

# Using digital photography to enhance your practice

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## Introduction

For many years dental photography was far from commonplace in most UK dental practices and even today, while its use is on the rise, it is by no means the norm. One recent study of 1,000 randomly selected GDPs (Morse, 2010) found that 48% of respondents regularly took clinical photographs with stated uses being:

- Patient instruction/motivation (75%)
- Medico-legal reasons (71%)
- Treatment planning (63%)
- Liaison with dental laboratory (64%).

Given the advent of affordable, easy to use, high-quality digital cameras and associated editing and presentation software, it is likely that more and more dentists will incorporate dental photography into their practices. One of the great advantages of digital photography in this context is that it eliminates the delay between image capture and review, as well as permitting greater freedom for trial and error adjustments.

This purpose of this paper is not to provide technical guidance in the art and science of clinical photography, rather to detail the various reasons why you should incorporate it routinely into your practice.

## Reasons for doing clinical photography

The ancient Chinese proverb 'a picture paints a thousand words' is at the core of why clinical photography is so

useful (Figures 1a and 1b). It is essentially an invaluable aid in communicating a vast array of information in an easily understandable form. In a thorough review of the literature on communication in healthcare, Houts et al (2006) found that 'pictures closely linked to written or spoken text can, when compared to text alone, markedly increase attention to and recall of health education information. Pictures can also improve comprehension when they show relationships among ideas or when they show spatial relationships. Pictures can change adherence to health instructions.'

In other words, photography is most useful when it is allied with the spoken or written word, with each medium enhancing the other. This principle applies to the wide range of functions that clinical photography now serves.

## Patient communication

Clinical photography is perhaps at its most useful when used to communicate with patients. During the initial examination phase it effectively allows patients to 'tour' their own mouths (Shorey, Mooer, 2009), enabling them to see clearly their hard and soft tissues, occlusal relationships, the relationship of adjacent teeth, tooth wear, symmetry, midline discrepancies and occlusal cants, all of which may be less apparent when only study casts are available. Photographs are also extremely useful in highlighting the condition of any deficient restorations (Figures 2a and 2b).

At a later stage, it is extremely useful in facilitating the explanation of a number of different treatment options when doing so by words alone would be laborious and might not put across important issues in a way that patients can understand. When the patient is presented with the various alternatives pictorially the decision about

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**Figures 1a and 1b:** A patient can easily see from these two photographs the beneficial effect of restoring these decayed incisor teeth with carefully placed composite restorations. This can be conveyed using words alone but photographic images are far more powerful.



**Figures 2a and 2b:** These photographs were taken mid-way during this patient's tooth whitening. The patient was sceptical about the benefits of the procedure and wanted to have his unrestored upper anterior teeth veneered. He was asked initially to whiten only the upper teeth and the resulting improvement is clear in these photographs, which also serve to highlight the poor marginal fit of the upper right ceramo-metal crown and the left side reverse overjet. After consideration of all of these factors the patient decided simply to replace the defective crown upon completion of tooth whitening.

which to select is usually simplified and importantly, made with greater confidence.

Pictures alone, however, cannot increase the uptake of any particular treatment and must be used in the context of a broad approach, which starts off by determining the patient's needs, wishes and expectations, followed by a presentation and explanation of the options that would satisfy those needs (Newsome, Latter, 2007). To present the various options effectively requires meticulous preparation and, for most patients, demands a separate dedicated appointment. You should review radiographs, study casts, charting and initial examination findings at least one day in advance. Fees should be calculated for each particular treatment scenario in advance so that you aren't floundering around when the patient asks the inevitable question 'How much will all this cost?'

When you do illustrate your presentation with examples of treated cases, the greatest impact is always when these

are highlighting your own clinical work rather than someone else's (Figures 3a-3c).

Remember too that patients are primarily interested in solutions and don't usually need to know exactly how you are going to arrive at those solutions so don't get too bogged down showing pictures of crown preparations, retraction cord, implant surgery and so on – save those for presentations to your colleagues or introduce them later on as treatment progresses.

