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Precautions on Contact Dermatoscopy and Other Practices in the Pandemic of COVID-19

Walid Al-Zyoud and Dana Erekat

Abstract

In the age of the pandemic of COVID-19, there is a considerable need for hospitals that triggers many challenges for health care providers to keep themselves and their patients protected from any nosocomial infections, including viral, fungal and bacterial infections. Among health care providers, dermatologists play a vital role in performing dermatoscopy free from *Staphylococcus epidermidis*, *Micrococcus*, and *Corynebacterium* species reported to be identified on the dermoscopic lenses and their adaptors. There is also a possibility for SARS-CoV-2, a member of coronaviruses, to be transmissible from patient to a physician or vice versa or even from a physician to one of her or his family members. SARS-CoV-2 can be transferred through the mucus membranes of the human eyes. This chapter will flag the importance of having a detailed list of precautions for dermatologists and patients to make clinical practice as safe as possible.

Keywords: dermatoscopy, COVID-19, nosocomial, precautions, dermatology

1. Introduction

The novel coronavirus (SARS-CoV-2 or 2019-nCoV) originated in Wuhan, China, in December 2019 and caused deadly acute respiratory syndrome and hence the pandemic COVID-19 [1] with an exponential increase in the number of infected persons. It is well-known that the pandemic of COVID-19 has affected everyone and every sector we are involved in, either physically mentally or even economically. One of the most affected sectors is the sector of public health. The health care providers represent the front line defence and the most critical components of any healthcare system across the globe. The pandemic of COVID-19 has put an unprecedented challenge on the healthcare providers, including dermatologists [2, 3] to cope with such an outbreak. Many studies have reported that SARS-CoV-2 can stay on inanimate surfaces such as stainless steel, copper, plastics, and papers [4–6]. Our contact with lifeless surfaces might represent a source of infection if we contact a living tissue or mucus of suspected or confirmed cases of COVID-19; this was our motivation to write this chapter to summarise precautions from the literature on how dermatologists can apply some contact practices when dealing with expected infections. This chapter has been divided into five sections: the first section of the introduction; section two about consent and precaution; section three about aesthetic procedure protection, section four about general principles, and the last section about dermatoscopy procedures. The chapter references focused on the published expertise of

the prestigious Indian Association of Dermatologists Venereologists and Leprologists (IADVL) and the World Health Organisation (WHO) in this field.

2. Consent and precaution

The dermatologist and patient should consider the precautions of the COVID-19 pandemic. A dermatologist's ability to manage their patients care is the single most critical criterion for patient safety. Depending on the type of treatment being conducted, the risk-benefit ratio of undergoing a procedure should be considered. Procedures that need many appointments to the institution for follow-up are best postponed, so performing treatments requiring the least number of sessions is preferable [7]. Patients should be aware of the possibility of being exposed to the infection on their visit to the healthcare facility. It is better if the dermatologist explains the risk of invasiveness of the treatment and contracting the virus. The dermatologist may also list the side effects of the procedure that may need counselling pre-procedure. Patients on treatment after the pandemic may need to be monitored by video teleconsultation serial imaging, or followed up with a USB or portable patient-friendly dermatoscope, while some other patients starting treatments may still need to undergo onsite visits and procedures [7].

It was proven that even vaccinated individuals can get infected with COVID-19 [8]. If any staff member tests positive or expresses symptoms of infection, the personnel should undergo screen testing with Polymerase Chain Reaction (PCR). According to the Centers of Disease Control (CDC) in the United States of America, the individual with a positive result should remain in quarantine until testing negative after 5 to 7 days if the individual is fully vaccinated and after 14 days if not fully vaccinated to prevent the spread of the virus [9]. Rotational shifts of staff members, in which staff members are divided into two teams for 7 days on-duty and 7 days off-duty, might be a viable alternative [10].

It is essential to support medical staff mentally during the pandemic and on the other hand avoid frightening the patients in an excessive way so that they do not abstain from medically justified procedures, including skin cancer surgery. Some individuals might seek counselling sessions and therapy to stay in their best mind and energy through the tough times. This allows the staff to stay more balanced about the seriousness of the virus.

