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Review

# The early response of plastic and reconstructive surgery services to the COVID-19 pandemic: A systematic review



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## KEYWORDS

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surgery;  
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Pandemic

**Summary** The World Health Organisation characterised the spread of coronavirus disease-19 (COVID-19) as a pandemic in March 2020, signalling medical governance and professional organisations worldwide to make urgent changes in their service. We have performed a systematic review of the literature to identify all published literature on plastic surgery and COVID-19, in an effort to summarise the evidence for future reference. Our search identified 1207 articles from electronic databases and 17 from manual search, out of which 20 were included in the final data synthesis. Out of the included studies, most originated from the United States ( $n = 12$ ), five from Europe, two from China and one from Australia. Strategies described to limit the spread and impact of the virus could be divided into nine distinct categories, including the suspension of non-essential services, use of telemedicine, use of personal protective equipment, screening patients for COVID-19, restructuring the healthcare team, adapting standard management practices, using distance-learning for trainees, promoting public education and initiatives, and minimising intra-hospital viral transmission. The ever-changing nature of the COVID-19 may prompt plastic surgeons to adapt special strategies as pandemic progresses and subsequently declines. The findings of this review can prove beneficial to other plastic surgery

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departments in informing their response strategies to the pandemic and in a second wave of the disease.

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## Introduction

The World Health Organisation (WHO) characterised the spread of coronavirus disease-19 (COVID-19) as a pandemic on 11 March 2020.<sup>1</sup> This novel  $\beta$ -coronavirus strain is phylogenetically related to the severe acute respiratory syndrome-like (SARS-like) bat viruses and was first identified in a cluster of cases in Wuhan, China.<sup>2,3</sup> As of 10 June 2020, 7,145,539 confirmed cases and 408,025 deaths were reported globally, across more than 220 countries and territories.<sup>4</sup> A total of 289,144 confirmed cases and 40,883 deaths have been reported in the UK.<sup>4</sup> Inevitably, COVID-19 has impacted healthcare service, including surgical specialities such as plastic surgery.

Clinical manifestations of COVID-19 can vary from an asymptomatic carrier state to severe pneumonia.<sup>5</sup> Fever, cough and fatigue, the commonest COVID-19 triad of symptoms, appear in 95%, 60.3% and 38.0% of cases, respectively.<sup>6</sup> Illness severity and case fatality ratios increase substantially with age; elderly patients with multiple underlying co-morbidities are at considerable risk of morbidity and mortality, while younger people may experience mild to no symptoms at all.<sup>7</sup> People with subclinical manifestations of COVID-19 may never be tested, posing an enormous challenge for prevention and control of the disease.<sup>8,9</sup>

Following WHO recommendations, many nations have adopted public health measures including quarantine, social distancing and travel restrictions to slow the spread of COVID-19.<sup>10</sup> Despite these efforts, the rapidly evolving pandemic has placed an unprecedented burden on healthcare services worldwide, depleting hospital resources and leading to shortages in personal protective equipment (PPE).<sup>11</sup> In the UK, the National Health Service (NHS) England has opened temporary critical care hospitals (Nightingale) to anticipate the need for additional bed capacity.<sup>12,13</sup> The four Royal Surgical Colleges in the UK have released common policy statements and guidance in response to this changing landscape, including cancelling all non-essential travel for surgeons, suspending all educational activities, adapting the service and releasing online material for training.<sup>14-19</sup> Similarly, the British Association of Plastic Reconstructive and Aesthetic Surgeons (BAPRAS) and British Association of Aesthetic Plastic Surgeons (BAAPS) have released policy statements and advice for members.<sup>20,21</sup>

Plastic surgeons have a responsibility to follow current guidance and recommendations to protect both the public and staff and support the frontline to minimise the virus' burden on healthcare services. We have performed a systematic review of the literature to identify all published literature on plastic surgery and COVID-19, in an effort to summarise the evidence for future reference.

## Methods

This systematic review was performed in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

### Search strategy

The search strategy aimed to identify all published literature addressing 'surgery' during the COVID-19 pandemic. We avoided focussing the search on 'plastic' surgery only, to capture all special topic publications that might have not included plastic surgery in their title or abstract. An electronic database search of MEDLINE (via Ovid), EMBASE, PubMed, SCOPUS, Cochrane Central and Web of Science Core Collection was conducted, using the keyword strategy detailed in Appendix 1. The search results were limited to records published in 2019 and 2020, up until 1 May 2020. To supplement our results, a further manual search was performed by two independent reviewers on Google Scholar and through the bibliographies of all included articles.

