases de réorganisation des consultations externes ont été décrites durant la crise (de la semaine 11 à la semaine 21 en 2020) : une phase préparatoire, une 1<sup>ère</sup> phase organisationnelle, une phase attentiste, une 2<sup>nd</sup>e phase organisationnelle et une phase de reprise progressive. Le nombre de patients venus en présentiel a baissé en 2020 par rapport à 2019 de 64.5% tandis que 78.2% des créneaux de consultations ont été annulés. Une adaptation des moyens logistiques (téléconsultations, circuits COVID-19) et des moyens humains (arrêts de travail, télétravail, réaffectation dans d'autres services) a été parallèlement instaurée au décours des semaines, ce qui a permis une poursuite adaptée à la crise sanitaire, de la prise en charge des patients habituellement suivis en consultation de chirurgie de la main.

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## 1. Introduction

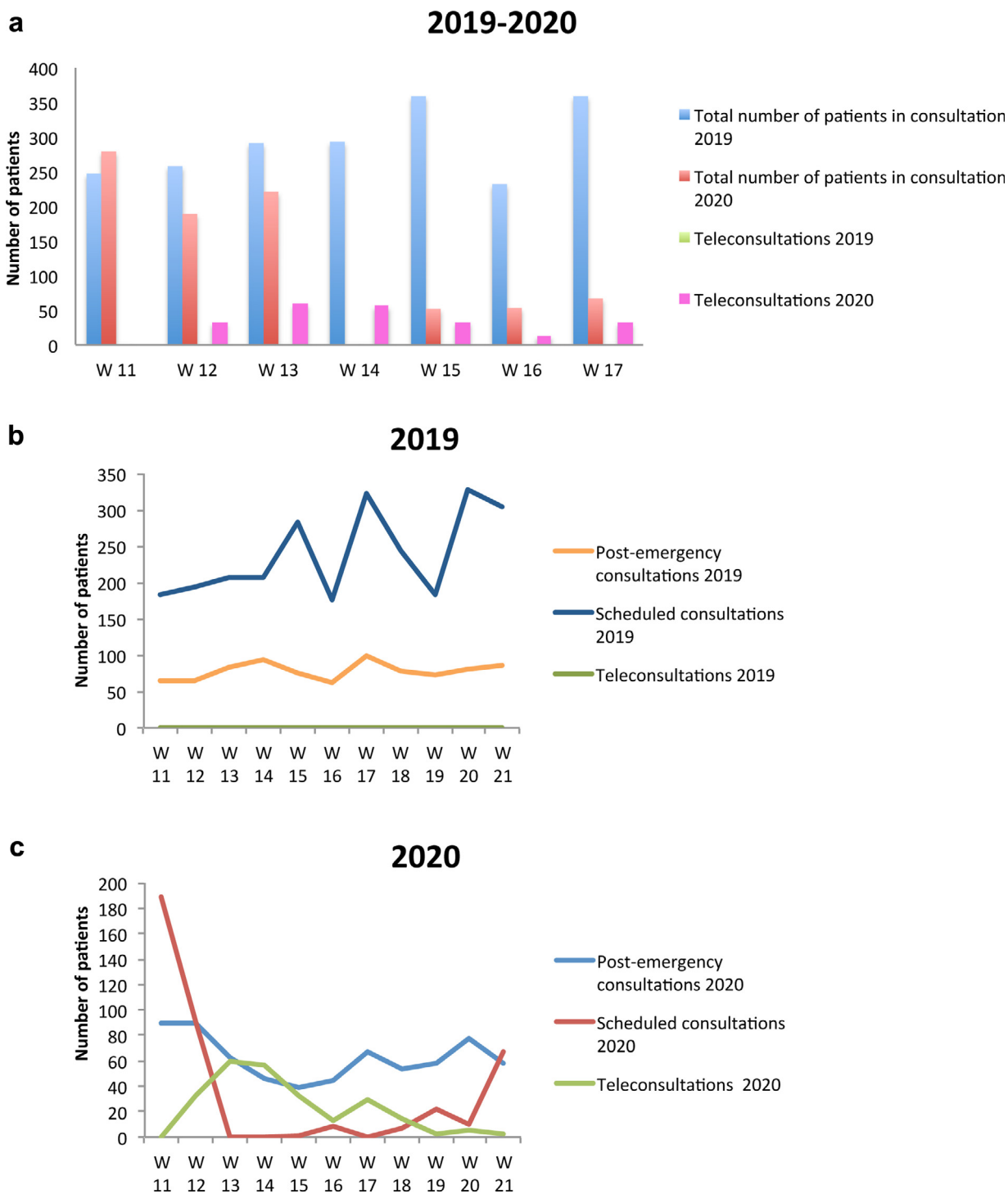
The health crisis due to coronavirus (COVID-19) hit France during the 1st quarter of 2020. A lockdown was initiated on March 17th, 2020 after stage 3 of the epidemic was reached on the March

