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Importance of Digital Dental Photography in the Practice of Dentistry

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SUMMARY

Digital photography has today, quite sure, penetrated into all segments of life, providing new facts and perceptions in the field of science, medicine, industry, fashion design, communications and arts.

The aim of this paperwork was to, based of the observations from literature and clinical experience, inform and assist the physician-practitioner in having insight into the overall importance from the domain of digital dental photography and make in this way the everyday practice easier, more comprehensive and of better quality.

Numerous statements in technical literature and reports in everyday practice point to its great significance in contemporary dentistry, both from the aspect of its role in documenting dental treatment, communication in the relation dentist-patient-dental technician, self-checking (control) of one's own results, illustration of lectures and publications, and the aspect of conceptualizing efficient marketing and accomplishing electronic teledental system of connections.

Digital photography has multilevel significance and represents the synonym of contemporary dentistry. It's application in dental practice is simple, fast and utterly useful in documenting procedures of work, effectuating the education of patients and pursuing clinical investigations, thus securing many benefits to dentists and patients.

Key words: digital dental photography, digital documentation, teledentistry

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INTRODUCTION

It would be difficult to imagine any form of our existence that is not associated with photography. Its century and a half long history represents a turning point in the development of society, making life of people more rich and comprehensive. The opinion of the majority prevails that photography has influenced the conscience of people so much that the saying "an image is worth a thousand words" is accepted as an irrefutable fact (1,2).

Digital photography has today, quite sure, penetrated into all segments of life, providing new facts and perceptions in the field of science, medicine, industry, fashion design, communications and arts (3-5).

The reasons for the above are probably implied, on the one hand, in its numerous advantageous features, an enviable level of technical - technological development, as well as numerous advantageous features in comparison to conventional photography on the other hand, particularly when it concerns medical documentation (6,7).

The above are: instant access of digital images to the user, promptly after shooting and possibility of efficient control of their exposition; optimal choice of illuminating the object of shooting which spares the photographer from supplying costly accessory equipment for lighting; photographing may be adjusted to different color temperatures; technical data of each photograph are automatically recorded, which makes its adequate reproduction possible; possibility of fast printing, filing, copying and sending by electronic mail to any part of the world; possibility of fast reviewing and removing of spotted errors as well as the possibility of instant deleting and repeating shooting procedures until obtaining the result desired and, eventually, economy feature of digital photography due to excluding costs for the film and its processing in the laboratory in spite of significant financial expenditure about purchasing modern photographic equipment (1,2,8-10).

Documentation

The basic aim of dental photography is documentation of dental treatment which includes photographs demonstrating the process and stages of therapeutic treatment (Figures 1 and 2).

Images should be made prior to each noninvasive and invasive diagnostic procedure, which results not only in a bunch of interesting dental files but it also shows those forensic elements as well, which are of crucial importance in judicial-medical, investigation and proof finding procedures (6, 7, 11).

In many situations, discrepancies between the dentist and patient may also be overcome in this way. In addition, images should be always made after the treatment, the purpose of which is not only to legally



Figure 1. Photograph made before treatment



Figure 2. Photograph made after treatment

protect the dentist but the patient as well. Dental photography is also useful in the course of treatment and control check-ups in order to monitor pathological changes on osseous and soft oral tissues. The results of investigations, furthermore, may be documented with the help of images in order to define preliminary diagnoses. Since the importance of dentistry shall be growing in the years to come, the mentioned aspects will have greater importance than earlier (12).

Communication

The appearance of hard and soft tissue may be quickly and easily photographed, thus facilitating the communication among dentist, physician and laboratory. The images also provide dental technicians with important information on the structure and color of teeth, therewith making it possible to them to individually match aesthetically and functionally artificial crowns as much as possible with natural teeth. Even when the choice of color has not been made by the dentist, the photograph can be a means of direct communication with dental technician, with the aim of making the

colors of artificial crown and natural tooth on the photograph as more even as possible (13).

The preoperative photograph sent along with the sample of the tissue to the pathologist may render important information, and in this way also help in defining the proper diagnosis (Figure 3).



Figure 3. Photograph assists in communication between dentist and patient

Images also play an important role in consultations regarding the patient. They not only make it possible for the dentist to accomplish informative communication with the patient, but offer the patient numerous possibilities to talk about his/her impressions and wishes about the success of the therapy applied.

Self - checking

In the years to come, quality control will become increasingly important to the dentists. In this context, the photograph will be increasingly significant. Even without institutionalized control of quality, the photograph will make it possible for the dentist to self check his or her own result. Anyone who has photographed the stages of dental treatment, subsequently enlarging and designing the results, is capable of verifying it (14) (Figure 4).

Images are, in the end, the key element in presentation of the case whether as a part of training or as a part of quality control.

Illustrations

It is almost impossible to think about lectures and publications in dentistry to be presented without images (15) (Figure 5).

Practice - marketing

The concept of marketing in practice is often misused. Many recommendations by "marketing experts", who call themselves this way, seem to be too



Figure 4. Conditional disadvantage of dental photograph is a possibility of self-checking



Figure 5. Digital photograph is very useful for illustrating lectures to dentists as well as for lecture writing and publications

exclusive and, as such, quickly understood. Marketing in the positive sense may allow the patient to immediately compare the beginning and outcome of the treatment. Two images, printed next to each other, are generally sufficient for this and can be given to the patient. Very little text is needed. Patients are often prone to show them to friends and people they know. There is probably no better, small but efficient, marketing tool from this (16) (Figure 6).