Clinical photographs of treated cases can be supplemented by demonstration models and diagnostic wax-ups. Computer-generated 'before' and 'after' images suggesting how the patient would look given any particular treatment are becoming increasingly popular but we strongly believe should be used only with extreme caution. As Ahmad (2009) has pointed out, such simulations become legal documents once created and given to the patient. The recipient may, at a later date, refer to them in legal proceedings if the outcome is not as depicted in the



**Figures 3a, 3b and 3c:** Photographs illustrating your own work are always more powerful and confidence-inspiring than those showing the work of others found on the internet or in stock publications. This patient did not want to have crowns or veneers but wanted to improve the appearance of his teeth so simple bonded composite resin restorations were used instead. Cases such as the one shown here illustrate your willingness to listen to the patient and understand his or her concerns.

images. Over-promising and under-delivering is one of the surest paths leading to legal action by the patient in whom expectations have not been met. This leads us onto the next, extremely significant, role filled by clinical photography.

**A medico-legal record**

As Christensen (2005) has pointed out, the number of dental practitioners involved with legal activity is ‘astounding’ and it does not appear to be decreasing. There is no reason to avoid recording potentially legally threatening clinical situations and storing them in digital form. It goes without saying that if such records exist then the dentist’s case is usually much easier to defend (Greskemper, 2002; Curley, 2002). However, as most practitioners undertake dozens of procedures every week, the question is which cases to record. Christensen (2005), for example, advises photographic records of such potentially litigious procedures as:

- Implant surgery
- The placement of all-ceramic crowns

- Any treatment planned as an aesthetic upgrade
- Any comprehensive or expensive dentistry
- Any treatment on patients who appear to be suspicious or overly anxious or who have had previous legal encounters with dentists.

All of the above can potentially lead to situations where patients feel that their expectations have not been met and seek legal redress. This phenomenon is growing, no doubt fuelled by the huge popularity of television and magazine makeovers as well as the enormous amount of information currently available on the internet.

Photographic records should include starting and ending conditions as well as any peculiar occurrences during treatment.

**Patient monitoring**

Dental photography can also be used to monitor disease progression and treatment outcomes over time, for example with oral mucosal lesions (Schoelich, 2009), gingival recession (Armitage, 2004), progressive loss of tooth tissue through abrasion/attrition/erosion (Bartlett et



**Figure 4:** Clinical photography is a useful tool for monitoring the long-term status of restorative dentistry. The gold restorations shown here have been in place for over 20 years and remain in excellent condition.



**Figure 5:** It is important to record clinical failures as well as successes for a variety of reasons including, medico-legal and as a useful teaching tool in lectures, seminars and discussions with colleagues and students.



**Figures 6a and 6b:** This case is an extreme example of what modern multidisciplinary dentistry can achieve.



al, 2008) or the extent and nature of incipient/arrested carious lesions (Elfrink et al, 2009).

For example, Elfrink et al (2009) examined the validity of scoring caries and areas of primary molar hypomineralisation (PMH) by the use of intra-oral photography. The authors concluded that the sensitivity, specificity and the likelihood ratio of scoring caries and PMH on photographs made with an intra-oral camera were good. The inter- and intra-observer reliability for caries and PMH were good to excellent.

In their everyday lives, most patients will not pay particular attention to small, ongoing changes and discrepancies in their dental and oral health such as gingival recession or tooth wear. A simple photograph taken at the initial consultation appointment acts a focal point for discussion and demonstrates to the patient an increased level of care. Serial photographs taken over a number of years can show if progression has visibly occurred and encourages a more proactive treatment philosophy.

Clinical photographs can also be used to demonstrate to

patients various alternative items of treatment as and when necessitated by changing circumstances. Such attention to detail reassures patients and gives them confidence in the dentist and his or her team.

### Postgraduate study

Over recent years there has been a significant increase in the demand and availability of dental postgraduate courses available in the UK, many of which lead to recognised postgraduate qualifications. These courses commonly include one or more assessed components comprising case presentations as well as the presentation of a clinical portfolio of work. Proficiency in clinical photography is clearly beneficial and, as with any form of examined work, presentation is half the battle.

### Clinical audit

This can be viewed firstly at a personal level in that clinical photographs allow you to monitor the quality and longevity of your own work (Figure 4).



*Figure 7: Photographs are invaluable in improving communication between clinician and technician, especially when it comes to reproducing tooth shade and characterisation.*



*Figures 8a and 8b: This case is rather simple but nevertheless allows staff members to discuss with patients a range of procedures including tooth whitening, enamel contouring and ceramic veneers.*

Serial photographs taken at regular intervals help create an awareness of dental material wear and breakdown, allowing you to gauge which materials are better suited to different clinical conditions. Photography can also be a key aspect of a practice-wide clinical audit, pointing to general areas of patient care requiring improvement.

