CHAPTER 9

Teamwork with the Dental Technologist

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INTRODUCTION

Teamwork is fundamental to successful clinical outcomes. Team working between the dental practitioner, the practice personnel and the dental technologist, who is typically in a remote location, is critical to success in the provision of indirect restorations and prostheses. Effectiveness, as with many, if not all, other measures of success, is greatly increased by individuals working as a team, not as a team of individuals working independently. Dentistry without teamwork is not in the best interests of the patient, carrying a high risk of failures and unnecessary comebacks and complaints.

Developing a team that is capable of effective teamwork can be challenging. Inclusion of dental technologists and the dental laboratory team in this process is best achieved by reciprocal visits between the practice and the laboratory, as well as 'get-togethers' to develop the necessary relationships, share a common understanding of goals and values, agree practical arrangements and, most importantly, facilitate communication. From time to time, team building must be followed with events to reinforce team spirit, refine practical arrangements and maintain the all-important relationship between the different members of the team. A strong team is an effective team; a weak team suffers limitations, including tensions between its members. For example, when things go wrong, members of a weak team tend to blame each other, often forgetting about the needs of the patient, instead of pulling together to resolve the problem quickly and effectively.

COMMON UNDERSTANDING AND COMMUNICATION

Communication – a prerequisite to effective team working – is greatly facilitated if the participants share a common understanding, including a common use of terminology. With a common understanding of the different terms used to describe occlusal relationships, for example, the dental team, including the dental technologist and the dental laboratory team, should develop an increasing confidence that the indirect restorations and prostheses they collectively produce will have the desired occlusal relationship and function. While the dental practitioner, as the leader of the dental team, is ultimately responsible for the care of the patient, each and every member of the dental team also has a duty of care. This duty of care extends to understanding the patient's needs and expectations. For the dental technologist and the dental laboratory team to fulfil their duty of care, dentist and practice personnel must ensure that they communicate what is required in the way of laboratory support, including the

use of terminology that they know will be interpreted correctly. All too often, failures in the provision of indirect restorations and prostheses are met with phrases such as 'Sorry, I didn't fully understand what you wanted' or 'If you'd made that clear, the problem wouldn't have arisen.'

Common understanding, let alone good communication, in something as complex as the provision of indirect restorations and prostheses is made exceedingly difficult, if not impossible, if the practitioner has never met the dental technologist, and if their respective teams have little, if any, knowledge of each other and their ways of working. This is particularly important when treatment is intended to enhance a complex concept such as dental attractiveness.

Many would say that the ideal – possibly the only – way to develop a common understanding and effective communication between the clinical and laboratory teams is to have the dental technologist and the dental laboratory team on site, or working in some nearby location, with ample opportunity to build up an excellent rapport. This is rarely possible, however, for a wide variety of reasons. Indeed, some of the world's largest dental laboratories work principally without direct communication, notably with the increasing use of digital technologies. As a consequence, ways must be found to overcome the difficulties posed by the physical separation of the clinical and dental laboratory teams. That said, it is suggested that there is great merit in a dental practice employing the services of a local dental technologist who welcomes visits to the laboratory and is prepared to visit the practice, possibly spending time in the surgery with the dentist and the patient, assuming the local dental technologist has the necessary knowledge, skills and technologies to provide the support required. Where such arrangements are not possible, and the dentist must rely on the services of a dental technologist in some distant location, or wishes to use a centralized high-tech service, possibly even in another country, then all the more the challenge is to ensure common understanding and good communication in the best interests of the patient. In general, the greater the separation between clinical and dental technology teams, the greater the need to work on achieving good communications.

REMOTE LABORATORIES

If, for whatever reason, a dentist must or feels obliged to seek the support of a remotely located dental laboratory for dental technology services, careful consideration should be given as to the best means of minimizing the ever-present risk of communication errors. The use of modern communication technologies – including, for example, Skype and the electronic communication of images

and possibly video clips, subject to the consent of the patient – can go a long way towards realizing this goal. Despite such measures, effective communication with a remote laboratory is typically challenging. Good communication is, of course, a two-way process, requiring both the dentist/practice team and the dental technologist/laboratory team to work together to overcome the communication challenge posed by their physical separation as best they can. Communication difficulties are no excuse for the provision of indirect restorations and prostheses that fail to meet the needs and expectations of the patient. Time spent on ensuring good lines of communication is typically time well spent.

