“WHAT BENEFICIAL CHANGES HAS THE PANDEMIC MADE TO DERMATOLOGICAL SURGERY?”

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What beneficial changes has the pandemic made to dermatological surgery?

The COVID-19 pandemic has been pivotal for all sectors, including dermatological surgery (DS). Dermatologists adapted to the unprecedented challenges of the pandemic, implementing changes that will benefit the field for many years. In this essay, I will draw from evidence in dermatological literature to explore beneficial changes the pandemic has made to DS, focusing on teledermatology, intra-operative changes, and training (Figure 1).

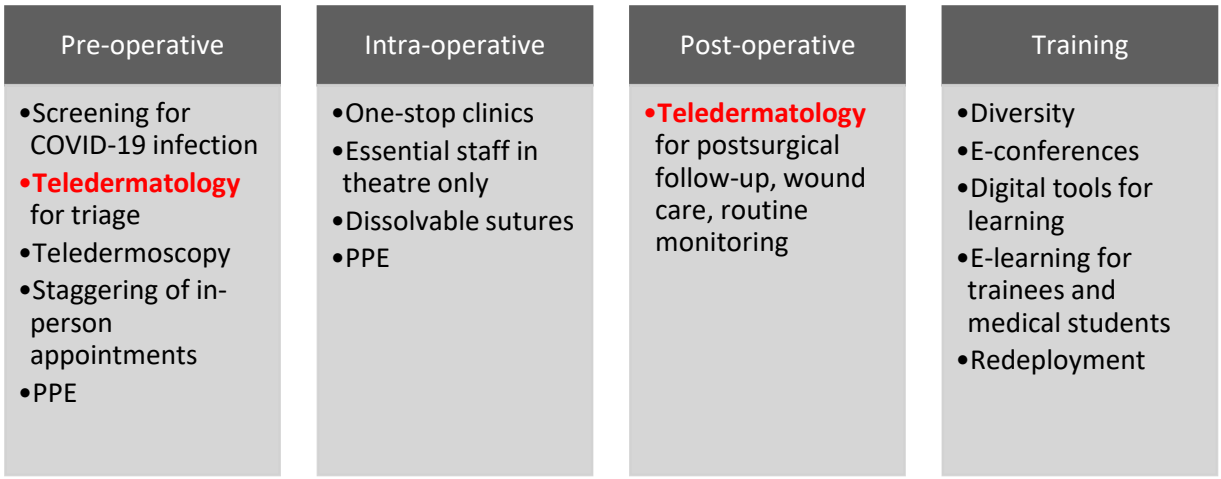

Figure 1- Pandemic changes

Teledermatology

Telemedicine refers to telecommunication technology used to deliver healthcare at a distance.[1] Fewer face-to-face (F2F) consultations during the pandemic necessitated greater telemedicine usage to allow patient access to dermatology services.[2] Teledermatology is provided through two main modalities (Table 1).[3]

Modality	**Definition**
store and forward (SAF)	Refers to a modality where clinical images and other information are evaluated by the clinician at a later point.
real-time (RT) video consultation	A synchronous modality that simulates a virtual in-office

	experience.

Table 1– Teledermatology modalities.[4]

Pre-operatively, teledermatology streamlines the triage process.[5] Postoperative uses include post-surgical follow-up, wound care, and routine monitoring.[6] Before the pandemic, teledermatology uptake was increasing although there were still barriers to widespread use. The pandemic accelerated teledermatology implementation and helped overcome some reservations.[2] For example, a UK survey investigating the pandemic's effect on registrar teledermatology confidence levels showed a 43% rise in those self-rating as 'slightly confident' compared to the start of the pandemic.[7,8] Advantages of teledermatology include time efficiency and greater accessibility (Table 2). While F2F consultations will likely remain the gold standard, teledermatology may be a strong future adjunct in DS.

