The importance of communication in the construction of partial dentures

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Key points

To define the importance of communication in removable partial dentures, with the patient, the laboratory, and the dental nurse.

To inform clinicians of the indications for removal partial dentures, and how to carry out a comprehensive patient assessment.

To provide clinicians with an overview for construction of removable prosthesis, with predictable and successful prosthodontic outcomes.

Removable partial dentures (RPDs) are still a very important treatment modality in general dentistry to replace missing teeth. With the increase in popularity of implants, RPDs are sometimes seen as an 'old-fashioned' treatment option and if not carefully designed can be damaging to oral tissue and aesthetically less favourable. However, there is still a significantly large cohort of patients for whom RPDs are the best option for replacement of teeth either due to a failing dentition, inappropriate anatomy or financial considerations. This article explores the importance of effective three way communication with the patient, the laboratory and the dental nurse to support the provision of reliable and predictable prosthodontic outcomes.

Introduction

Over time, the rates of edentulousness have decreased, with people increasingly retaining some of their natural teeth.[1] In 2009, the Adult Dental Health Survey showed that 94% of the population of England, Wales, and Northern Ireland had at least one natural tooth, the mean number of teeth in dentate adults being 25.7.[2,3] Consequently, as it is recognised that tooth loss occurs more frequently in older patients and with the increasing ageing population, demand for replacement of lost teeth will increase.

Depending on clinical appropriateness, options for replacement may include:

1. **Do nothing.** If the spaces left by the missing teeth are not in the aesthetic zone, and the patient has satisfactory masticatory function, then it may not be necessary to replace the missing teeth. The functional 'shortened dental arch' principle should always be considered as a possible future plan for every patient.[4,5] It has been shown that ten functioning teeth in each arch are sufficient to provide masticatory efficiency[6]
2. **Fixed prosthesis.** Fixed prostheses are supported on the remaining teeth, or implants. Retention can be gained either by preparing teeth for conventional indirect restorations, and using pontics to replace the missing teeth in a fixed-fixed, fixed movable, or cantilever design. Adhesive resin bonded bridge techniques are less destructive of tooth tissue and allow the pontic to be supported on a wing cemented to the palatal or lingual surface of the abutment tooth (or teeth). The option to use two distal cantilever adhesive bridges rather than a potentially poorly tolerated bilateral free end saddle denture should always be considered[7]
3. **Removal partial dentures.** While implants may be considered the gold standard for replacing missing teeth, for some patients, they may not be appropriate either on medical, anatomical (insufficient supporting bone, for instance) or financial grounds. For many patients, removable partial dentures are the only solution for replacing missing teeth and are generally well tolerated.

The General Dental Council (GDC) states that dentists should be able to 'prescribe and provide fixed and removable prostheses.'[8] However, current trends illustrate that although undergraduates may be 'competent' in the clinical stages of constructing a prosthesis, the amount of technical work undertaken and understanding over the years has decreased significantly.[9]

In many situations, the evidence has suggested that there is a lack of educational development in denture construction in GDPs, much of which may be happening in their dental foundation year.[10] In the study by Lynch and Allen, 70% of respondents reported having problems designing metal dentures one year after qualification, a third of whom relied on the laboratory to design the dentures on their behalf. A number of trainees also stated their trainers discouraged them from making metal dentures due to 'cost effectiveness'.[11,12]

The indications for constructing an RPD are shown in Box 1.

Removable prosthodontics is one area of dentistry that relies heavily on the interaction of members of the dental team.[13] Standard 2 of the GDC's '*Standards for the dental team*'[14] states that patients expect:

- To receive full, clear and accurate information that they can understand, before, during and after treatment, so that they can make informed decisions in partnership with the people providing their care

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Box 1 Indications for a RPD

- Poor tooth or tissue support for other restorative options
- Active or unmanaged periodontal disease
- Multiple mobile teeth
- Patient's financial factors
- Time constraints, for example, immediate RPD after extraction
- Previous long history of successful RPD wear
- Patient choice
- Complex soft tissue anatomy due to medical history – for example, a cleft defect that requires obturation

Box 2 Standard instructions for all laboratory work

Unless otherwise instructed, please:

- Make all special trays for partial dentures spaced and perforated
- Make all record rims wire reinforced
- When pouring impressions and trimming casts, please ensure full sulcus shape and depth are maintained
- All finished dentures to be returned fitted to a duplicate cast

- A clear explanation of the treatment, possible outcomes and what they can expect
- To know how much their treatment will cost before it starts, and to be told about any changes
- Communication that they can understand
- To know the names of those providing their care.