PRESCRIPTIONS

A prescription – the 'lab card' – is typically the principal form of communication between the practitioner and the dental technologist. To be effective, a prescription must include all the information necessary to achieve the desired outcome. This information must be presented in such a way that the dental technologist can, first and foremost, read and fully understand it. Hard as a dentist may try, it is important to remember that diagrams and drawings included in a prescription are at best two-dimensional illustrations of the complex, three-dimensional restoration or prosthesis that the technologist is being asked to produce. Regrettably, most dental technologists work from a collection of inappropriately brief or otherwise inadequate prescriptions – 'metal crown', 'temporary denture', 'splint' and so on – that fail on all counts to convey what is required. An example of a prescription form, which the dentist and the practice team should discipline themselves to complete in full on each and every occasion that dental laboratory support is being requested, is reproduced in Figure 9.1. Good as such forms are, the information they convey is greatly enhanced by the provision of some images of, for example, the patient's smile, the preoperative appearance of the teeth or edentulous space being restored, restorations or a prosthesis being replaced, and chairside mock-ups that the patient found acceptable and the dentist considered appropriate.

The importance of making communication a two-way process cannot be overemphasized. If a prescription is less than satisfactory, the technologist should feel free to contact the practitioner and explain this, in anticipation of a common understanding being amicably reached. Changes to a prescription agreed verbally should be confirmed electronically and recorded on the 'lab card'. If in doubt over what to include in a prescription, provide more rather than less information, mindful that most colleagues have never heard their dental technologist complain about prescriptions being too detailed. In requesting what are

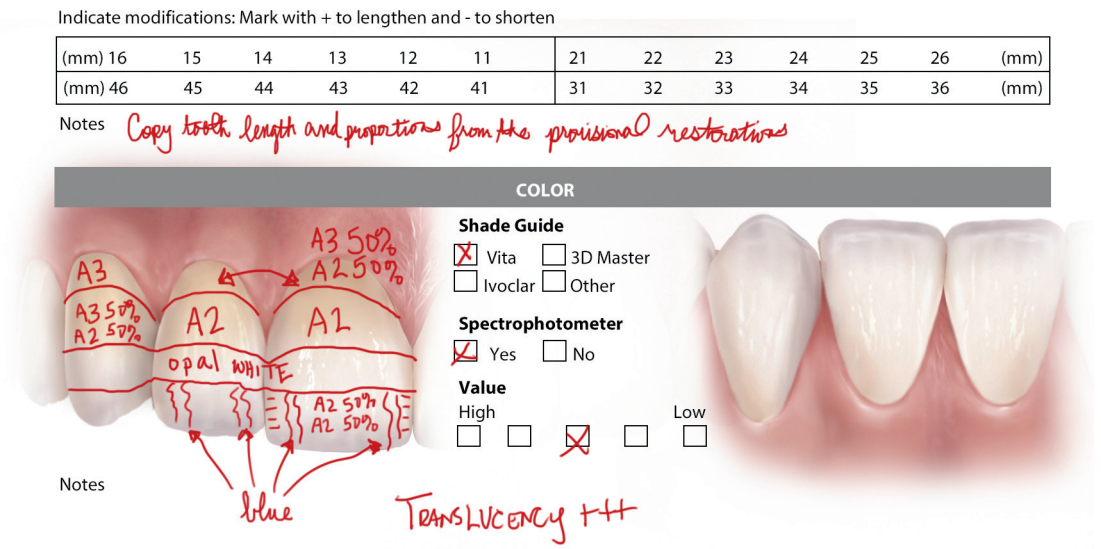

Fig. 9.1 A prescription form.

typically costly items from a dental laboratory, it is surprising that some practitioners leave so much room for doubt in their prescriptions for restorations and prostheses. Items returned from the dental laboratory can be no better than the quality of the information sent by the dentist.

When a prescription is being completed for dental technology support services, care should be taken to write legibly with indelible ink, which will withstand transfer to the laboratory, typically in the company of damp impressions. Despite impressions being suitably packaged in plastic bags, and subsequent careful handling by the dental technologist and the dental laboratory team, it is more common than not for the prescription card to suffer some water damage. It is good practice to retain a copy of any prescription sent to the dental laboratory in the relevant patient's clinical records. Such measures can pay great dividends when communication between the clinical and laboratory teams is compromised, through, for example, a prescription being lost or irretrievably damaged in some way; this is particularly true in the event of a dispute between the dentist and the dental technologist over responsibility for an unacceptable outcome to treatment involving dental laboratory support services. In an ideal world, such disputes should not occur, as any misunderstanding should have been discussed in the design phase, enabling the practitioner and technologist to be confident of working towards the same goal – a satisfactory prosthesis or restoration and, more importantly, a satisfied patient.