2.1 Waiting, consultation, and operating rooms precaution

Disposable masks and sanitizers should be offered to the patients at the entrance of the healthcare institute, as all patients should enter with three layered or cotton masks. Gloves can be provided as extra protection to avoid direct skin contact with surfaces that may be exposed to the virus. A thermometer should be used at the entrance to measure the fever of individuals before entering the facility, as high fever can be a sign of infection. The waiting rooms should adhere to social distancing, with 2 meters (~6 feet) distance between individuals [11]. To avoid overcrowding, patients are allowed to have one or even no companion with them to the appointment. The waiting room should be made only available for individuals who come in time for their appointments. If a person is late, the appointment should be rescheduled for another time. The patient should be transferred promptly to the consultation room without waiting long in the waiting area, and social distance is essential even if a close inspection is required during counselling [10].

The staff must disinfect all devices and tools that come in contact with the patient. The operating rooms must be sterilised after each patient [12]. To avoid contact with

Figure 1.
Steps to put on PPEs, including gown.

Figure 2.
Steps to take off PPEs, including gown.

numerous surfaces throughout the process, the patient should be required to wear a gown or overall. To disinfect the operating rooms, remove all machines, beds, stools, and chairs from the room and spray a sodium hypochlorite solution over all surfaces, including the floor, doors, windows, curtains, and cupboards [10]. The operating rooms should have ventilation and enhanced airflow. A powerful exhaust fan can be used in the operation area to optimise airflow, with stand-alone air conditioning devices in the rooms instead of the central air conditioning system [10].

2.2 Personalised protective equipment (PPE)

PPEs are protective equipment meant to protect employees' health by limiting their exposure to viruses. Goggles, face shields, masks, gloves, coveralls/gowns (with or without aprons), head cover, and shoe covers are all examples of PPE. It is advised for all the staff in the clinic to use PPE for extra protection from the virus. The PPE kit differs depending on the procedure and an individual's risk of exposure.

Gown, mask, goggles/face shield, then gloves are the steps in the PPEs donning sequence, whereas gloves, goggles/face shield, gown, mask, then hand hygiene or gown and gloves, goggles/face shield, mask, and lastly, hand hygiene are the steps in the PPEs doffing sequence (**Figures 1 and 2**). Hand hygiene should be conducted before going on to the next stage if hands contact any contaminated PPE surface. They should be disposed of accordingly, depending on the procedure. The interior of the biohazard bag should be treated with a 1 per cent sodium hypochlorite solution before being knotted, and the exterior should be decontaminated with 1 per cent sodium hypochlorite [10].

The N-95 masks can be used multiple times if disinfected correctly. The authors in the reference below suggest that masks can be discarded after five usages. After use, place the mask in a permeable paper mask and set it aside for 4 days to dry. On day 6, it should be used again. Similarly, vaporised hydrogen peroxide and U.V. germicidal radiation (UVC 254 nm) can also be used to decontaminate the N-95 masks [10].

3. Aesthetic procedure protection

The aesthetic procedures are classified into three categories depending on the invasiveness of the procedure; these categories are invasive, minimally invasive, and non-invasive. According to the Indian Association of Dermatologists Venereologists

Invasive	Minimally Invasive	Non-Invasive
• Goggles	• Goggles	• N-95 respirator mask
• Face-shield	• N-95 respirator mask	• Latex/nitrile gloves
• N-95 respirator mask	• Latex/nitrile gloves	
• Surgical gloves	• Gown	
• Gown		
• Head cover		
• Shoe cover		

Table 1.
Protection and precautions of the aesthetic procedures to be utilised.

and Leprologists (IADVL) each category requires different protection and precautions [7] summarised in **Table 1**. Invasive procedures include those that have the potential for aerosolisation and ablation because they expose the patient and health workers to the infection [7]. It is advised only to perform invasive procedures if no other treatment is possible. The non-invasive procedures require basic protection and caution. The dermatologist should wear a N-95 respirator mask and Latex/ Nitrile gloves. The patient is required to wear a three-layered mask. In contrast, the precautions of minimally invasive procedures include advanced caution, moderate protection, and additional protective equipment. Reasonable protection includes goggles, a N-95 respirator mask, Latex/Nitrile gloves, and a gown. Extreme caution, advanced safety, and additional protective equipment are mandatory to perform invasive procedures. Advanced protection requires goggles, face-shield, N-95 respirator mask, surgical gloves, coverall/gowns, head cover, and shoe cover.