### Eligibility criteria

The inclusion criteria selected studies addressing 'plastic surgery' during the COVID-19 pandemic. The modified PICO framework for qualitative systematic reviews, outlined by Butler et al., was used to define the inclusion criteria:

- Population: Plastic, dermatologic or facial plastic surgeons or staff working in plastic, dermatologic skin cancer surgery or facial plastic departments or clinics.
- Context: the COVID-19 Pandemic.
- Outcomes: responses to the COVID-19 pandemic, and recommendations or guidance derived from their experiences.

Any article of published literature quantitative or qualitatively describing the response or experiences of plastic, dermatologic or facial plastic surgeons and/or departments or clinics in hospitals worldwide during the COVID-19 pandemic was eligible for inclusion in this systematic review. No restrictions were placed on study design. Non-English texts were excluded.

### Screening

The results of the electronic database searches were exported into a reference manager (EndNote X9.3) to remove duplicates. A biphasic study selection process was undertaken: three independent reviewers (L.B., M.N., and R.S.) screened title and abstracts based on the inclusion criteria. Articles were included by default if any discrepancies arose between the reviewers during title and abstract screening. Full-text screening was performed by two independent reviewers (L.B. and M.N.). Any discrepancies were resolved by senior author input.

## Data extraction and synthesis

The author, year and country of publication and type of study were extracted from the full-text articles by two independent reviewers (L.B. and M.N.). Each study was critically appraised to identify common themes amongst the included articles. Recommendations and interventions made and enacted in response to the COVID-19 pandemic were extracted from each article and grouped into distinct categories. Each category represents a homogenous set of strategies that were recommended and/or implemented by the plastic, dermatologic or facial plastic surgeons and/or departments or clinics from which the article originated.

## Results

Our search identified 1207 articles from electronic databases and 17 from manual search (Figure 1). The majority of articles excluded during title/abstract screening concerned other surgical specialties. No articles were excluded during the full-text screening phase. Following duplicate removal and article screening, 20 studies were included in the final data synthesis.<sup>22-41</sup> The main characteristics of the included studies are outlined in Table 1. We identified 5 letters to the editor, 12 expert opinions, 1 review, 1 survey and 1 case report. All articles were published in 2020. Out of the 20 included articles, most originated from the United States (US) ( $n=12$ ), five from Europe, two from China and one from Australia.

Following critical appraisal and evaluation of the included articles, strategies described in the included studies to limit the spread and impact of the virus could be divided into nine distinct categories (Table 2). Most studies reported on prioritising urgent care, including the suspension of non-essential services, ( $n=16$ ), while 12 studies reported on the use of telemedicine, 11 reported on appropriately using PPE, 9 reported on screening patients for COVID-19, 8 reported on restructuring the healthcare team, 6 reported on adapting standard management practices during the pandemic, 4 reported on the use of distance-learning for residents, trainees and medical students, 4 other studies reported on public education and initiatives, and 3 reported on controlling the hospital environment and logistics to minimise intra-hospital viral transmission.

### Prioritising urgent care

Out of 20 studies, 16 included in this systematic review reported that non-urgent or elective procedures have been cancelled or postponed in the respective plastic and reconstructive surgery departments.<sup>23,25-37,39,41</sup> Nine studies additionally highlighted that non-urgent clinic visits and consultations have been rescheduled or restricted.<sup>23,25-27,29,33,35,36,39</sup> Six studies explicitly reported primarily refocussing care on urgent cancer and trauma cases, wherein morbidity is significant unless surgical intervention is urgently provided.<sup>22,23,25,28,32,39</sup> Six studies recommend triaging care on a case-by-case basis, by assessing clinical priority.<sup>22,25,26,31,32,34</sup>