The laboratory prescription form is, of course, a document containing confidential information and as such should be treated in the same way as other medical/

dental records. Dental technologists, together with all other members of the dental team, are obliged to treat the information provided on the form in confidence. It is important to remember this, particularly when sending patient information to remote locations where professional and ethical obligations and requirements may not be so robust. A simple but potentially effective measure is to limit the patient identifier to the patient's initials, possibly together with the date of birth; however, care must be taken in adopting such an approach to avoid confusion between patients.

COMMUNICATING INFORMATION ON SHADES

Communicating what is generally referred to as the 'shade' to the dental technologist can be difficult, especially when requesting the production of indirect restorations to be included in a patient's smile. Individual teeth, and even a number of adjacent teeth, invariably encompass considerable colour variation in terms of hue, chroma and value, let alone variation in translucency.

Sadly, many laboratory prescriptions include details of just one shade, which the dental technologist must assume to be the body shade, relating to the centre of the tooth. This leaves the ceramist to best-guess what colour and translucency variation to include in the completed restoration. In the provision of a prosthesis or restoration that will replace more than one tooth, the prescription of a single shade suffers limitations, in that this approach fails to recognize the variation in colour that occurs in, for example, six upper anterior teeth.

Obvious as it may seem, in prescribing the 'shade', the dental technologist first and foremost needs to know which shade guide or shade detection device has been used; not all shade guides have specified shade 'tabs' of the same hue, chroma and value. In addition to a body shade, it is typically necessary to record at least the cervical shade, together with details of the shade and translucency of the incisal third, in the case of anterior teeth. As may be indicated clinically, the shade prescription should include details of the colour characteristics of any special features required in the completed restoration. Images of the teeth or edentulous space to be restored, with and without the selected shade 'tab(s)' included, and diagrams of the colour variation and any special features required, can be most useful, if not essential, adjuncts to a written shade prescription. Examples of the way to describe shades are illustrated in Figure 9.2.