14th [1]. A public health emergency was declared on March 23rd, 2020, forcing hospitals to enforce the White Plan (“Plan Blanc”) [2–4]. The White Plan had four goals: mobilization of all healthcare facilities, mobilization of health professionals, mobilization of health supplies and logistics from private and public facilities, adaptation of the medical activity at these facilities [5].

In the week leading to the lockdown, the crisis unit at our hospital decided to cancel all non-urgent surgical procedures in

March to preserve human resources and medical supplies for the care of COVID-19 patients as recommended by the Regional Health Agency. The 1st stage of easing of the lockdown started May 11th, 2020.

Like other surgical departments in other countries [6], outpatient consultations for hand surgery had to abide by the White Plan’s rules and four goals, even more so in one of the French regions most severely hit by the pandemic. Our team had to adapt



**Fig. 1.** (a) Total number of patients seen for in-person consultation (post-emergency and scheduled) and teleconsultation from W11 to W21 in 2019 and 2020. (b) Change in the number of patients seen in post-emergency or scheduled consultations and teleconsultations from W11 to W21 in 2019. (c) Change in the number of patients seen in post-emergency or scheduled consultations and teleconsultations from W11 to W21 in 2020.

to follow the guidelines issued by the government, especially the physical distancing measures [7], while providing optimal medical care for patients [8].

The goal of this study was to describe the progressive adaptation of our hand surgery practice for outpatient consultations during the health crisis related to the COVID-19 pandemic.

## 2. Material and methods

We studied the organizational modifications implemented at our outpatient consultations after the first cases of COVID-19 appeared in France. Our hand surgery department has seven surgeons in a teaching hospital context. We compared the activity between 2019 (considered as the reference year without pandemic) and 2020 (year studied during the COVID-19 pandemic) during the same time frame. Three criteria were studied between weeks 11 and 21 (W11–W21): patient, consultation, and logistics (manpower and supplies).

For the “patient” criteria, we counted the number of patients at the consultation (differentiating those seen after an emergency from those seen for a scheduled consultation), the number of patients who did not show up for their consultation and the number of patients treated using teleconsultation (telephone or videoconference) for each week in 2019 and 2020. Headcounts, variation in attendance (in percentage) between 2020 and 2019 and variation in no-shows at the consultations are shown in Fig. 1 a,b,c. The pathologies and mechanisms of injury of patients presenting at the emergency room, number of surgical inter-

ventions and results of COVID-19 screening by PCR for operated patients during the lockdown were also recorded. All pathologies and mechanisms of injury seen during post-emergency consultations in 2020 were studied and compared with 2019 over the same period.

For the “consultation” criteria, we documented all modifications (delays, cancellations, creations, rescheduled) in the various outpatient consultations.

For the “logistics” criteria, we counted the number of available staff members in this time frame (secretaries, doctors, nurses, physiotherapists, occupational therapists), as well as all the modifications made to the premises and organization of the consultation.