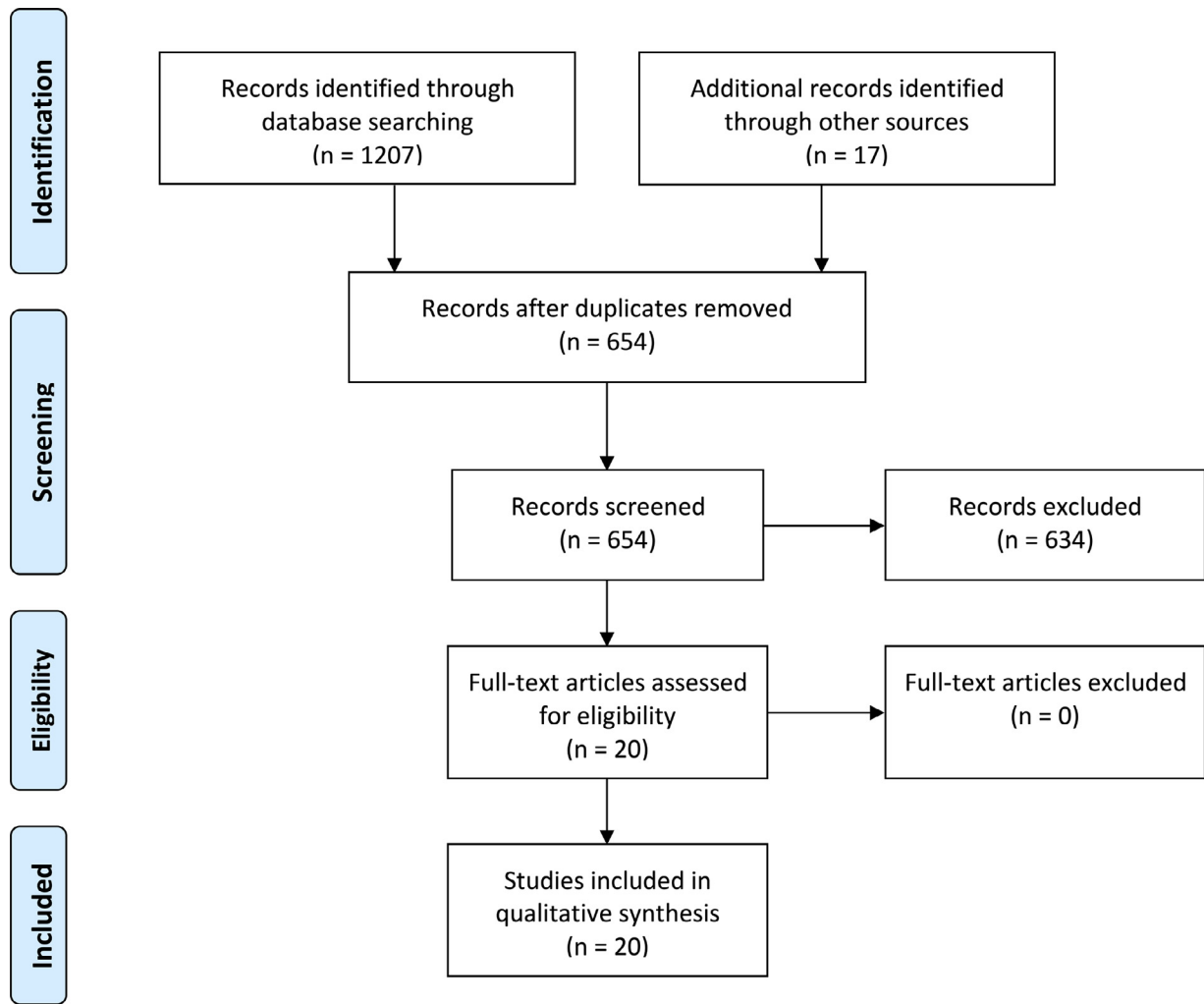


Figure 1 PRISMA Flowchart showing the study selection process.

Table 1 Main characteristics of the included studies.

Author	Year	Country	Study Design
Armstrong et al.	2020	United Kingdom	Expert Opinion
Baccarani et al.	2020	Italy	Letter to Editor
Barry et al.	2020	United States	Expert Opinion
Cho et al.	2020	United States	Expert Opinion
Der Sarkissian et al.	2020	Australia	Expert Opinion
Ducournau et al.	2020	France	Survey
Facchin et al.	2020	Italy	Expert Opinion
Hsieh et al.	2020	United States	Expert Opinion
Liu et al.	2020	United States	Case Report
Raj et al.	2020	United States	Expert Opinion
Reissis et al.	2020	United Kingdom	Letter to editor
Rohrich et al.	2020	United States	Expert Opinion
Sarac et al.	2020	United States	Review
Shokri et al.	2020	United States	Expert Opinion
Squitieri et al.	2020	United States	Expert Opinion
Teven et al.	2020	United States	Letter to Editor
Wang L et al.	2020	China	Expert Opinion
Wang Z et al.	2020	China	Expert Opinion
Wlodarczyk et al.	2020	United States	Letter to Editor
Yuen et al.	2020	United States	Letter to Editor