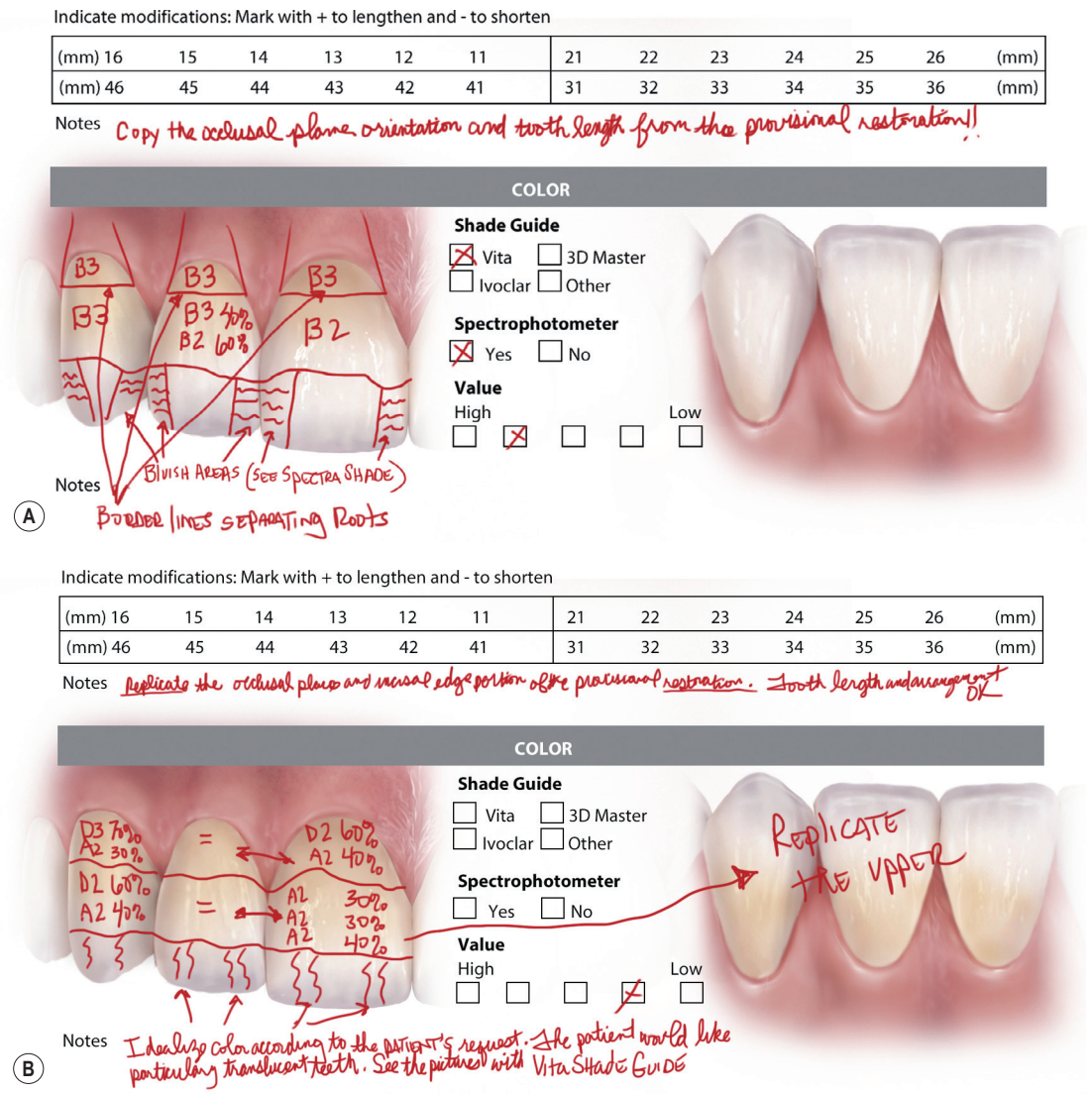

Fig. 9.2 Examples of shade descriptions included in prescription forms.

If the indirect restorations or prostheses requested form part of a phased course of treatment, it is most helpful to include in the shade prescription details of the shades and shading effects used in restorations and prostheses already completed.

Details of devices and techniques to record shades are discussed in Chapter 7.

ANATOMICAL DETAILS

In addition to information on the required shading of restorations, a note of anatomical details can be of great assistance to the dental technologist

in producing a good esthetic outcome; this should cover the prominence of mamelons and marginal ridges, and surface topographical features such as perikymata, rippling or other contours. The anatomy of teeth is as varied as the anatomy of other parts of the body and reproducing it is a great art.

SURFACE TEXTURE AND LUSTRE

The surface texture and, as a consequence, reflectance of the surface of a restoration or replacement tooth can have a profound influence on its esthetic acceptability. The prescription for indirect restorations or prostheses should therefore include details of the nature and quality of the surface finish required, particularly if it is to match that of an adjacent tooth. For example, should the surface have a smooth (low in texture), glossy (high in lustre) appearance, or should it include some form of irregularities (high in texture) or specific topography and look more matt (low in lustre)? If a single tooth is to be restored or replaced, surface quality information can usually be determined from the working model, assuming a high-quality impression has been provided. If, however, two or more adjacent teeth, such as the upper central incisors, are to be replaced or restored, then surface quality requirements should be communicated to the dental technologist. The wrong surface finish can spoil an otherwise attractive esthetic restoration.

Chairside adjustment of ceramic restorations is occasionally necessary. This may affect contact areas, occlusal contacts or even the textural appearance, as mentioned above. When the glazed surface of a ceramic crown has been adjusted, it is preferable to return the restoration to the laboratory for reglazing and finishing. Very modest chairside polishing of adjusted ceramic can be carried out using specifically designed kits. If, however, either the clinician or the technologist feels that adjustments to ceramic restorations may be necessary, the option of providing a ceramic restoration for try-in at a 'bisque bake' or 'pre-glaze' stage should be considered. In this way, adjustments to ceramic restorations can be carried out prior to finishing and glazing.