4. General principles

The World Health Organisation (WHO) have issued a list of precautions and recommendations guideline to help prevent the spread of COVID-19. The facility must follow these guidelines for the safety of both the patients and staff. Personalised protective equipment (PPE) should be worn with an examination in negative pressure rooms must be followed if there is a high possibility of being exposed to infection [12].

1. All procedures should occur in a ventilated area, with the required protection used depending on the procedure.
2. Some patients may have an asymptomatic syndrome, so everyone should adhere to social distancing and universal precautions (WHO).
3. The instruments and tools in the facility should be sanitised with different chemicals depending on the type of material; this applies to dermatoscopes.
4. The tools should be sterilised, and the region that will be examined should be disinfected before starting the procedure.
5. Replace medical tools and products with disposables if available.
6. Tools and materials used in the examination or the procedure should be disposed of as per biomedical waste guidelines, and all surfaces must be cleaned with 60–90% isopropyl alcohol.

7. Disposable bins should be available in all rooms.
8. Patients should wear a mask at all times to prevent the spread of infection unless the treated area is around the mouth and nose.
9. Immunosuppressed patients and those on immunosuppressive medication should avert invasive procedures [7].
10. Procedures can be performed safely if an individual is on a regular hydroxy-chloroquine dose for rheumatoid arthritis patients or if an individual is on COVID-19 prophylaxis protocol [7].

4.1 Avoided procedures

Some treatment procedures might have a high risk of exposure to infection; hence, safer alternative treatments can be used instead of what is needed to be avoided. For example, platelet-rich plasma, platelet-rich factor, and growth factor concentrate are part of the blood and blood product treatments that can be avoided until after the pandemic, while mesotherapy using hair growth concentrates can substitute these procedures. If medical facials are not essential, they should be deferred and alternated with a prescription from the dermatologist. Carbon facials are avoided because they are plume generating procedures that need extreme caution [7]. Procedures such as laser toning and carbon peels can be postponed or performed with proper PPE/overalls and the use of disposable equipment [10]. The carbon peel, just like the carbon facials, highly generates plumes.

It is obligatory to use a complete COVID-19 PPE kit for dermabrasion procedures; otherwise, they should be postponed. All disposable and personal protection kits should be discarded accordingly. Fat grafting procedures must be deferred because the danger of transmission is serious while handling tissues [7]. Hyaluronic acid filler can be used instead. It is best to avoid hot probe electrosurgery procedures that produce plumes. These procedures are electrofulguration, electrodesiccation, and electrocautery. To limit plume generation, cold probe devices such as higher frequency—radiofrequency devices may be utilised for electro sectioning [7]. Avoiding various procedures such as cosmetic tattooing, tattoo removing and dermaplaning is recommended. Mucosal and oozy/fissured lesions should be deferred in dermatoscopy [12].

4.2 Recommendations for specific procedures

Some procedures may need particular recommendations for precaution against the virus.

1. Fillers, toxins, threads, and lipolysis injections are classified under injectables. For safety, the dermatologist should follow basic protection and caution. Use povidone-iodine to cover oral and nasal mucosa for procedures around the nose and perioral region since it has been found to be viricidal against SARSCoV2 for 3 h [13]. Steristrips™ or an appropriate skin dressing should be worn for 48 h after the surgery, followed by antibiotic cream and medical plaster within the first 2 days [7].
2. In micro-needling, use disposable derma rollers, discard the cartridge of motorised devices, and sterilise the tip of radiofrequency devices using glutaraldehyde after each patient [14].