### Teaching

Photographs are very useful teaching tools, whether at undergraduate or postgraduate level, in vocational training study groups or as a part of in-house staff training.

As useful as it is to demonstrate successful cases, it can be equally beneficial to study those cases in which things did not proceed quite to plan (Figure 5) and learn lessons from your own as well as other peoples' mistakes and less than optimal results.

### Patient referral

When referring patients to specialist colleagues it is appropriate to give as much relevant information as possible. Along with a concise dental and medical history, any relevant radiographs should also be included.

In a study by Aslam et al (2010) investigating the use of photographs to help prioritise patients referred to an oral medicine department, it was shown that photographs made a difference to the appointment prioritisation of any given patient in 37% of cases, and was deemed very useful in helping the specialist/consultant prioritise new patient appointments for their initial consultation.

Almog et al (2005) found that in complex restorative cases requiring the use of an interdisciplinary team in order to achieve a desired aesthetic outcome (for example, patients exhibiting a combination of severe tooth wear and

crowding), the use of photographs significantly enhanced patient acceptance of proposed treatment plans and patient satisfaction of the treatment itself as well as the final outcome (Figure 6).

### **Communication with the dental laboratory**

There are intrinsic benefits to using photographs to communicate more clearly with the dental laboratory, especially when patient demands (in terms of shade, characterisation and morphology) are high (Newsome et al, 2010). Pre-operative photographs can be used to facilitate dentist-technician dialogue during the treatment-planning phase, for example in choosing the most appropriate restorative material for a given clinical situation. Achieving the correct tooth/gingival shade is also greatly assisted by supplementing the written instructions with clinical photographs (Figure 7). With the rapid rise in the use of highly translucent all-ceramic systems, technicians nowadays need considerably more information about the condition and shade of the underlying tooth preparation and again photographs are an ideal and effective way to relay this information. A photograph of the stump shade taken at the time of tooth preparation (ideally including a clearly visible shade tab) indicating the degree of discolouration present will inform the final decision concerning choice of ceramic system, degree of opaquing required and the shade map of the final restoration.

### **Internal and external marketing, PR**

The use of clinical photographs to reinforce and enhance a practice's marketing strategy can be hugely beneficial and can be used in a number of different ways. They can, for example, be used for internal marketing and staff training purposes. Photographs illustrating treatment procedures as well as 'before' and 'after' views can enhance members of the dental team's motivation as well as their knowledge and understanding of the various procedures being carried out within the practice and of which patients rightly expect them to be able to explain, even if at a basic level (Figure 8). Knowing that support staff understand the implications and ramifications of the available treatment options leads to an increased level of confidence and trust. As previously said, more value is placed on work that has been performed by the clinician actually providing the care rather than just by looking at a generic source book featuring work carried out by other dentists. Software is now widely available that facilitates photograph management and

presentation, portfolio production and even personalised photo-books that outline a patient's individual treatment journey.

Photographs can also be used as an external marketing tool by increasing brand awareness outside of the practice. This can be done, for example, on the practice website by featuring a 'photo' or 'smile' gallery, demonstrating different treatments offered by the practice. Photographs can be used in informative magazine editorials again acting to increase patient awareness/knowledge and enhancing brand awareness.

The last word on this is one urging extreme caution with the external use of patient photographs. It is extremely important to remember that before any patient photographs are used publicly in marketing materials that are sent out to other patients, or by being displayed in the practice reception area, or in the surgery when discussing treatment options with other patients it is absolutely imperative that you gain written consent and permission. Ahmad (2009) advises use of a standard release form stating the intended use of all photographs. This should be signed by the patient and kept along with the dental records.

### **Conclusion**

The advantages of clinical photography far outweigh any possible disadvantages such as cost of equipment, acquiring the necessary skills and the inevitable disruption caused by having to interrupt procedures to take the photographs.

Provided that it is used sensibly and you always bear in mind patient confidentiality issues, clinical photography will enhance many aspects of your work. It will force you to examine closely, and continually review, your clinical skills as there is nothing quite so illuminating as viewing your own work enlarged on a computer screen in front of you.

It is no coincidence that the very best clinicians have all embraced photography and incorporated it fully into their patient care protocols. We would go as far as to say that in this modern digital age there is little excuse for not incorporating clinical photography extensively into your own everyday practice.

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