## 3. Results

For the “patient” criteria, the results for each week are summarized in Fig. 1a,b,c. During this period, the number of patients seen for consultations decreased 64% between 2019 and 2020 (3426 patients vs 1216), with 58% sustained consultations. Among those patients, the proportion of patients seen for a scheduled consultation decreased 81% (2095 patients vs 395), and the patients seen for a post-emergency consultation decreased 20% (860 patients vs 687). While no patients were seen using teleconsultation in 2019 (Fig. 1b), 248 patients were treated this way in 2020, with a stabilization of this number after week 14 (W14). The study also showed that the rate of no-shows in outpatient consultation increased moderately from 258/2922 in

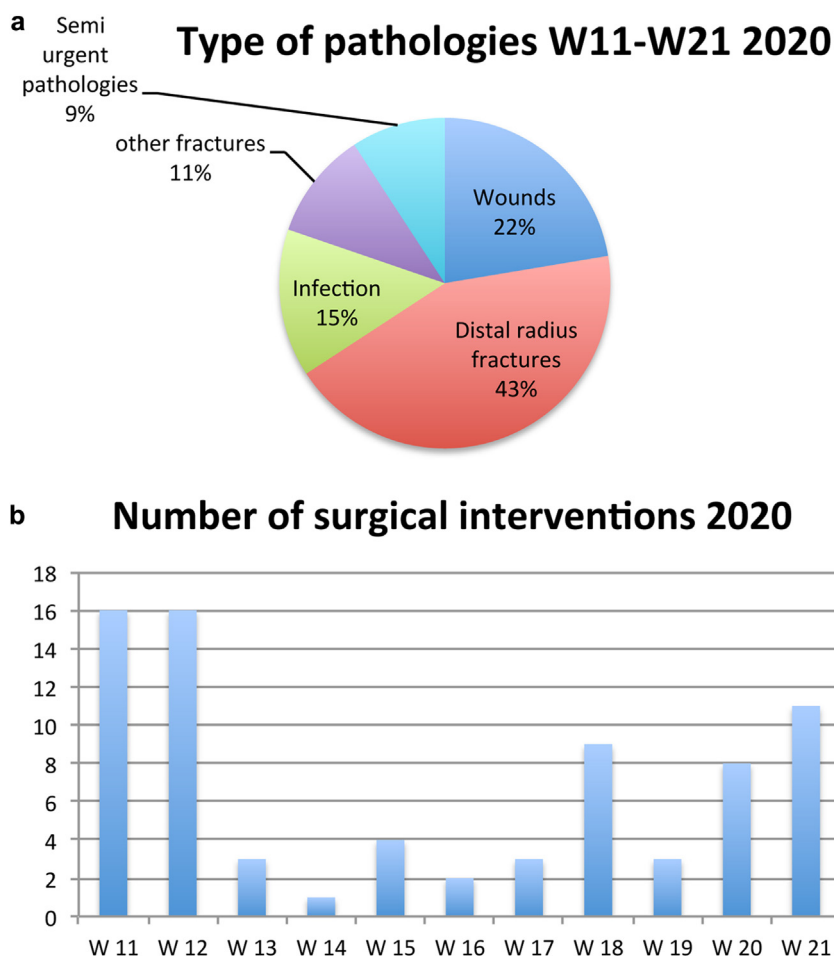


Fig. 2. (a) Type of hand pathologies seen during the lockdown (W11–W21) in 2020. (b) Number of surgical interventions performed during the lockdown (W11–W21) in 2020.

2019 (9%) to 127/1216 in 2020 (10%). The five main pathologies that were treated surgically during W11–W21 were lacerations, infections, distal radius fractures, hand fractures (e.g. metacarpal bones), other semi-urgent diseases (Fig. 2a). For patients seen in the emergency room, the mechanism of injury was mainly wounds, sometimes after a fight during confinement at home; there was a decrease in the number of accidents at work while the number of road accidents was the same. Approximately 2 patients were operated per day during W13–W17 (Fig. 2b). All our COVID-19 screenings for operated patients during the lockdown were negative. The percentage of COVID-19 positive patients in the consultation between weeks 11 and 20 was 0.5% (tests started on W14). All pathologies and mechanisms of injury such as the circumstances of the accidents seen during post-emergency consultations were compared between 2019 and 2020 over the same period (Figs. 3a,b and 4a,b).

