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ZUSAMMENFASSUNG

ABSTRACT
The aim of this paper is to summarize the results of a consensus process and a European webinar of the two societies, European Association of Societies of Aesthetic Surgery (EASAPS) and the European Society of Plastic, Reconstructive and Aesthetic
Introduction

The first case of COVID-19 was reported in late December 2019 and, on the first days of May 2020, 3 400 000 cases and 240 000 deaths had been reported worldwide [1–3]. About 80 % of symptomatic patients develop mild disease. In the remaining 20 %, the disease is moderate to severe, and up to one quarter of those will require intensive care unit (ICU) care [4]. Severe disease is most frequent in elderly patients with comorbidities but it has also been seen worldwide among younger and healthy individuals [5]. The dominating feature of the disease is respiratory compromise, but involvement of other organs, such as cardiac, neurologic and coagulation abnormalities (mostly pro-thrombotic), have also been described, mostly in severe disease [6–8]. Mortality among ICU patients in most regions is high, especially among those requiring invasive mechanical ventilation, and has been reported as surpassing 50 % [9]. Transmission of SARS-CoV-2 occurs mostly through contact with contaminated surfaces and inhalation of respiratory droplets. After procedures that involve manipulation of the airway, aerosols can be generated which can participate in transmission of the virus over larger distances [10]. Epidemiologic studies estimate that 40 % of all transmission might originate form contact with asymptomatic or pre-symptomatic patients [11, 12].

Quarantining, social distancing strategies, contact tracing and isolation strategies have been effective in reducing the spread of the disease in several countries [13]. Hospitals and private practices worldwide are now contemplating how to resume normal provision of healthcare. It is likely that transmission of SARS-CoV-2 will continue to occur after this initial outbreak [13] until vaccination or therapy is available, so the return to normal activity also in plastic surgery will happen in coexistence with this disease, and measures should be put into place to minimize risks within these facilities.

With the partial ending of the lockdown, institutions all over Europe are anticipating a return to ‘normal’ work practice. Although different countries impose different protocols and regulations there are many similarities. However, local situations vary significantly in terms of infection rates, degree of utilization of local capacities of health care system, local resources for Personal Protection Equipment (PPE) and others. Most hospital administrations impose rules as to the use of consultation- and operation-room facilities on their premises. Government regulation addresses regular healthcare first and foremost. This leaves a lot of uncertainty in plastic surgery for private practices, ambulatory surgery facilities, private clinics and hospitals. On top of this, aesthetic procedures are being considered non-essential and as such are on the bottom of the list of procedures being allowed in hospitals (Fig. 1). However, public perception and the reputation of the specialty could be significantly affected if for example aesthetic surgery is commenced to early and with insufficient regard for the safety for patients and staff. Therefore, avoiding complications and being perceived as a serious medical specialty puts extra stress on everything plastic surgeons will decide and perform in the next couple of months.

The aim of this paper is to summarize the results of a consensus process and a European webinar of the two societies, European Association of Societies of Aesthetic Surgery (EASAPS) and the European Society of Plastic, Reconstructive and Aesthetic Societies (ESPRAS) on what is considered safe practice based on the scientific knowledge we have today. This review of the current situations gives considerations which have to be taken into account when getting back to work in plastic surgery with COVID-19 in Europe. At all times, one should be familiar the local and regional infection rates in the community, with particular emphasis on the emergence of second and third waves of the pandemic. Due to the fast-evolving nature of the COVID-19 pandemic the recommendations aim to be rather considerations than fixed guidelines and might need to be revised in near future.

Material and Methods

The board of directors of EASAPS and ESPRAS organized a live webinar on May 1st, 2020 with chairs from different specialties (plastic surgery, anesthesia, infectiology) to focus on the following four daily life situations:

1. Consultations and clinical examination
2. Non-surgical procedures
3. Surgery under local anesthesia in an ambulatory setting
4. Surgery under general anesthesia

![Fig. 1 Current Ranking of possible Plastic Surgery with emergency and urgent surgery being possible all over Europe. Elective Surgery is still banned in many countries and aesthetic surgery in most European countries.](image)
Furthermore, attending viewers (n = 276) from all over Europe were asked to answer poll questions that were displayed throughout the webinar. 41% of the respondents have a full-time private practice, 39% have a part-time private practice and 20% do not have a private practice.