**Table 2** Strategies to utilise during the COVID-19 pandemic in plastic surgery settings.

Study	Prioritising urgent care	Telemedicine	Personal Protective Equipment	Screening patients for COVID-19	Restructuring the healthcare team	Adapting standard operating procedures	Distance-learning	Public education and initiatives	Controlling the hospital environment and logistics
Armstrong et al.		✓	✓		✓	✓		✓	
Baccarani et al.	✓	✓	✓		✓				
Barry et al.								✓	
Cho et al.	✓	✓	✓	✓	✓	✓	✓		
Der Sarkissian et al.	✓	✓	✓	✓					✓
Ducournau et al.	✓	✓	✓	✓	✓	✓			✓
Facchin et al.	✓		✓	✓					
Hsieh et al.	✓		✓	✓	✓	✓			✓
Liu et al.	✓		✓	✓		✓			
Raj et al.	✓	✓			✓				
Reissis et al.	✓	✓				✓			
Rohrich et al.	✓	✓			✓		✓		
Sarac et al.	✓		✓						
Shokri et al.	✓	✓	✓						
Squitieri et al.	✓	✓	✓						
Teven et al.	✓			✓					
Wang L et al.		✓		✓				✓	
Wang Z et al.	✓	✓		✓	✓			✓	✓
Wlodarczyk et al.							✓		
Yuen et al.	✓						✓		

## Telemedicine

Telemedicine, or telehealth, involves the use of communication technology to facilitate the provision of clinical services.<sup>35</sup> Telemedicine technologies range from simple phone calls to store-and-forward imaging or video and the use of audio-visual telecommunications software, i.e. videoconferencing, to allow real-time correspondence.<sup>25,35</sup> Out of the 20 included studies, 12 report utilising telemedicine during the pandemic.<sup>22,23,25-27,31-33,35,36,38,39</sup> All 12 studies advocate the use of videoconferencing for online consultations and post-operative assessments.<sup>22,23,25-27,31-33,35,36,38,39</sup> Two studies report the use of telemedicine to communication between healthcare professionals.<sup>22,27</sup>

## Personal protective equipment

Fourteen studies recognised the importance of PPE for healthcare staff when in contact with patients.<sup>22,23,25-31,33-36,39</sup> Two studies highlight the need for special attention and enhanced PPE when performing aerosol-generating procedures that involve nasopharyngeal or craniofacial spaces.<sup>29,30</sup> Eleven studies recognise that shortages in hospital resources during the pandemic has prompted the need to ration PPE.<sup>22-26,29,31,33-36</sup> Three studies suggest donating unused resources to support hospitals and community healthcare efforts.<sup>25,31,33</sup>

## Screening patients for COVID-19

Nine studies identified the need to screen patients for COVID-19 prior to undergoing a procedure or attending hospital visits.<sup>25-30,39</sup> Five studies stress the importance of identifying suspected cases, by being alert to signs and symptoms of COVID-19 and recent travel or contact history.<sup>25,27,28,31,39</sup> Three studies outline screening protocols used in their department to deliver patient care efficiently, while protecting healthcare staff.<sup>28,29,39</sup> Two studies mentioned isolating infected patients and operating on confirmed COVID-19 cases in different rooms to uninfected patients.<sup>27,39</sup>

## Restructuring the healthcare team

Eight studies make recommendations regarding the reorganisation of the healthcare team to protect staff and maximise effective teamwork.<sup>22,23,25,27,29,31,33,37,39</sup> Four studies express the importance of working collaboratively with the emergency department to manage the surge in patients.<sup>22,23,25,31</sup> Three studies support rotating staff shifts to promote recuperation and reduce the risk of exposure.<sup>22,33,39</sup> Three studies advise limiting the number of healthcare staff in operating rooms.<sup>27,29,39</sup> Four studies report redeploying residents and/or medical students, who are interested in volunteering.<sup>22,23,25,27</sup>