For the “consultation” criteria, the consultation was normally run by seven hand surgeons during W11–W21 of 2019: 18 slots for scheduled consultations, 2 slots for pediatric consultations, 3 slots for private consultations and 5 slots for post-emergency consultations. During the pandemic, starting at week 13, consultations only took place in the morning; all afternoon consultations were cancelled (Table 1). A total of 18 consultations slots were cancelled

each week (78%). One week after the lockdown was eased (W21) only 10 slots were cancelled. The patients who had scheduled consultations for “semi-urgent” conditions were seen during the post-emergency consultation slots (infection, hardware removal, cast renewal, corticosteroid injections, etc.). Teleconsultations were not used in 2019 in the department and were all initiated during the COVID-19 pandemic (Fig. 1a,b,c). These consultations took place either in the morning alongside the post-emergency consultations with a different surgeon or in the afternoon for private and physiotherapy consultations (created in 2020).

For the “manpower and supply logistics” criteria, the normal number of medical and paramedical staff was 26. The number of absent or reassigned staff was reduced during the lockdown but started to return to normal after restrictions were eased: 24/26 staff present on week 11 (Table 2a), 12 staff on week 13 (Table 2b), 14 staff on week 17 (Table 2c), 23 staff on week 21 (Table 2d). Week 13 saw an increase in absences due to vacation, sick leave, child-care or COVID-19 infection and also a large number of medical staff being reassigned to other duties (helping to change of position of patients in intensive care units (ICU), call to the families, regulation of calls to the emergency phone number) [9].

The modifications made to the premises were (in chronological order): set-up of COVID-19 signs [7] and hand sanitizer stations

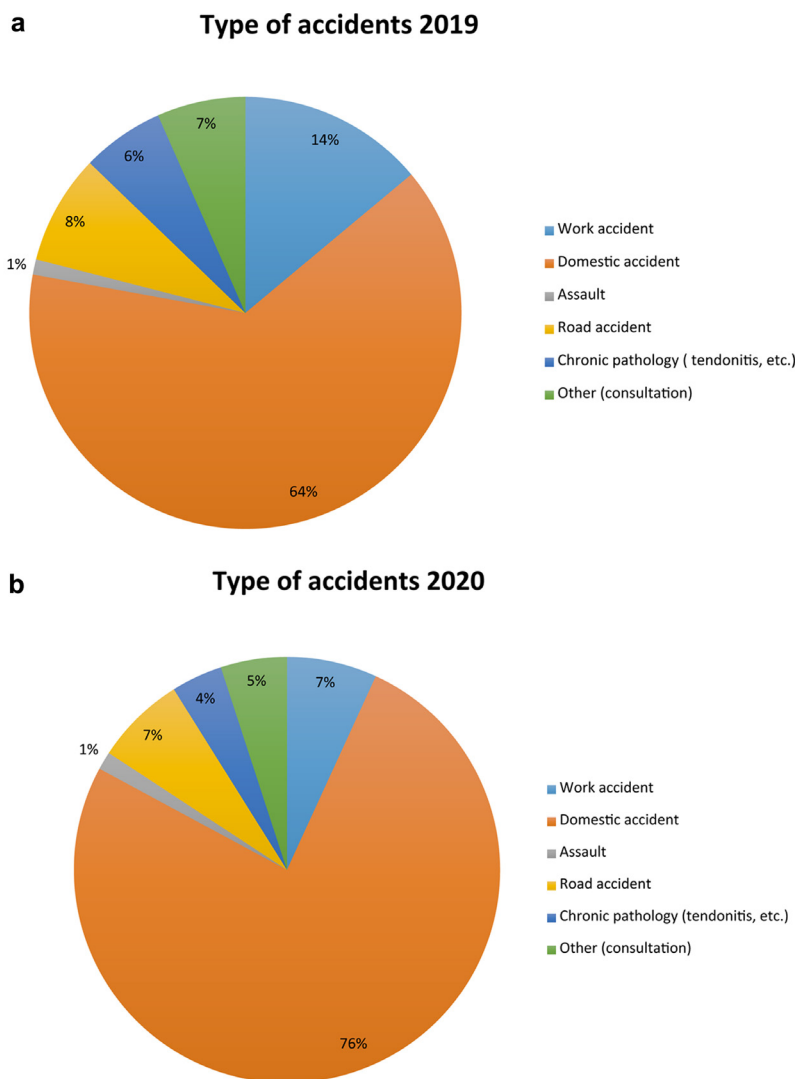


Fig. 3. (a) Type of accidents encountered in post-emergency consultations in 2019. (b) Type of accidents encountered in post-emergency consultations in 2020.