Poll results (Fig. 2a–Fig. 2d)

73% of the respondents reported no COVID-19 contact that they were aware of, while 1% was COVID-19 positive, 23% knew a colleague that was tested positively and 3% had an infected family member. When asked if they had stopped their consultations: 8% responded: not at all, 5% stopped their consultation before March 1st, 32% between March 1st and March 15th, 53% between March 16th and March 31st and 2% between April 1st and April 15th.

43% of the respondents perform Polymerase Chain Reaction (PCR)-testing for COVID-19 before all surgeries, while 21% perform PCR-testing for elective surgeries only and 36% do not perform any PCR-testing at all. 34% of the respondents use Computer tomography scans (CT) for COVID-19 screening, while 52% are not using any CT-diagnostic and 14% use both, CT and PCR testing.

44% of the respondents do not know the Centers for Disease Control and Prevention (CDC) definition of COVID-19 high risk patients, while 56% do. 29% have the opinion that even for consultations, a modified consent should be in place, 24% think it is necessary for surgery only while 22% think that both non-surgical and surgical interventions COVID-19, infection risk should be included into the consent, and 24% think that they do not need any consent form adjustments.

Of all respondents the vast majority (90%) did not perform any minimally invasive procedures including Botulinum toxin or fillers after elective surgery was stopped in their country, while 10% performed a few interventions. Only 1% have operated on a COVID-19 positive patient in an elective setting, while 9% operated on COVID-19 patients in an emergency setting and 90% did not operate on any COVID-19 positive patient.

Of all respondents, 10% have, at the time of writing, recommenced elective surgery, while 64% will start soon and 26% are still waiting for a date to be announced. (Figures 2a-d)

Considerations in various settings

Consultations and clinical examination (Table 1)

Pre-screening If possible 24–48 hours before appointment patients should be asked using a questionnaire via phone regarding the presence of symptoms (fever, headache, fatigue, coughing, sneezing, limb pain, sore throat, diarrhoea, headache, respiratory distress, anosmia) or if they have had contact with a COVID-19...
contact within the past 14 days. If the patient has symptoms or reports, contact with a COVID-19 they should be referred to their GP or testing-facility. If no symptoms or contact with COVID-19 patients, they should be referred to their GP or testing-facility.

Organization and Infrastructure  
Staff at registration should be protected with a protective barrier. If possible, several waiting rooms with a minimum distance of 1.5–2 meters (depending on the National guidelines) between waiting chairs should be established. Patients should be appointed with a 15-minute delay from the finish time of previous appointment. Remind patients of being on time. If patient arrives early or consultation takes longer than planned and waiting room capacities are not sufficient to allow for 1.5–2 meters distance between patients, patients should be asked to wait locally outside the facility, for example in their car. Consider removal of self-service amenities including coffee dispensers and magazines to avoid spread of infection via surfaces. In general, consider the possibility of telemedicine. For plastic surgery in many instances possible – of course this will not be able during a physical examination, thus physical examination should be performed in a timely manner without sacrificing diligence. Examinations in the head/neck region where inspired air will be shared should be performed using FFP2 masks or higher, to avoid infection via aerosols. Doctors should wear clothing that can be washed daily at 60°C or that is disposed by the end of the office-day. Eyes should be protected using glasses or face-shields.

Personal Protective Equipment (PPE)  
Staff and patients should cover their mouth and nose with a mask at all times. Patients should be asked to bring own masks, however if this is not possible the hospital/practice should be able to provide masks at all times. It is mandatory to check with local authorities if there is still enough PPE in stock at hospitals where COVID-19 patients are treated to avoid any shortages in centers, where PPE are absolutely necessary. If possible, social distancing should be adhered to as long as possible – of course this will not be able during a physical examination, thus physical examination should be performed in a timely manner without sacrificing diligence. Examinations in the head/neck region where inspired air will be shared should be performed using FFP2 masks or higher, to avoid infection via aerosols. Doctors should wear clothing that can be washed daily at 60°C or that is disposed by the end of the office-day. Eyes should be protected using glasses or face-shields.

