Experience of Using Telehealth for Foot and Ankle Examination During The SARS-COV-2 Crisis

Abstract: The era of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) is rapidly evolving. To comply to the guidelines for social distancing and reducing travel to prevent the spread of disease, many centers made rapid adjustments to conduct follow-up appointments through telehealth mediums. We explore our center’s adaptation to the pandemic, reflecting on how we formulated telehealth clinics for our patients. We share our experience, discuss the challenges encountered, the feedback received, as well as consider the future role of telehealth in everyday orthopaedic practice.

Levels of Evidence: Level V

Keywords: telehealth; SARS-COV-2; pandemic; foot and ankle examination

Background

The World Health Organization defines telehealth as

The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease . . . all in the interests of advancing the health of individuals and their communities.

From the 2016 Global Health Observatory data, it was found that implementation of telehealth was limited by several factors. These factors include

- Funding to develop programs
- Funding to support programs
- Equipment and connectivity to provide an infrastructure
- Limited telehealth legislation and regulations
- Health systems having other priorities

However, the SARS-COV-2 pandemic has created a nudge effect toward utilization of telehealth. As a result, health trusts have had to adapt to the situation by overcoming previous barriers and prioritize telehealth as a medium to engage patients in virtual consultations.

The digital integration of video communication has been implemented swiftly thus forcing clinicians to utilize telehealth in circumstances where the normal standards of orthopaedic examination have not previously been fully tested or developed.

This article is a report of our center’s experiences and challenges in implementing our telehealth protocol for virtual visits. We also discuss our tools and measures used to achieve an efficient virtual appointment, focusing on obtaining the information usually inferred from a first-person foot and ankle examination. We explore whether telehealth accurately enables clinicians to retrieve information regarding the patient’s well-being in an efficient manner, while reducing environmental exposure for patients given the current climate.
**Our Telehealth Virtual Protocol**

We scaled the use of telehealth consultations with our patients at the first patient contact, offering video consultations where appropriate for both new and follow-up appointments to enable a more effective and streamlined patient journey. We introduced sign posting of ongoing symptoms through illustrations using a screen share feature in addition to standard history taking and examination through visual inspection using video platforms (Figures 1-6).

Determining a safe digital platform to be used for telehealth was a crucial step in starting our virtual consultations. An NHS England-endorsed web-based video consultation software was selected by our trust. This software allows doctors to simultaneously video conference their patients and screen share in real time; this enabled the clinician to show the patient our consultation guide document, which assisted in the absence of direct physical examination. Designed by NHS improvement, this software processes any personal information over a “secure encrypted internet channel,” which is deleted following the consultation. To facilitate with our virtual consultations, all consultants were provided with trust laptops supporting modern video conferencing capabilities, existing computers were updated to allow virtual clinics.

Patient triage involved the scheduling team contacting the patient, explaining the virtual assessment process, and consenting for the consultation.
An important element was patient eligibility and identifying whether they are able to use digital methods for communication. Patients were triaged by senior orthopaedic surgeons based on their primary care physician’s referral and initial imaging. Patients considered unsuitable for virtual consultation were invited for telephone or face-to-face consultation.

Patients were then sent an invitation for their consultation via email, including information about the software used and advice regarding technological requirements. Visual aids were used in a step-by-step diagram to navigate patients through what they could expect on the day. Troubleshooting information was also provided.

To discuss the challenges of virtual consultations in foot and ankle clinics, one difficulty with the foot and ankle examination is viewing the foot appropriately while maintaining good rapport. Using a camera built into devices to visualize the patient’s foot during the consultation resulted in a downgrade in the quality of communication verbally and visually. We used our digital illustrations (Figures 1-6) to facilitate face-to-face communication while pinpointing the location of pain on a patient’s anatomy with minimal camera manipulation. If necessary, a second person was required to adjust the camera so that the foot could be visualized clearly.

The telehealth medium enabled communication with patients who would not be able to attend a routine visit to the hospital due to complications of SARS-CoV-2 or deemed too “high risk” for contracting the virus. These clinics were useful postoperatively as they minimized the need for this potentially vulnerable patient group to attend the hospital clinic (thus reducing the risk of nosocomial transmission of SARS-CoV-2). Patients would additionally find some solace that they were recovering under the supervision of their operating surgeon.

The implementation of virtual clinics has provided several benefits regarding hospital resources. The healthcare teams have more time and personal space available to manage the clinics without feeling over exposed to the virus. Clinic capacity and flexibility is also increased for the department. This allows patients that require urgent face-to-face consultations to have shorter waiting times. Additionally, the benefits of less traffic in the outpatient setting means, no patient transport, less pollution, increased hospital parking space and ultimately lower costs for the hospital.

Patients that have participated in video consultations were sent patient feedback forms subsequently. The results of the completed questionnaires are being analyzed. We need to ensure that the patients are satisfied and importantly trust this service going forward.
Discussion

The development and implementation of remote care has occurred swiftly during the pandemic. The legacy of the efforts during this time provides clinical pathways supported by digital health technology to support patient care virtually. There are existing resources available that with the right training and procurement could be effective tools in providing virtual assessment in orthopaedics. With these tools, we should look at the whole patient journey and try to utilize its full potential.

The biggest question is whether the foot and ankle surgeons will utilize this virtual method of medical consultation. We found that this service was best used for identifying conditions that are not complex and more predictable in nature; conditions which can be easily self-assessed and safely monitored remotely. This reduces demand for face-to-face consultations, enabling patients for whom it is essential to have direct assessment by a clinician to be seen faster.

Screen sharing is valuable in a virtual clinic setting to discuss and review the results of investigations. Patients are given information in real time with the autonomy to discuss options with the surgeon. It is one of many innovations implemented during the pandemic, which could be used in the future for virtual clinical assessments.

Better assessment tools can potentially be developed such as dual camera technology to collect patient objective outcome measures such as range of motion and function. This could be accomplished by using available mobile phone technology with accelerometers and inclinometer and digital photographs to record progress after intervention.

One of the limitations that we have regarding implementation of telehealth in the post SARS-CoV-2 era is the comparative difficulty in both establishing a similar level of rapport and assessing current levels of rapport between the clinician and the patient. As a result, there is a potential risk of losing ethos.

From here on, we need to risk assess the pathway to understand any potential gaps as well as evaluate the quality and accuracy of this developing method of clinical assessment. Moreover, we should gain greater clarity regarding which
patient groups benefit from this approach.

**Author Contributions**

Y.S., P.H., and A.S. carried out the clinics and collected data. S.J., S.L., and Y.S. wrote the manuscript. P.H. and A.S. supervised the project. All authors provided critical feedback and helped shape the analysis and manuscript. S.J. and S.L. designed the graphics used in the column.

**Declaration of Conflicting Interests**

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