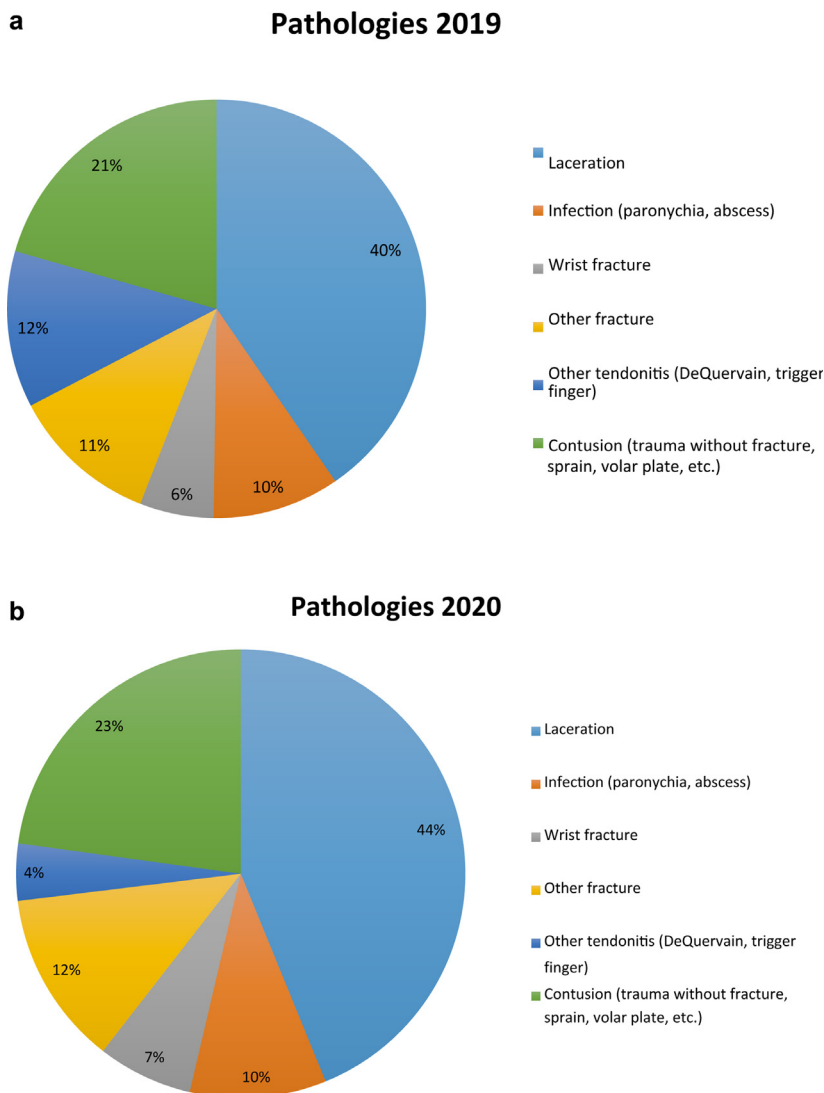


Fig. 4. (a) Pathologies encountered in post-emergency consultations in 2019. (b) Pathologies encountered in post-emergency consultations in 2020.

**Table 1**  
Comparison of the number of weekly consultation slots between 2019 and 2020.

	Monday		Tuesday		Wednesday		Thursday		Friday	
	2019	2020	2019	2020	2019	2020	2019	2020	2019	2020
Morning	2	1	3	1	4	1	4	1	2	1
Afternoon	3	0	3	0	3	0	2	0	1	0

(W10), set-up of glass panels at the secretaries' desks (W12) (Fig. 5a), dedicated room for the care of COVID-19 patients with dedicated equipment at the entrance (W14) (Fig. 5b), access restricted to every other seat in the waiting room using caution tape (S14) (Fig. 5c) according to the recommendations of the hospital's health safety committee [10,11].