### Table 1  
Table summarizing main considerations for consultations and clinical examination.

<table>
<thead>
<tr>
<th>Prescreening</th>
<th>Organization and Infrastructure</th>
<th>Personal Protective Equipment (PPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 24–48 prior to appointment questionnaire via phone whether symptoms are present</td>
<td>• Protection of staff at entrance with glass or Plexiglas shields</td>
<td>• Patients should enter hospital/private practice with mask (if necessary supplied by hospital)</td>
</tr>
<tr>
<td>• If symptoms are present or contact with COVID-19 patients referral to GP for testing</td>
<td>• Waiting rooms with distance of 1.5 to 2 meters between waiting patients</td>
<td>• FFP2 masks or higher for doctors and surgical masks or higher for patients</td>
</tr>
<tr>
<td>• Two negative tests if prior COVID-19 infection before appointment</td>
<td>• 15 minute breaks between consecutive appointments</td>
<td>• Doctors should wear clothing that should be washed daily at 60°C or that is disposed by the end of the office-day</td>
</tr>
<tr>
<td></td>
<td>• Social distancing between doctor, staff and patient should be maintained</td>
<td>• Eyes should be protected using glasses or face-shields</td>
</tr>
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### Table 2  
Table summarizing main considerations for non-surgical and minimally-invasive procedures.

<table>
<thead>
<tr>
<th>Prescreening</th>
<th>Organization and Infrastructure</th>
<th>Personal Protective Equipment (PPE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 24–48 prior to appointment questionnaire via phone whether symptoms are present</td>
<td>• Treatment chairs should be disinfected using chlorine-based cleaning solutions</td>
<td>• For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols.</td>
</tr>
<tr>
<td>• Patients that receive a procedure in the face and neck region should present with a negative PCR test or negative chest CT scan</td>
<td>• Possibility of COVID-19 infection should be included into the consent form</td>
<td>• Eyes should be protected using glasses or face-shields</td>
</tr>
</tbody>
</table>

Non-surgical and minimally-invasive procedures (Table 2)  
Keep in mind that emergent procedures, should be prioritized over urgent, non-urgent but time sensitive, elective and finally aesthetic interventions.

Prescreening  
Previously outlined recommendations regarding prescreening apply. However, patients undergoing a procedure in the face and neck region should present with a negative PCR test or negative chest CT scan. Again, it is questionable if aesthetic minimally invasive treatments justify the allocation of testing resources or radiation exposure of a chest CT scan.

Organization and infrastructure  
Abovementioned changes should be adhered to. Furthermore, if doctors should decide to perform minimally-invasive procedures as i.e. soft–tissue filler augmentations or Botox-injections treatment chairs should be disinfected using chlorine-based cleaning solutions after every treatment. Possibility of COVID-19 infection should be included into the consent form.

Personal Protective Equipment (PPE)  
Abovementioned changes should be adhered to. For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols (Table 2).
**Surgery under local anesthesia in an ambulatory setting (Table 3)**

Again, keep in mind that emergent procedures, should be prioritized over urgent, non-urgent but time sensitive, elective and finally aesthetic interventions.

**Pre-screening** Previously outlined recommendations regarding prescreening apply. However, patients undergoing a procedure in the face and neck region should present with a negative PCR test or negative chest CT scan. Again, it is questionable if aesthetic minimally-invasive treatments justify the allocation of testing resources or radiation exposure of a chest CT scan.

**Organization and Infrastructure** See above for minimum-standard infrastructure upon arrival of the patient. Increased COVID –19 risk should be mentioned in the consent form. Outpatient operation theatre should be separated from operation theatres treating COVID –19 positive patients if applicable. The surgeons and staff treating COVID –19 negative and positive patients should not be the same.

During surgery, there should be a minimum of required staff within the operation theatre.

Noise levels in the operation theatre should be kept to a minimum to reduce loud talking and shouting - known to increase aerosols. Elective surgery can only be performed if the hospital has sufficient resources of PPE and utilized material.

Operating room should have adequate ventilation ensuring the minimal turbulence and promotion of aerosol.

Smoke evacuation should be available when electrocautery other smoke generating equipment is used.

Operating theater should be cleaned between operations with viricidal cleaning solutions.

**Personal Protective Equipment (PPE)**
- See Table 1
- For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols.
- Eyes should be protected using glasses or face-shields.

**Surgery under general anesthesia (Table 4)**

**Pre-screening** A negative PCR test or negative chest-CT in emergency cases should be obtained.

Preoperative tests and preparation for general anesthesia should be done before the testing for COVID-19 (see anesthesia guideline in text).

**Organization and Infrastructure** See above for minimum-standard infrastructure upon arrival of the patient. Patients should be admitted to the hospital maximum one day before surgery.

**Personal Protective Equipment (PPE)**
- See Table 1
- For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols.
- Eyes should be protected using glasses or face-shields

**Table 3** Table summarizing main considerations for surgery under local anesthesia in an ambulatory setting.

**Table 4** Table summarizing main considerations for surgery under general anesthesia.
tation for general anesthesia should be done before the testing for COVID-19.