OCCLUSAL RELATIONSHIP

If a single restoration or replacement tooth is required, if the inter-cuspal position (ICP) is obvious, and if a conformative occlusal approach is being adopted, then relatively little, if any, information on occlusal relationship need be conveyed to the dental technologist; the exception is when the restoration or replacement tooth is to be protected in some way from damaging non-axial loading. Indeed, an occlusal registration in simple cases adopting a conformative approach may cause more harm than good. All the technologist needs to be advised of in such

cases is that a conformative approach is being used and the models should be mounted in ICP, assuming there are no deflective contacts or other occlusal complications. If a sectional impression has been recorded, then, depending on the circumstances and the extent of the impression, at least some notes on occlusal relationship will be required. These details should be provided in addition to information on the form and function of the contralateral tooth or teeth, if they are not included in the impression. Such information is essential, for example, when a quadrant impression has been taken for a crown on a premolar tooth that is to contribute to premolar guide group function. Many would say that such circumstances contradict the use of a sectional impression technique.

If multiple restorations or replacement teeth are required, then some form of occlusal registration, possibly together with a facebow recording, will be needed, as discussed in Chapter 7. In providing such information, remember that it is critical for the dental technologist to know and understand the approach that has been adopted, in particular if centric relationship (CR) has been recorded and the completed restorations are to create a new ICP in CR. As a general rule, the more complex the case, the greater the need for effective, detailed communication between the practitioner and the dental technologist.

SELECTION OF MATERIALS

Assuming a practitioner and dental technologist have an agreed understanding about which materials, including dental alloys, to use as a matter of routine in various circumstances, then the laboratory prescription need contain little information on the selection of materials; the exception is when the dentist wishes to deviate from normal practice – in which case, the laboratory prescription should specify the materials the dentist wishes to be used. Otherwise, the dental technologist must assume that the practitioner is content for the dental technology team to use the materials typically applied in the laboratory, according to the nature of the case. In the provision of porcelain fused to metal crowns (PFMs), the dentist should specify the extent to which the crown is to be faced or covered with porcelain to achieve the planned treatment outcome.

The patient's notes should contain a record of the process requested and the materials prescribed – for example, non-precious, semi-precious or precious alloy; in addition, the dental laboratory should keep a note of the alloy batch numbers used, in the event of any queries. This information may be captured in a 'statement of conformity', which should be provided with all finished laboratory work, and which all dentists are now obliged to offer to patients on completion of treatment, at least in the UK.

PHOTOGRAPHS

Photographs taken clinically or provided by the patient can greatly enhance communication to the laboratory of the requirements in individual cases, as well as constituting an important element of a patient's clinical record. In identifying photographs to be sent to the laboratory, it is important to obtain patient consent and to ensure that suitable arrangements will be in place to maintain patient confidentiality. Details of how best to record photographs clinically are discussed in Chapter 7. Poor-quality images, in particular ones that fail to record colour correctly, may add nothing to the helpfulness of a laboratory prescription; indeed, they may be misleading. A good photograph may well be worth a thousand words, however, and, in the process, may make all the difference between clinical success and failure in esthetic treatments involving laboratory support. It is important to remember, however, that photographs are two-dimensional and that views from different angles may be required to convey all the information the practitioner wishes to impart to the dental technologist.

Photographs, such as the image shown in Figure 9.3, form part of the patient records and must, of course, be treated in the same way as other records and notes in terms of confidentiality.

Good prescribing takes time and effort, but with due diligence is typically rewarded with good clinical outcomes, fewer 'remakes', and good working

Fig. 9.3 Example of an image taken as part of shade selection. This becomes part of the patient's clinical records.

relationships between the clinical and laboratory teams. Also, the dentist must accept the judgement of the dental technologist if, for example, it becomes apparent that insufficient information has been captured by an impression when models have been cast and examined. Trust is an important aspect of the communication processes and the relationship between practitioner and dental technologist.

CLINICAL TIP

When a case goes well, take a photograph and send it to your technician with a note of thanks. Don't just communicate when there's a problem!

MOCK-UPS AND LABORATORY-MADE PROVISIONAL RECONSTRUCTIONS

In the undertaking of extensive and complex cases, and, on occasion, in the provision of even single tooth restorations or prostheses under very demanding circumstances, the use of mock-ups and laboratory-made provisional restorations can greatly facilitate communication between the dentist and the dental technologist. Traditionally, mock-ups and laboratory-made provisional restorations were principally used to communicate the form and function of restorations or replacement teeth, but they have become increasingly important in the esthetic management of the patient's dental attractiveness. A major advantage of the use of mock-ups and laboratory-made provisional restorations is the involvement of the patient, and possibly the patient's partner and family members, in the developing of the desired clinical outcome. Patients involved in this way tend to have a sense of ownership of the outcome of treatment.