In chronological order, the modifications made to the organization of the consultation were the set-up of telework for secretaries (W13), set-up of teleconsultations using Odys web (Pulsy) for the surgeons (W12) and physiotherapists (W16), safety regulations for use of nitrogen monoxide and oxygen (MEOPA) in a ventilated room (W14). A dedicated protocol for radiological examinations of COVID-19 positive patients required calling ahead to the radiology department to set up the appropriate protective measures and accompanying the patient to and from the radiology

department to prevent contaminations along the way (W14) [12,13]. We started to increase outpatient consultation slots of one week after the lockdown was eased (W21).

#### 4. Discussion

Our results show that the outpatient consultations for hand surgery during the COVID-19 pandemic in France were organized in five stages.

Stage 1 was the preparatory phase before the lockdown. We found a continuation of the normal pace of consultations (with figures comparable to 2019). It lasted until the end of week 11 while France was in stage 2 of the pandemic [14]. This time was used to prepared for the following stages. Surgeons asked their secretaries to call and cancel non-urgent, pediatric, and private consultations from week 12 on. Surprisingly, the number of no-shows was not greater in 2020 compared to 2019 as the patients took the time to cancel their appointments.

Stage 2 was the 1st organizational phase during the lockdown. It lasted 3 weeks (W12–W14) matching the beginning of the lockdown and the governmental restrictions on circulation [15–17]. The cancellation of consultations continued. To free time for the medical, paramedical and secretary staff [9], all consultations

**Table 2a**  
Medical and paramedical staff assignments during W11 (Stage 1).

W11 in 2020 Stage 1	Present	Sick leave	Telework	Reassigned to other departments	Vacation
7 secretaries	6	0	0	0	1
13 doctors	12	0	0	0	1
4 physical/occupational therapists	4	0	0	0	0
2 nurses	2	0	0	0	0
Total	24/26	0/26	0/26	0/26	2/26

**Table 2b**  
Medical and paramedical staff assignments during W13 (Stage 2).

W13 in 2020 Stage 2	Present	Sick leave	Telework	Reassigned to other departments	Vacation
7 secretaries	3	2	2	0	0
13 doctors	7	1	0	4	1
4 physical/occupational therapists	1	0	0	1	2
2 nurses	1	0	0	1	0
Total	12/26	3 /26	2/26	6/26	3/26

**Table 2c**  
Medical and paramedical staff assignments during W17 (Stage 3).

W17 in 2020 Stage 3	Present	Sick leave	Telework	Reassigned to other departments	Vacation
7 secretaries	1	1	1	1	3
13 doctors	11	0	1	1	0
4 physical/occupational therapists	1	0	0	2	1
2 nurses	1	0	0	1	0
Total	14/26	1/26	2/26	5/26	4/26

**Table 2d**  
Medical and paramedical staff assignments during W21 (Stage 5).

W21 in 2020 Stage 5	Present	Sick leave	Telework	Reassigned to other departments	Vacation
7 secretaries	6	0	1	0	0
13 doctors	12	0	0	0	1
4 physical/occupational therapists	2	0	0	2	0
2 nurses	2	0	0	0	0
Total	22/26	0/26	1/26	2/26	1/26

were grouped in the morning (Table 2b). Despite a dramatic decrease in the number of available consultations, 58% of on-site consultations were maintained. At the same time, teleconsultations were set-up rapidly for follow-up consultations with 59 teleconsultations a week starting in W13 (Fig. 1c). During this stage, the patients continued to call to cancel their appointments. Some emergency cases were transferred to another hand center because of severe lack of anesthesiologists.

Stage 3 was the wait-and-see phase during the lockdown. It started on W15 and had a stable number of post-emergency consultations and teleconsultations (Fig. 1c). The number of post-emergency consultations did not decrease despite a decrease in the number of hand emergencies during this period; this is explained by the fact that “semi-urgent” patients were also seen during post-emergency consultations.

Stage 4 was the 2nd organizational stage, before and during easing of the lockdown restrictions from W18 to W20. New protocols were disseminated according to the recommendations of

the hospital's health safety committee. COVID-19 screening for operated patients was mandatory.

Stage 5 was a progressive return, with outpatient consultations at first (W21). We started to operate on scheduled patients during W23.