**Organization and infrastructure** The patients should be admitted to the hospital if possible, on the morning of surgery with all investigations, anesthetic consultations etc. carried out on the morning of the surgery where possible. The wards and operating theaters treating COVID-19 negative patients should be separated from wards and operating theaters used to treat COVID-19 positive patients. The surgeons and staff treating COVID-19 negative and positive patients should not be the same. Protocols should be in place to ensure that there is a safe way to distribute medications, equipment, food and linen to both COVID-19 positive and negative parts of the hospital with no or minimal interaction.

Because there is a significant potential for a resurgence of the virus in the second and third waves – plans should be made to have an available capacity in the intensive care units within a short period of time (72 hours). To this end – a gradual increase in elective surgery as appropriate, with the appropriate adjustments based on the reported local and regional infection rates.

Increased COVID-19 risk should be mentioned in the consent form. Formation of a committee consisting of surgeons, anesthesiologists, infectiologists and nurses that decides upon prioritization and escalation of surgical activity. Discharge management should be activated prior to surgery to allow for fast transfer to rehabilitation facility or home in order to minimize duration of hospital stay. Consider a post-op social isolation period to reduce incidence of a new exposure and infection as feasible, excluding needed post-op visits. Hospitals should create an environment for elective surgery, in which evidence-based prevention techniques, access control, workflows and distancing protocols are in place. The beds in the room should be spaced so that there is 1.5 – 2m between patients. The dressing changes should be done preferably in the patient’s room with nurses bringing in only the material needed for a single patient. If possible, the bathrooms and sanitary facilities should be in the patients’ room to minimize the number of users with regular cleaning using viricidal cleaning solutions.

The operating room should have adequate ventilation ensuring the minimal turbulence and promotion of aerosol. Aerosol generating procedures should be minimized and smoke evacuation should be available when electrocautery or other smoke generating equipment is used. The operating theatre should be cleaned between operations with viricidal cleaning solutions. The number of personnel required in the theater during surgery should be reduced to a minimum. Standardized handover protocols to optimize workflow should be in place.

As screening methods, both PCR tests and Chest CT are not 100% specific consider the possibility that every patient is potentially COVID-19 positive. Alterations should be made to the consent form to reflect this. The usual preoperative tests are performed depending on the procedure and length of surgery, as given by general anesthesia. Consider the possibility that COVID-19 positive and recovered patients have a degree of hypercoagulability so appropriate measures should be taken. Consider postponing high-risk patients when risk outweighs the benefit. If ICU care will be needed or is probable after the procedure, consider the availability depending on the epidemiologic situation in your area.

A “high quality” filter should to be placed between the breathing circuit and the patient’s airway to protect the machine from contamination and allow taking of gases sampled for analysis. Heat and moisture exchange filters (HMEFs) are a good choice since they preserve airway humidity and are designed so that sampled gas is filtered before it enters the gas analyzer (note that HMEs without filters provide no protection to the anesthesia machine or gas analyzer). It is possible to use a filter only at the airway that is not also a heat and moisture exchanger, but strategies like low flow anesthesia should be employed to preserve humidity. If a filter only is used at the airway, lower fresh gas flows (1–2 L/min or less) are desirable during maintenance of anesthesia to preserve humidity in the circuit. Manufacturer’s recommendations should be used to sterilize the ventilator when necessary. Intubation is an aerosol generating procedure, so the anesthesiologist and anesthesiology technician have to wear a FFP 2 or higher mask and face shield and disposable nonpermeable gowns. The same rules are necessary for extubating procedure. Use of endotracheal intubation is an option to reduce the aerosol in the operating room (use of supraglottic devices are not recommended in this time). For COVID-19 positive patients’ surgeries should only be performed in emergencies considering the general status of the patient. Non emergent procedures are postponed until the patient recovers from Covid-19. Regional/local anesthesia is a better option if it is possible. For Covid-19 negative patients who need urgent or oncological procedures whose postponement would lead to worsening of the condition, operations under general anesthesia can be performed considering the general considerations mentioned above.