Finally, images also contribute to maintaining and supporting profession of dentist, which becomes increasingly important for career advancement (Figure 7).

Teledentistry

It was established in 1994 as a military project of the American army (U.S. Army's Total Dental Access Project), with the aim to improve patient protection, offer dental education and realize the communication of dentist-dental technician laboratory. Via teledentistry, dental professionals may mutually be consulted at remote locations.

The military project has made it clear that teledentistry reduces total costs, widens protection to remote and rural regions, and provides as complete information for needs of analysis as possible. Teledental system enables dentists to share the information about the patient, x-ray images, graphic presentation of periodontal and hard tooth tissue, applied therapies, notes, photographs and other information that can be transported via multiple providers (7).

There are two basic techniques used in teledentistry (17). One is the real-time video conference and the other one, more common, is store - and - forward. Both techniques include professional digitizing and electronic transmitting of video information, drawings, diagrams, photographs, radiograph shots etc.

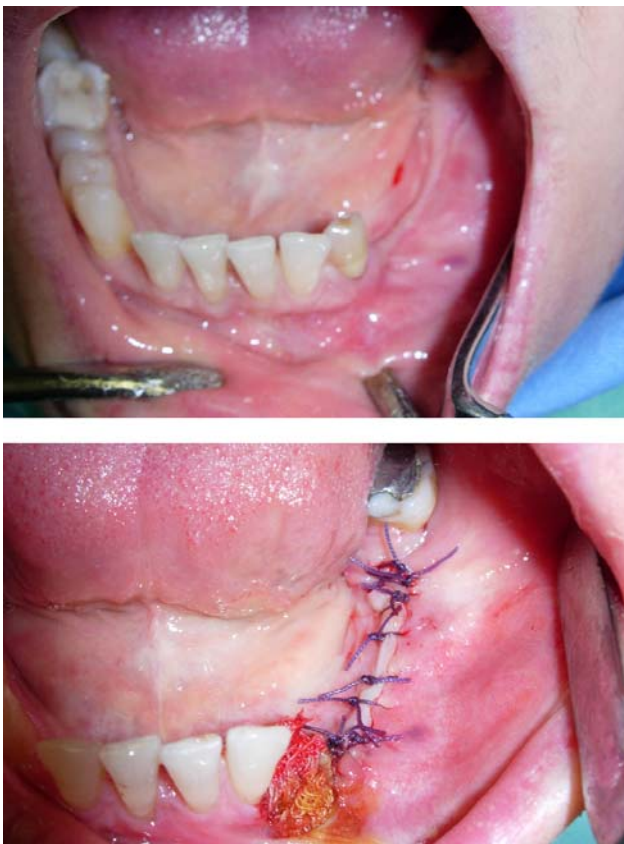


Figure 6. Placing photographs next to each other taken at the beginning and end of treatment not only stresses the importance of the applied therapy to the patient, but is also an underestimated but efficient marketing tool



Figure 7. Photographing of interesting cases or curiosities arouses interest in dentistry

CONCLUSION

Digital photography has multilevel significance and represents the synonym of contemporary dentistry. Its application in dental practice is simple, fast and utterly useful in documenting procedures of work, effectuating the education of patients and pursuing clinical investigations, thus providing many benefits to dentists and patients.

Quality digital dental photography is a real prize for deposited financial funds in supplying equipment, as well the time and effort directed to acquiring new knowledge from this field. As images become more significant, the camera should be therefore undoubtedly a part of standard equipment for each dentist.

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ZNAČAJ DIGITALNE DENTALNE FOTOGRAFIJE U STOMATOLOŠKOJ PRAKSI

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Sažetak

Digitalna fotografija je danas, sasvim sigurno, prodrila u sve segmente života, obezbeđujući nove činjenice i saznanja u oblasti nauke, medicine, industrije, modnog dizajna, komunikacija i umetnosti. Stoga je mišljenje većine da je fotografija toliko uticala na svest kod ljudi da je maksima: "jedna slika vredi kao hiljadu reči" prihvaćena kao nepobitna i često je citirana.

Cilj ovog rada bio je da informiše i pomogne lekaru-praktičaru u sagledavanju celokupnog značaja iz domena digitalne dentalne fotografije i time učini svakodnevni rad lakšim, sadržajnijim i kvalitetnijim. Brojni navodi u stručnoj literaturi i izveštaji iz svakodnevne prakse ukazuju na njen veliki značaj u savremenoj stomatologiji, kako sa aspekta njene uloge u dokumentaciji stomatološkog tretmana, komunikaciji na relaciji stomatolog-pacijent-zubni tehničar, samoproveri (kontroli) sopstvenih rezultata, ilustraciji predavanja i publikacija tako i u koncipiranju efikasnog marketinga i ostvarivanju elektronskog telestomatološkog sistema veze.

Digitalna fotografija ima višestruki značaj i predstavlja sinonim savremene stomatologije. Njena primena u stomatološkoj praksi je jednostavna, brza i krajnje korisna u dokumentovanju postupaka rada, sprovođenju edukacije pacijenata i obavljanja kliničkih istraživanja, obezbeđujući mnoge koristi stomatologima i pacijentima.

Ključne reči: digitalna dentalna fotografija, digitalna dokumentacija, telestomatologija