The human measures and logistics matched these five phases. During Stage 1, we enforced the physical distancing measures as much as possible; hand sanitizer gel was usually available but sometimes was stolen or out of stock. A glass panel was set-up to enforce the physical distancing between patients and secretaries. The number of staff was normal (except for 2 who were on vacation) (Table 2a).

During Stage 2, teleconsultation software was tested and rolled out. Phone consultations were more frequent than videoconferences. Dedicated paths for COVID-19 patients were set-up after they were approved by the hospital's health safety committee (outpatient consultations, use of MEOPA, and outpatient radiology). The number of staff decreased due to reassignments to other





**Fig. 5.** (a) Glass panel set-up at the welcome desk of outpatient consultations. (b) Examination room dedicated to COVID-19 positive patients with protection equipment at the entrance. (c) Waiting room where only every other seat can be used to enforce physical distancing.

departments, especially to help the medical staff in the ICU [9], due to sick leave [18], and due to telework that became a part of our secretaries' work schedule. Telework enabled our staff to reduce the risk of being contaminated and to adapt to the reduced availability of public transportation [19].

During Stage 3, teleconsultation was also started for physiotherapists after the surgeon referred the patient to limit functional sequelae. Indeed, most physiotherapists in private practice had stopped all activity based on governmental recommendations [20–22]. This consultation method allowed us to give advice and self-directed rehabilitation exercises, supplemented as needed by written protocols (FESUM, GEMMSOR websites). Meanwhile physiotherapists were reassigned to provide chest physiotherapy in COVID-19 units.

During Stage 4, more staff members (except physiotherapists working in COVID-19 units) were invited to return to the hand surgery department.

During Stage 5, we progressively returned to a subnormal activity level with increasing human measures and logistics.

Teleconsultations by videoconference had several technological limitations. Before a teleconsultation, a secretary had to call the patient beforehand to set-up an appointment but also make sure he had a camera, a microphone, and an Internet connection. Up to 50% of patients preferred to wait for an on-site consultation or did not have the required equipment for the videoconference. Videoconferences were sometimes interrupted by temporary network failures that extended the time necessary to complete the teleconsultation. For private consultations and first consultations, other software packages were used (Doctolib, Deuxiemeavis). Pediatric consultations, especially those regarding birth defects, were conducted by teleconsultation starting at W15. The two main upsides of teleconsultations (phone call and videoconference) were the protection of the patients [19,23,24] and staff against contamination. Indeed, some patients were afraid to be in a waiting room with other patients who might carry the SARS-CoV-2 virus and preferred this type of consultation. Teleconsultations also enabled the surgeons to stay home and work despite not having secretaries and nurses to welcome the patients. The downsides of teleconsultations were the difficulty in doing a radiological follow-up, difficulty in doing an objective physical examination, temporary internet failures [25], and difficulty in collecting payment from the patients. These limitations should be addressed by continued use of this type of consultation beyond the pandemic. The average teleconsultation time was 25 min but after a 5–6 week learning curve, the consultation time was the same as a conventional in-office consultation (15 min).

## 5. Conclusion

The COVID-19 epidemic was an exceptional situation with major repercussions on the French healthcare system, especially in the Eastern part of France [3,4]. Measures had to be progressively taken in our outpatient hand surgery department following governmental recommendations, lockdown restrictions as well as protective measures for our staff and our patients and then easing of the lockdown [23,24]. Thanks to these five specific phases, it was possible for us to continue outpatient consultations. We were able to maintain 35% of our activity (compared to 2019) and started using two new technological tools in our practice: teleconsultation and telework.

The 2nd preparatory phase before the end of the lockdown was crucial to prepare for a gradual return to normal. Permanent reorganization of outpatient consultations was necessary to follow the public health situation. Our experience could help hand departments prepare for a new viral pandemic in the future.

## Funding

This work did not receive any grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Author contributions

All authors attest that they meet the current International Committee of Medical Journal Editors (ICMJE) criteria for Authorship.

## Conflicts of interest

P. Liverneaux has conflicts of interest with Newclip™, Technics™ and Argomedical™.

The other authors declare that they have no conflicts of interest related to this article.

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