Patients that have recovered from COVID-19 infection, can be scheduled for general anesthesia within two to four weeks after full recovery. On consultation, patients have to have at least two negative tests on COVID-19. The best estimation of recovery is a patient’s normal response to common physical activities. It is generally agreed that Aesthetic procedures should be postponed for

<table>
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<tr>
<th>Medical Conditions:</th>
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<tr>
<td>Chronic lung disease or moderate/severe asthma</td>
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<tr>
<td>Serious heart conditions</td>
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<tr>
<td>Immunocompromised</td>
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<tr>
<td>Severe obesity (BMI &gt; 40 kg/m²)</td>
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<tr>
<td>Diabetes</td>
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<tr>
<td>Chronic kidney disease undergoing dialysis</td>
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<tr>
<td>Liver disease</td>
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**Table 5** CDC (Center for Disease Control and Prevention) Criteria for high risk patients to suffer from severe COVID-19 disease [14]. The conducted poll revealed that 43 % did not know the CDC definition of COVID-19 high risk patients.

- 65 years or older
- Living in a nursing home or long-term care facility

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additional 2 months, as the potential for reemergence as not fully known.

**Personal Protective Equipment (PPE)**  Abovementioned changes should be adhered to. For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols. If surgery allows, patients that undergo surgeries in the face, patients nose, and mouth should be covered with surgical masks or higher as well (► Table 4).

**For private-practices**

**Prescreening**  A negative PCR test or negative chest-CT cases is recommended. Preoperative tests and preparation for general anesthesia should be done before the testing for COVID-19.

**Organization and infrastructure**  Elective surgery can only be performed if the hospital has an environment for elective surgery, in which evidence-based prevention techniques, access control, workflows and distancing protocols are in place, with sufficient resources of PPE for the procedure and care. The surgeons and staff treating patients should not be working with COVID-19 positive patients in public hospitals at the same time. Discharge management should be activated prior to surgery to allow for fast transfer to rehabilitation facility or home in order to minimize duration of hospital stay. Consider a post-op social isolation period to reduce incidence of a new exposure and infection as feasible, excluding needed post-op visits. The beds in the room should be spaced so that there is 1.5 m between patients’ single bedrooms are preferable. The dressing changes should be done preferably in the patient’s room with nurses bringing in only the material needed for a single patient. If possible, the bathrooms and sanitary facilities should be in the patient’s room to minimize the number of users with regular cleaning using viricidal cleaning solutions. The operating room should have adequate ventilation ensuring the minimal turbulence and promotion of aerosol. Smoke evacuation should be available when electrocautery or other smoke generating equipment is used. The operating theater should be cleaned between operations with viricidal cleaning using viricidal cleaning solutions. The operating room should have adequate ventilation ensuring the minimal turbulence and promotion of aerosol. Smoke evacuation should be available when electrocautery or other smoke generating equipment is used. The operating theater should be cleaned between operations with viricidal cleaning solutions. The number of personnel required in the patient’s room to minimize the number of users with regular cleaning using viricidal cleaning solutions. The number of personnel required in the operating theater should be reduced to a minimum. Anesthesia regulations apply as mentioned above.

**Personal Protective Equipment (PPE)**  Abovementioned changes should be adhered to. For procedures involving the face, doctors should wear FFP2 masks or higher, to avoid infection via aerosols. If surgery allows, patients that undergo surgeries in the face, patients nose, and mouth should be covered with surgical masks or higher as well.

**Emergencies in Plastic, reconstructive and aesthetic surgery**  Emergencies in Plastic, reconstructive and aesthetic surgery should be defined as trauma of the face with major bleeding, inferior rectus muscle entrapment in orbital fractures, fasciostomies and escharotomies in trauma and replantation and revascularization. Furthermore infections of the hand that need surgical treatment or uncovered structures after extensive trauma should be considered as emergencies in plastic, reconstructive and aesthetic surgery.

**Conclusion**  Covid-19 has changed our world, now it is up to us to adapt to the new circumstances. These considerations aim to help reestablishing working after the COVID-19 pandemic, enhancing patient safety and work ethics, as in total 90 % of respondents have not, we commenced elective operations so far. Informing patients about the impact of COVID-19 on aesthetic procedures is important in that regard. With these guidelines, it is imperative that we remain up to date with the local protocols and remain aware of the local and regional community infection levels. Updated information will be distributed via EASAPS/ESRAS websites (www.espras.com; www.easaps.org).

As an organization EASAPS/ESRAS has worked diligently to formulate these considerations based on evidence-based medicine and in line with most laws and standards. However, regional and national regulations may be different, in parts, and therefore regional and national laws will always take precedence over this text.

This paper demonstrates the need for a strong European partnership amongst plastic surgeons throughout Europe so to focus efforts an information in our field. The cooperation between EPRAS and EASAPS proved to be most effective.

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