## Adapting standard operating procedures

Six studies have suggested various alterations to standard management practices with the aim of reducing hospital footfall or minimising the risk of viral transmission.<sup>22,25,27,29,30,32</sup> To minimise hospital visits, two studies reported treating patients conservatively where possible.<sup>22,27</sup> Two other studies suggest using absorbable sutures<sup>22,32</sup> and finally two studies encourage plastic surgeons to educating patient to enable patient-led wound care and k-wire removal. For craniofacial procedures, two studies recommend using a scalpel over electrocautery (and bipolar over monopolar) for mucosal surfaces, minimising suction and irrigation and favouring closed reductions using self-drilling screws for facial fractures.<sup>29,30</sup>

## Distance-learning

Four studies discuss methods of distance-learning to permit the continuation of trainee education during the COVID-19 pandemic.<sup>25,33,40,41</sup> These studies recommend using HIPPA-compliant video-conferencing application to conduct online webinars, didactic teaching, grand rounds, virtual conferences or even wards rounds, clinic visits or live streaming operations with the patient's consent.<sup>25</sup> Additionally, three studies highlight that some examinations and interviews have been conducted online during the pandemic.<sup>22,33,41</sup>

## Public education and interventions

Three articles reported disseminate information to the public, including announcements, educational material and marketing.<sup>22,38,39</sup> Barry et al. argues that electric scooters should be prohibited during the pandemic.<sup>24</sup>

## Controlling the hospital environment and logistics

Four studies made recommendations to alter hospital logistics and/or control the hospital environment to reduce the risk of nosocomial COVID-19 infection.<sup>22,27,29,39</sup> These studies opted to limit the number of visitors per patient, patient movement in the hospital and non-essential operating room personnel.<sup>22,27,29,39</sup> Two studies described additional changes to the waiting room environment.<sup>22,39</sup> Wang Z et al. made additional recommendations to reduce the risk of infection in operating rooms.<sup>39</sup>

## Discussion

This systematic review compiles the early published literature illustrating the response of plastic and reconstructive surgery departments to the COVID-19 pandemic. A variety of strategies with the overarching aim of preventing viral transmission were identified in this review. The included articles in this systematic review primarily included expert opinions and editorials, indicating an overall low quality of

evidence. In addition, the majority of included studies originated from the US, likely due to the nation's high case load and research output. Despite these limitations, this review may prove beneficial in informing the response to a potential 'second-wave' of COVID-19 or future pandemics.

The suspension of non-emergency services was the most widely reported strategy. This intervention would limit hospital footfall, reduce the healthcare team's exposure risk and allow the reallocation of hospital resources, including beds and PPE, to support frontline staff.<sup>25,33</sup> Equally, prioritisation of urgent cases was required to maintain adequate patient care in spite of the pandemic's burden on healthcare services. The triaging protocol or system varied between institutions. Reissis et al. optimised triage by categorising surgical cases into the following levels of urgency: operate immediately, operate urgently, operate in the order of presentation and no surgery.<sup>32</sup> Armstrong et al. suggested managing patients on a 'see and treat' basis for complex reconstructive procedures.<sup>22</sup> For skin cancers, Reissis et al., and Der Sarkissian et al. prioritised malignant melanomas, triaged treatment of squamous cell carcinoma according to prognostic variables and deferred treatment for basal cell carcinoma.<sup>26,32</sup>

The cancellation or postponement of elective procedures and non-urgent consultations was a principal recommendation made by governmental and surgical association guidelines published by the Italian Central Government, the Centers for Disease Control (CDC), the Centers of Medicare and Medicaid Services (CMS), the American College of Surgeons, the American Society of Plastic Surgeons (ASPS), the Aesthetic Society, the Arbeitsgemeinschaft für Osteosynthesefragen-Craniomaxillofacial (AO-CMF) international task force and the British Association of Plastic and Reconstructive Surgeons (BAPRAS).<sup>23,28-34</sup> Sarac et al. however highlighted the vagueness of multiple guidelines, especially state guidelines in the US.<sup>34</sup> For example, clarity is lacking whether breast reconstructive surgery should be permitted following breast cancer surgery, leading to uncertainty regarding what is considered best practice.<sup>34</sup> Squitieri et al. also highlights the lack of guidance for returning to standard practice safely in the future.<sup>36</sup>