3. Non-invasive and minimally invasive chemical peels for face, nail, and body need prescribed skin barrier repair creams after treatment. In the post-care recommendations, the patient should be urged to moisturise well since dry skin after a peel might lead to more frequent touching of the face and the theoretical risk of virus transmission through abraded skin.
4. Dermabrasions are better avoided, while microdermabrasion can be done with extreme care because dry skin scrubbing can cause aerosol generation.
5. Use moderate protection for procedures that require radiofrequency for extra precaution.
6. Nonsurgical body contouring procedures require basic protection and caution as they are not dangerous to perform.
7. The dermatologist should use 60–90% isopropyl alcohol swaps to clean the scoped lesion with alcohol-containing solutions utilised as interface medium in dermatoscopy. Instead of the handheld contact dermatoscope, noncontact polarised dermatoscope, video, or USB dermatoscopy can be used [12].
8. Most various procedures are safe. Electroporation, skin boosters, and low light laser therapy are non-invasive or minimally invasive procedures that require almost no pre-or- post-care. Because microblading can cause some bleeding, it is advised to use full PPE and apply sterile/Tegaderm™ [7] wound dressing overnight to ensure skin closure.
9. In laser and energy-based devices, the lens of the machines is cleaned with 70% ethyl alcohol [10]. Special PPE kits are worn while performing carbon laser peels, ablative lasers, fractional resurfacing, tattoo removal, IPL photorejuvenation, mono/bi/multipolar radio frequency (RF) firming, and High intensity Focused Ultrasound (HiFU) [10]. Disposable cup and brush for carbon solution or cooling gel application and disposable cling wrapping for the handpiece and machine and cooling equipment disinfection can be used when needed. Different treatments require particular caution and protection depending on the technology used; please see **Table 2** below.

Technique	Technology
Carbon laser peel	Q-switched Nd:YAG laser
Ablative lasers	Continuous wave CO ₂ laser
Laser epilation	810 nm, 1064 nm, 755 nm, or triple wavelength
Fractional resurfacing	CO ₂ , Er:YAG, Er:glass, thulium laser
IPL photo rejuvenation, mono/bi/multipolar RF firming, HiFU	IPL, mono/bipolar RF, HiFU
Tattoo removal	Nanosecond Q switched Nd:YAG, HiFU or picosecond laser

IPL: intense pulsed light; HiFU: high intensity focused ultrasound; RF: radio frequency; Q-switched laser: Quality-switched laser; Nd:YAG laser: (neodymium-doped yttrium aluminium garnet laser; Nd:Y₃Al₅O₁₂); Er:YAG laser: (erbium-doped yttrium aluminium garnet laser); Er:glass laser: erbium glass lasers.

Table 2.
The technology of laser and energy based procedures [10].

5. Dermatoscopy procedures

The dermatologist should follow basic protection and caution before performing procedures. There must be smoke evacuators and ventilation in all the rooms where the procedures are performed as some procedures may generate plume. The dermatoscope should be wiped with 70% isopropyl alcohol and covered with a disposable dermoscopic lens [12].

These precautions may decrease the possibility of virus transmission through the device. Between the dermatoscope lens and the lesion, a polyvinyl chloride (PVC) film is applied, and a transparent adhesive tape can be put to aid contact dermatoscopy once the immersion fluid has been deposited with a glass slide can be placed over the lesion in front of the dermatoscope [12]. The PCV, tape, and glass slide act as a barrier between the patient and the device. For microscopy, a disposable polyethylene tube can be used with a USB dermatoscope [12]. It is recommended that if the dermatologist is going to use mobile phone to see photos with a dermatoscope to clean it first. A digital dermatoscopy report is preferred because an audiovisual paperless communication is desirable specially when there is a distance between the patients and the healthcare providers. Some limitation of digital dermatoscopy may remain, such as low resolution images, ethical dilemma, patient's privacy and medico-legal responsibility.

All dermoscopic examination materials should be disposed of according to biomedical waste rules. To decrease the nosocomial infection when practicing dermatoscopy, there are many precautions to be taken into consideration, especially when dealing with suspected COVID-19 cases such as:

1. Telephone and or web-based interview form to be filled before dermatoscopy to check the travel history and the presence of any symptoms [10]. This form should include instructions for patients on the clinic's measures related to coronavirus.
2. To use commercially available and disposable dermoscopic lens cover.
3. To use transparent adhesive tapes or microscopic glass slides over the skin lesions when contact dermatoscopy is applied [15].

6. Conclusion

It is vital to have a set of precautions and recommendations for the dermatologists to help them carry on their clinical practice safely in COVID-19 era; it is rightly said that "prevention is better than cure". The pandemic of COVID-19 has significantly affected many sectors all over the world. We did not expect such a catastrophic outbreak, and it might not be the last. The presence of clear and informative safety consensus guidelines for the dermatologists when dealing with suspected or confirmed cases of COVID-19 is essential to stop the viral transmission from the patients to health care providers and then to their family members.

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Conflict of interest

The authors declare no conflict of interest.

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