APPLICATION OF SELF-RECORDED PHOTOS USING MOBILE PHONES IN MAXILLOFACIAL SURGERY

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Nowadays, there is an increasing use of mobile phones as a part of telemedicine to aid in the management of various health conditions. There are numerous reports of using mobile phones as a tool for sending and receiving short text message (SMS) in medicine. Aside from keeping patients continuously in touch with their health care providers, mobile phones can also be a useful tool for providing doctors with valuable information. A useful adjunct of many mobile phones is its ability to take clinical pictures.

In this study we present a case series where mobile phone photos taken by the patient were later used to aid in the diagnosis and management of various maxillofacial conditions.

Introduction

In recent years, we have been witness to various advancements in mobile technology with broad implications in medicine. A search of the medical literature reveals many accounts of the use of mobile phones in various specialties. There are numerous reports of using mobile phones as a communications tool for sending and receiving short text message (SMS) between patients and doctors.¹⁷ In addition, the use of mobile cameras to take clinical pictures for the purposes of documentation or as a diagnostic aid has been widely used in various specialties.⁸⁹

Telemedicine is the “provision of care through remote interaction” which may be enhanced by mobile phone technology. Patients today are becoming increasingly autonomous in the management of their own health by participating in telemedicine and using their mobile device to improve or aid in their disease management.¹⁰ However, there are fewer published studies investigating the use of patient-taken photos in the aid of clinical diagnosis. In this study we discuss how photos taken on mobile phones by patients helped the doctor to manage the clinical problem. The aim of this study is to report the use of pictures taken with mobile phones as a medical diagnostic tool in two patients in the context of maxillofacial pathology.

Case 1

A 17-year old boy presented to the Oral and Maxillofacial department of Shahid Beheshti University Medical Centre (SBUMC) for treatment of an erythematous swelling on his left cheek. When asked about the history of his present illness he could not give an adequate account and was only sure that the problem had occurred 6 months ago. He had undergone several treatments in the previous 6 months but since he lived in a remote village the clinician did not have any knowledge of the previous medical interventions, which made the situation more complicated. He tried to explain the fact that the lesion underwent a period of remission and exacerbation following intravenous antibiotic
therapy. On examination, he had a visible scar in left alar groove of the nose.

Self-taken photos of this cheek lesion attracted our attention. These photos were taken by a 2 megapixel phone camera, after which they were transferred via USB cable to a laptop. Some of these photos can be seen in Figure 1. These photos clearly showed a complicated chronic infection and provided good insight of how the wound had changed during the time. Biopsy and tissue culture showed Mucormycosis. The photos notified the clinician of the ineffectiveness of previous pharmacotherapy thus wide local excision followed by medicine therapy was decided.

Figures 1 - Sample of pictures taken by patient with his mobile phone before admission to a hospital

Case 2

A 20-year-old boy was referred to SBUMC with the chief complaint of an unaesthetic scar on his right frontal area due to a car accident that had happened 12 months ago. When asked about the history of present illness, he could hardly explain the procedures he had undergone. This case did not have any medical reports either, but numerous pictures of the scar were taken by the patient with the aid of his mobile phone 3.2 Megapixel camera (Figure 2). The photos showed that the patient had a tendency to form keloids and hypertrophic scars; thus, scar revision surgery was not a suitable treatment approach. After thorough evaluation of the patient’s photos and his expectations, we decided to choose self-inflated tissue expander installation for him.

Figure 2 - Sample of pictures taken by patient with his mobile phone before admission to a hospital
Discussion

Nowadays, mobile phones have become the primary camera for many people and taking pictures with them have become very popular. We believe that clinical photos of facial lesions can not only augment the patient’s history in order for the primary health provider to synthesize and accurate diagnosis, but can also serve as a powerful diagnostic tool.

Since their invention mobile phones have played an active role in medicine. Dyer in 2003 reported the use of mobile phones for sending a text message to patients in order to remind them of upcoming appointments with their doctor. Mao et al in 2008 reported effective use of mobile phone text messaging for pharmaceutical care in a hospital in China. Moumoulidis et al, in 2007, described a novel use of photo messaging in the assessment of nasal fractures; Shreier et al presented a mobile phone based telemedical compliance management system for patients with psoriasis. Shreir and his team developed a unique software whereby patients are able to input various health parameters (such as their body weight), take photos of their psoriatic lesions, and report their side effects of their current treatment. This data is automatically sent to a monitoring center for continuous clinical monitoring with periodic assessment of the state of the disease. Hayn et al concluded that mobile photos can simplify the patient – physician communication and shorten the mean duration of a regular outpatient follow up. In addition to this, it can also facilitate the treatment process by having regular photo updates of particular lesions under treatment, thereby allowing any particular modifications to the treatment regimen as is necessary. However, in one study the results showed that there was no evidence to support the use of photographs sent by email or message for follow-up of facial lacerations sutured in the emergency department and despite the request of doctors, none of the patients sent their photos.

In the present study, the patients were firstly treated in remote village areas with no access to proper medical equipment; therefore, once they were referred to a medical center in a city the photos they had taken with their mobile phones proved to be an extremely valuable diagnostic tool. In case 1, the photos showed the ineffectiveness of a particular pharmacological treatment and the photos in case 2 helped the clinician to select the optimal treatment modality. These two cases elucidate how patients' own mobile photos can be a valuable adjunct to the clinical history provided by them.

Nowadays, with advances in technology, nearly all mobile phones have the possibility of taking photos, thus, it would be a useful idea to encourage the patients to record any visible changes in their maxillofacial region and also the progress of their treatment. In most cases, serial photos might be very useful to document the onset, extent and progress of the disease, as well as tracking the post-surgical outcome.

Conclusion

Mobile phone pictures can become part of a patient’s permanent medical record and can provide reliable information for doctors.

References