The solution to cancelling in-person clinic visits became telemedicine, which permitted continuity of non-urgent care while avoiding unnecessary face-to-face contact. Surgeons worldwide implemented remote counselling for outpatient consultations.<sup>27</sup> Virtual clinics were setup to review referrals and offer parents' phone advice on managing minor injuries expectantly.<sup>22</sup> Wang Z et al. found that mutual understanding and trust in the patient-surgeon relationship were unimpaired by virtual communication and patients were generally satisfied with the use of video-conferencing.<sup>35,39</sup> Certain US studies, however, stressed the importance of complying with the Health Insurance Portability and Accountability Act (HIPAA) regulations when using communication technology.<sup>33,35,41</sup>

Telemedicine can facilitate efficient communication between healthcare staff and professionals, avoid unnecessary in-person contact and intra-hospital movement.<sup>22,27</sup> Ducournau et al. found that 27 out of 47 hand surgeons opted to conduct staff meetings via videoconference.<sup>27</sup> Armstrong et al. encouraged homeworking where possible, allowing on-calls to be undertaken and referrals to be made

by a triaging consultant working from home.<sup>22</sup> Video-calling can also be used to talk referring healthcare professionals through simple procedures such as nail bed reconstruction.<sup>22</sup>

Public announcement could additionally be made via the internet to reduce hospital footfall. The Shanghai Ninth People's Hospital warned patients against visiting hospital without notice via their website, and BAPRAS used social media to remind the public of the risks of avoidable DIY injuries during lockdown.<sup>22,39</sup> In Hangzhou, China, Wang L et al. found that the Starbody Plastic Surgery Clinic benefitted from increased profits and number of operations performed post-epidemic as a result of social media marketing.<sup>38</sup> Barry et al. additionally argued in favour of prohibiting electric scooters for the pandemic's duration to minimise avoidable injuries, including fractures, head trauma, contusions, sprains and lacerations, and preventable COVID-19 infections, that may unnecessarily overburden healthcare services.<sup>24</sup>

Telecommunication technology also provided a solution to the suspension of medical training and education.<sup>22,33,41</sup> Professional conferences and examinations worldwide were cancelled in accordance with social distancing measures.<sup>22,33,41</sup> The evidence base behind distance-learning is well established, and the benefits of accessibility and cost-effectiveness indicates the likely post-pandemic persistence of online education in medical training.<sup>25</sup>

To directly limit intra-hospital transmission of the virus, judicious screening for COVID-19 before undergoing an operation or attending hospital visits was highly recommended. At Shanghai Ninth People's Hospital, patients underwent thorough epidemic history surveys, temperature detection, a coronavirus blood test and chest CT scan within 24 h; subsequently a two-week quarantine was enforced for suspected cases.<sup>39</sup> Ducournau et al. found that a majority of hand surgeons were in agreement with this level of rigorous screening.<sup>27</sup> Facchin et al. reported that maintaining a high index of suspicion for asymptomatic patients with a positive contact history meant only one nurse tested positive (out of 89 swabs) during the month of March in the Plastic and Reconstructive Surgery Unit, in Padua, Italy.<sup>28</sup> However, when surgical interventions were urgently required, testing patients for COVID-19 was not always possible.<sup>29</sup> Positive or suspected cases of COVID-19 could subsequently be isolated where possible. Wang Z et al. additionally advocated single-use bed sheets and having patients wear masks if requiring transfer to another ward.<sup>39</sup> Armstrong et al. also reported restricting patient movement in the hospital.<sup>22</sup> Of the 47 hand surgeons surveyed by Ducournau et al., 32 operated on confirmed COVID-19 cases in different rooms to uninfected patients.<sup>27</sup>