As indicated above, impressions and photographs of completed mock-ups and laboratory-made provisional restorations in the mouth, possibly together with the putty indices used in tooth preparation (Fig. 9.4), can be of great assistance in ensuring effective communication with the dental technologist. They may also facilitate communication with the patient. In cases where the patient is greatly attracted by the feel and appearance of a mock-up or laboratory-made provisional restorations, the challenge for the dental technologist may be exact replication in the production of the definitive restorations or prosthesis. In the event of sending removable mock-ups or laboratory-made provisional restorations back to the laboratory to aid the production of the definitive restorations or prostheses, care must be taken to avoid colour change or distortion, caused principally by dehydration. If removed from the mouth and returned to the

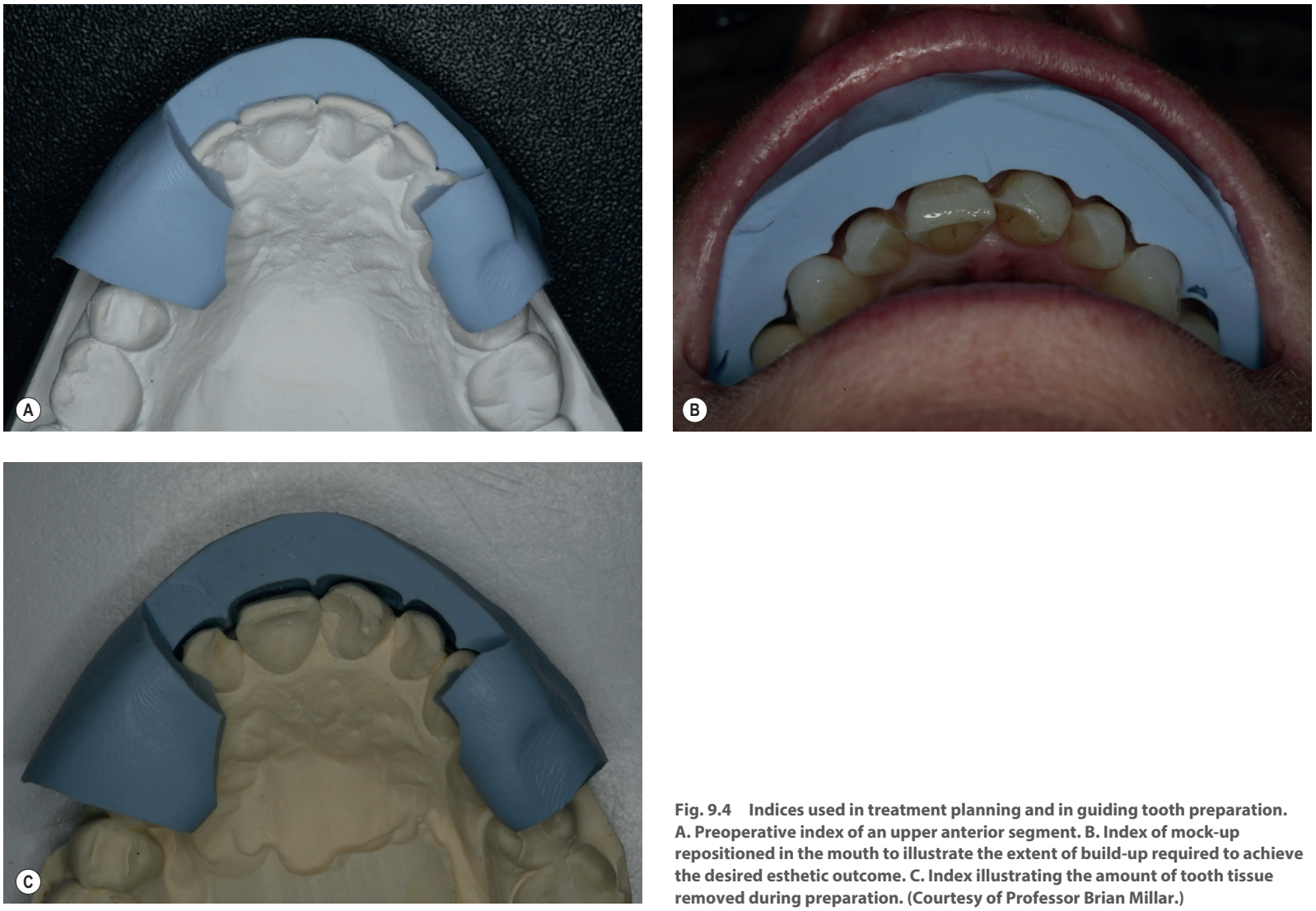

Fig. 9.4 Indices used in treatment planning and in guiding tooth preparation. A. Preoperative index of an upper anterior segment. B. Index of mock-up repositioned in the mouth to illustrate the extent of build-up required to achieve the desired esthetic outcome. C. Index illustrating the amount of tooth tissue removed during preparation. (Courtesy of Professor Brian Millar.)

laboratory, mock-ups and laboratory-made provisional restorations must be kept moist. The dental technologist must remember that the shade of the mock-up or provisional restorations may no longer be that used in the original construction, given that some shift in shade may have occurred in the mouth through, for example, staining, or possibly bleaching by toothpaste or some other oral hygiene aid.

COMPLEMENTARY INFORMATION

Information that may usefully complement a prescription for indirect restorations or prosthesis may include, for example, preoperative study casts; photo-

graphs provided by the patient, as indicated above; an impression of any mock-up provided as part of the treatment; or, better still, the mock-up itself, if removable, together with any special instructions not otherwise included in the prescription. If in doubt, include it, remembering that a completed indirect restoration or prosthesis can only be as good as the information provided by the dentist to the dental technologist.

CHAIRSIDE COMMUNICATION

Many would maintain that the gold standard in communication between a dentist and a dental technologist is to have the technologist meet the patient and work with the dentist in choosing shades and otherwise completing the laboratory prescription. This, however, is a luxury that has traditionally been available to relatively few colleagues, but it is one that has much to commend it as good practice in dental team working. It also provides an opportunity for the patient to meet the dental technologist, and, if necessary, to be told face to face, by the person who will make their restorations or prosthesis, what can or cannot be achieved in the dental laboratory. One of the great pitfalls of esthetic dentistry is when the patient develops expectations that cannot be met.

CLINICAL TIP