Advantage	**Evidence**
Environmentally friendly	A life cycle inventory found that replacing F2F consultations with telemedicine consultations led to a 40–70 times reduction in carbon emissions.[9]
Similar diagnostic accuracy	A Cochrane review found that there was similar diagnostic accuracy between teledermatology and F2F consultations in identifying malignant lesions.[10] Moreover, a cohort study found that although telemedicine consultations have slightly reduced diagnostic accuracy, they have comparable accuracy to F2F consultations in listing patients to urgent or routine skin cancer pathways.[11]
Patient satisfaction	A systematic review that had found slightly higher diagnostic accuracy of FTF consultation than teledermatology for skin cancer diagnosis noted

	teledermatology reduced waiting times and could result in earlier assessment and treatment. Patients expressed high satisfaction.[12] A patient survey found that nearly one-quarter of patients would use teledermatology in the future and 57.1% would use it in addition to a traditional consultation only. Common reasons found for using telemedicine were reduced waiting times and no need to travel.[13] Another survey of patients using synchronous teledermatology for the first time found that 88.9% of patients were satisfied with their teledermatology encounter. Although there was high patient satisfaction with synchronous teledermatology, 68.7% still preferred a F2F consultation for their next consultation.[4]
Reduced 'no-show' rates	A retrospective chart review noted that compared to F2F consultations, telemedicine consultations had significantly lower no-show rates.[14]
Reduced waiting time	A cross-sectional retrospective study concluded teledermatology as a triage tool lowered the waiting time for F2F visits by 78%, which improved health care access.[15]

Table 2- Advantages of teledermatology

Intraoperative

Surgical Procedures

The pandemic affected DS enormously with most surgical departments prioritising urgent cases and cutting many elective procedures.[16] Even surgical techniques changed. For example, one UK survey investigating pandemic Mohs surgery services found that there were reduced external reconstruction and lowered proportion of flaps and grafts.[17] The same study

noted greater use of dissolvable sutures for less complex repairs as an approach to mitigate COVID-19 spread by removing the requirement for patients to return to theatre for suture removal.[17] In addition to this benefit, greater dissolvable suture usage could reduce demands on surgical resources and limit any surgical and psychological discomfort associated with multiple visits.[18,19] Moreover, some evidence suggests no long-term difference in cosmetic results and equal safety profile between dissolvable and non-dissolvable sutures.[20,21]

Additionally, one-stop clinics combining assessment and surgery were adopted.[16] In a similar vein, this was introduced to reduce hospital footfall and infection risk. Added benefits of one-stop clinics include reduced waiting times and greater patient satisfaction compared to conventional pathways.[22]

Surgical Smoke

Several personal protective equipment recommendations were made for DS in light of COVID-19, including advise on smoke extractor use during aerosol-generating procedures.[23,24] One benefit of the pandemic is that it drew attention to surgical smoke hazards since there was speculation as to whether surgical smoke could spread COVID-19.[25,26] Past studies show surgical smoke contains harmful toxic gases and metabolites.[27,28] Significantly, evidence suggests it can act as a vector for some infectious particles although this has not been reported for COVID-19.[29-32] Considering one survey found that only about 10% of dermatological surgeons routinely used smoke management before the pandemic, it is plausible that the pandemic may increase focus on surgical smoke hazards during the pandemic may result in greater heed paid to precautions when dealing with surgical smoke in the future.[33] However, it remains to be seen as to whether use of smoke management will increase long-term.

Training

Diversity

A serious disparity exists in melanoma diagnosis, outcome and surgical treatment between white patients and Black Asian and Minority Ethnic (BAME) patients.[34-36] Together with the Black Lives Matter movement, the pandemic highlighted health inequalities for BAME communities.[37] Resources created during the pandemic like 'Mind the Gap' and dermatological educational events somewhat offset the lack of skin of colour dermatology educational resources available.[38-40] Hence, one beneficial change of the pandemic has been initial steps towards increased skin of colour representation, paving the way for better future dermatological care for BAME individuals. Additionally, lack of skin of colour inclusion in machine learning algorithm development currently limits its applicability in dermatology; increased representation will help this technology be implemented without exacerbating inequalities, revolutionising dermatology.[41]

Learning opportunities

Many conferences moved online due to the pandemic, permitting dermatologists to still share knowledge. Remote conferences led to travel and cost reduction and, greater convenience and accessibility for delegates.[42]

Moreover, the pandemic catalysed the adoption of digital tools for DS training. To combat less exposure to DS during the pandemic, one study described a program created to teach surgical techniques to dermatology residents. It utilised both flap designing tasks solved using a simulator model and videos on surgical techniques.[43] Simulation for DS training is viewed positively and as helpful.[44]

Redeployment

Many dermatologists were redeployed to COVID-19 and in-patient wards. Although a stressful experience, it may have broadened skills transferrable to permanent roles.[45-47]

Conclusion

The pandemic undoubtedly caused much distress and huge surgery backlogs. However, it presented an opportunity for a paradigm shift in dermatological technology use and will help deliver more accessible dermatological care.

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