Adequate PPE is essential to protect healthcare staff; however, shortages of these important resources were noted internationally. Decisive guidelines are critical in order to strike the balance between conserving resources and effectively protecting healthcare workers.<sup>34</sup> Donation of unused resources and personnel was highly appreciated.<sup>25,31,33</sup> Standard PPE for most plastic surgeons consisted of surgical masks worn at all times and protective eyewear.<sup>27</sup> amongst the hand surgeons surveyed by Ducournau et al., only 12 out of 47 wore N95 respirators in the operating room.<sup>27</sup> Facchin et al. and Liu et al. highlight that a lack of agree-



ment regarding the usefulness of masks, or even N95 respirators, may negatively impact efforts to ensure consistent use of PPE.<sup>28,30</sup> Liu et al. cited the significant mortality rate in otolaryngologists in the Wuhan region to emphasise the increased risk of infection from aerosolised viral particles generated during endotracheal intubation and the management of craniofacial trauma.<sup>29,30</sup> Hsieh et al. outlined extreme airway precautions when performing aerosol-generating procedures in COVID-19 positive patients.<sup>29</sup> The study advocates a fluid-resistant gown, surgical gloves and a powered air-purifying respiratory (PAPR) to replace standard eye protection and an N95 respirator.<sup>29</sup> Surgical technique should also be adapted to minimise exposure of mucosal surfaces and generation of aerosols.<sup>29,30</sup>

Through effective leadership and teamwork, healthcare teams were reorganised during the pandemic. Armstrong et al. argued that a distributive leadership built on collaboration and consensus would keep staff engaged and empowered to maximise clinical effectiveness.<sup>22</sup> Rolling rotas were implemented whereby one cohort of staff worked in-hospital, while another cohort worked from home.<sup>22,25</sup> Any member of the healthcare team who fell ill was encouraged to stay home and self-isolate.<sup>22,25,37</sup> Operating rooms and team were limited to essential personnel, while ward staff were assigned to a single ward or hospital zone to restrict movement around the hospital.<sup>27,29,39</sup> Additional measures to optimise patient and staff safety intraoperatively include using negative pressure ventilation, disposable gowns, ultraviolet light to disinfect operating rooms for at least 30 min between operations and collecting drapes and equipment in special bags post-operatively.<sup>39</sup> Wang Z et al. also advocate centralising treatment for confirmed COVID-19 cases in designated institutions.<sup>39</sup> Keen trainees and medical students were often redeployed to bolster the frontline by performing basic clinical tasks and supporting community initiatives.<sup>22,25</sup>

The risk of intra-hospital COVID-19 infection could be further minimised with certain logistical considerations. In waiting rooms, making disposable alcohol-based handkerchiefs or hand sanitiser available, ensuring adequate air ventilation, removing potential infection sources (e.g. magazines) and spacing chairs 1.5m apart reduce the opportunities of viral transmission.<sup>22,39</sup> Staggering appointments and limiting the number of accompanying persons or visitors per patient also reduces the number of patients in waiting rooms or wards at any given time.<sup>22,27,39</sup>

Overall, the role of the plastic surgeon appears to have shifted towards supporting 'frontline' healthcare staff.<sup>22,23,25,31</sup> Bacarani et al. reports that plastic surgeons have been required to manage complications of tracheostomies as well as facial pressure sores from laying prone on a ventilator for extended periods of time.<sup>23</sup> Plastic surgeons have been required to cross-cover other specialities during the pandemic.<sup>22,25</sup>

To reduce return hospital visits, various adaptations to typical management practices have been described, including giving ambulatory IV antibiotics for soft tissue infections, using removable splints and absorbable sutures, and empowering patients or carers to lead post-operative wound care independently. Opting for conservative treatment in patient who would normally have undergone surgical management was favoured by 27 out of 47 hand surgeons sur-

veyed by Ducournau et al.<sup>27</sup>. Reissis et al. set up a 'one-stop' minor operations room, where procedures using local anaesthesia or the Wide Awake Local Anaesthesia No Tourniquet (WALANT) technique can be undertaken.<sup>32</sup>

The ever-changing nature of the COVID-19 may prompt plastic surgeons to adapt the strategies discussed in this review as pandemic progresses and subsequently declines. Furthermore, conditions that were managed conservatively during the pandemic (i.e. without surgical intervention) can be followed up to assess surgical and patient outcomes to investigate whether conservative treatment is equally beneficial in several procedures. The findings of this review can prove beneficial to other plastic surgery departments in informing their response strategies to the pandemic and in a second wave of the disease.

## Declaration of Competing Interest

None

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## Authorship statement

All authors have made substantial contributions to all of the following:

- (1) the conception and design of the study, or acquisition of data, or analysis and interpretation of data,
- (2) drafting the article or revising it critically for important intellectual content,
- (3) final approval of the version to be submitted.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.bjps.2020.08.088](https://doi.org/10.1016/j.bjps.2020.08.088).

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