As part of co-decision-making, involve the patient in shade selection, particularly in a smile design case where shade-matching is not the goal, and selection of a completely new shade is the requirement. Some clinicians allow the patient to take home a shade card. It may also be worth involving other members of the dental team in shade selection, particularly dental nurses and, where possible, the ceramist.

DISPUTES

Disputes between practitioners and dental technologists are often caused by failures in communication. In the unfortunate event of a dispute developing between a dentist and a dental technologist, typically over who is at fault when a case goes wrong and a restoration or prosthesis needs to be returned to the laboratory for extensive modification or even to be remade, the priority is the satisfactory completion of the patient's treatment. Under no circumstances should patient treatment be delayed for longer than is necessary, or otherwise compromised while the practitioner and technologist sort out their dispute. Once the patient's treatment has been successfully completed, and the practitioner and the dental technologist have had opportunity to reflect on the reasons for the failure, which may well become apparent in the process of modifying or

remaking the item of work, the path to resolution may become obvious. If, however, resolution is proving difficult or impossible and the costs involved justify it, consideration should be given to seeking the help of a colleague whom both sides will accept as an independent arbitrator. Being drawn into an acrimonious or even legal dispute, particularly when it involves someone with whom it would be advantageous to continue doing business, is unlikely to provide a satisfactory outcome for either of the parties. In such matters, both sides may need to remind themselves of their professional responsibility to be honest and to act with integrity in all matters. Admitting blame, even partial blame, is never easy, but it is invariably more pleasant than having to deal with the consequences of the possible alternative approaches.

The above paragraph focuses on how to act when things go wrong, but what about when everything goes well? When a well-made restoration or prosthesis is placed, the dentist can feel a great sense of pride, and this will also be shared with the dental nurse; however, as a member of the dental team, technologists should also be congratulated when they have done a particularly good job. A simple phone call, email or text message to congratulate the technologist, or to thank them for their time, effort and help, can go a long way towards cementing their position in the dental team. It may also further improve the dentist–technologist relationship, with the prospect of even better outcomes in the future.

CONCLUDING REMARKS

Much of what is written and said about communication is common sense; however, common sense does not always seem to prevail in everyday life. Communicate with others in the way you expect to be communicated with yourself, taking account of any circumstances that complicate the communication process. Building a relationship with people you need to communicate with on a regular basis, such as your dental technologist, will be time well spent.

Before signing off a prescription to a dental technologist, pause and consider:

- Does it communicate all the necessary information, together with any additional details that may help to minimize the risk of any misunderstanding or failure?
- Is the prescription not only legible but also articulate, and free of any ambiguity?
- Is it sufficient to achieve the esthetically pleasing result I am striving to obtain?

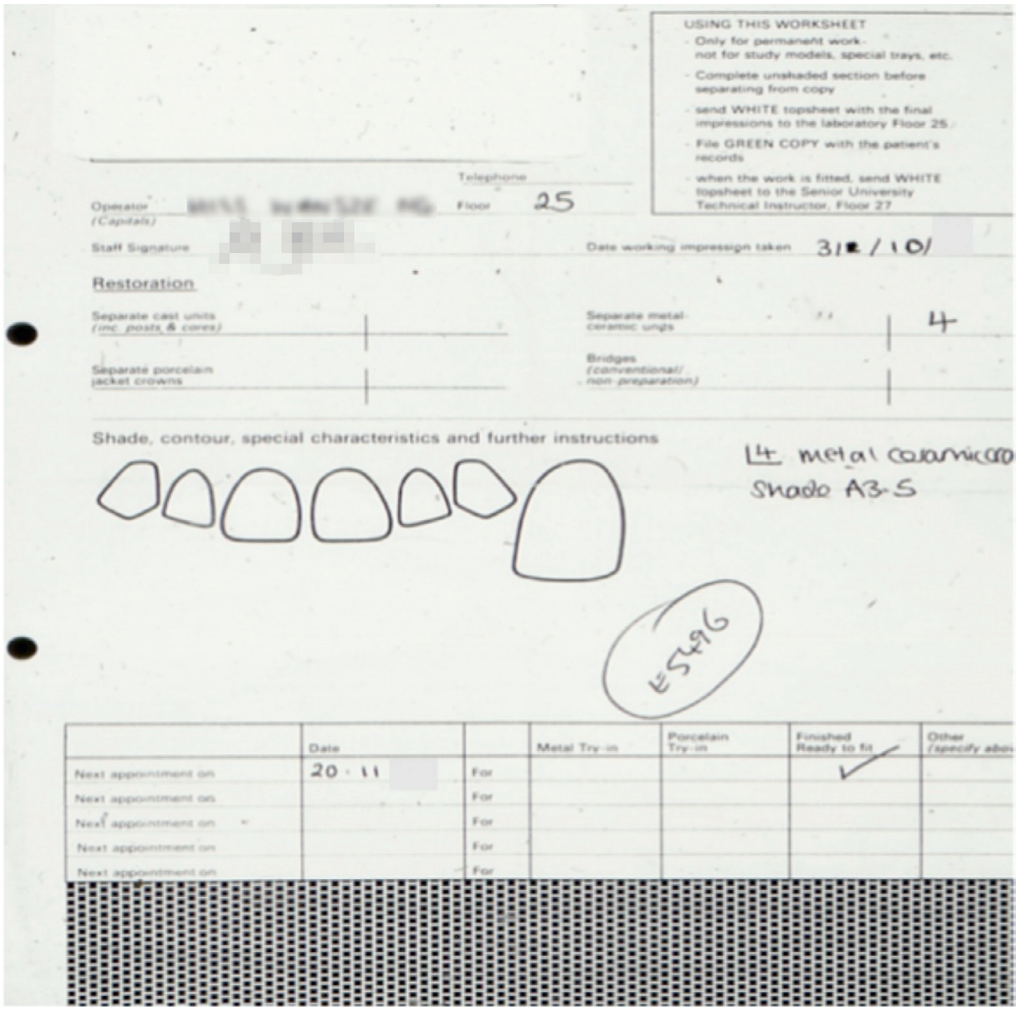

Fig. 9.5 An example of a laboratory prescription that highlights the importance of effective communication between clinician and dental technologist.

- Will the laboratory work completed to this prescription satisfy the needs and expectations of the patient?

Finally, reflect on the likelihood of obtaining a good esthetic outcome based on the prescriptions in Figure 9.5.

Additional reading

Chiche GJ, Pinault A. Communication with the dental laboratory. In: Esthetics of anterior fixed prosthodontics. Chicago: Quintessence; 1994. p. 115–42.