Further, dental care professionals must:

- Communicate effectively with patients – listen to them, give them time to consider information and take their individual views and communication needs into account
- Recognise and promote patients' rights to and responsibilities for making decisions about their health priorities and care
- Give patients the information they need, in a way they can understand, so that they can make informed decisions
- Give patients clear information about costs.

A patient focus, listening to the patient and effective communication is essential for the successful outcome of an RPD. The emotional effects of tooth loss have been well documented in the literature.[15] These include being more likely to feel less confident about themselves and more likely to feel inhibited in carrying out everyday activities.

Table 1 Examples of instructions for each denture stage

Stage	Instruction
Secondary impressions	Please make spaced perforated special tray
Jaw registration	Please make wire reinforced wax record rims
Trial insertion	Please articulate casts to jaw registration provided and set up teeth in wax
Finish	Please process to finish in heat cured acrylic

Communication with patients

To optimise a patient focus, communication with the patient considering an RPD begins at an early stage of the care planning process. A cornerstone of this is not just to listen to the patient's concerns but to probe the patient as to their past denture wearing history and their expectations of care.

It is essential that all members of the dental team are aware of the patient's medical history. For instance, xerostomia (dry mouth) can be very important in RPD construction, which may be caused by drugs with anticholinergic side effects (such as tricyclic antidepressants), diuretics, previous history of radiotherapy to the head and neck region, as well as damage or disease to the salivary glands.[16] This can reduce the patient's tolerance of a removal partial denture. Any condition which affects the patient's muscular control of the mouth, for instance in Parkinson's disease or stroke, will affect the patient's ability to manage a prosthesis.

Social history is also important. Many RPDs will be constructed for the older patient, so timing of appointments may be a factor to consider, for example, having appointments later in morning, so elderly patients have sufficient time to organise personal care and travel. In the dependent older patient, it is important to establish who is requesting the treatment. If a family member requests replacement teeth on behalf of the patient and the patient does not appear very enthusiastic at the thought, then an RPD is probably not appropriate.

Taking the initiative to really understand the patient's history, views and expectations is the most important first step in any care plan. Patients often have negative views of dentures, viewing them stereotypically for the 'elderly'. RPDs have poor patient acceptance, as well as compromised function and aesthetics.[17,18] Nevertheless, an RPD can have a very good clinical outcome, if the patient's expectations are appropriately managed and is well-made, thus significantly improving the quality of life.

It is essential to understand what the patient is expecting from dentures at the outset of any care plan. Patients expecting dentures to be no different to their natural teeth are in for a bitter disappointment. RPDs have a number of components which will inevitably initially feel bulky in the patient's mouth. The appliance can feel tight, but even then the patient may be aware of movement of eating or talking, leading to lack of confidence in the denture. In some people the denture affects their perception of taste. All of these limitations should be explained to the patient before starting treatment, and ideally, at each appointment they should be reminded of these initial discussions.

If the patient has poor experiences of denture wearing, then the reasons should be explored. For instance, if the patient attends with a history of poor adaption to many sets of dentures, then the reasons for this need to be established with a clear history from the patient. Clinical examination may reveal design defects in the construction of previous dentures and the clinician may feel that some improvements could be made. The limitations of any such modifications should be clearly explained to the patient and again repeated at each stage of construction. However, if the clinician feels he/she can make no changes or improvements to previous sets, then the question should be asked as to if another set will add to the patient's satisfaction, or simply add to their collection of previous unsatisfactory dentures. This situation may require specialist referral, although the specialist will be faced with the same problem and dilemma as to whether they can satisfy the patient's demands, particularly if there are financial restrictions.

Having attempted to evaluate the experiences and the expectations of the patient, and taking into account the clinical findings, then a clear explanation of what can be expected from dentures should be made before starting any treatment. These explanations and expectations should be clearly noted and repeated in writing to the patient as a part of the treatment and consent process. Despite this, the patient may well not fully understand the limitations, preferring to

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hear just potential positive outcomes rather than some of the warnings that all patients are given.

An initial period of adjustment is to be expected. After final fit, communication is enhanced if the patient has a review appointment soon after. If the patient is new to denture wearing, the reassurance that further contact with the clinician is available is good for patients' confidence in the procedure. Sometimes, asking the patient to wear the new denture for 24 hours without removal, knowing that there is a review with the clinician within 24 hours, will give the patient the confidence to persevere for those first difficult few hours. This is particularly important in the fitting of an immediate replacement denture.

It is important to remind the patient of the realities of denture wearing and to manage their expectations of the finished result at every clinical stage. The aphorism 'Under promise, over deliver' is never truer than in RPD provision.

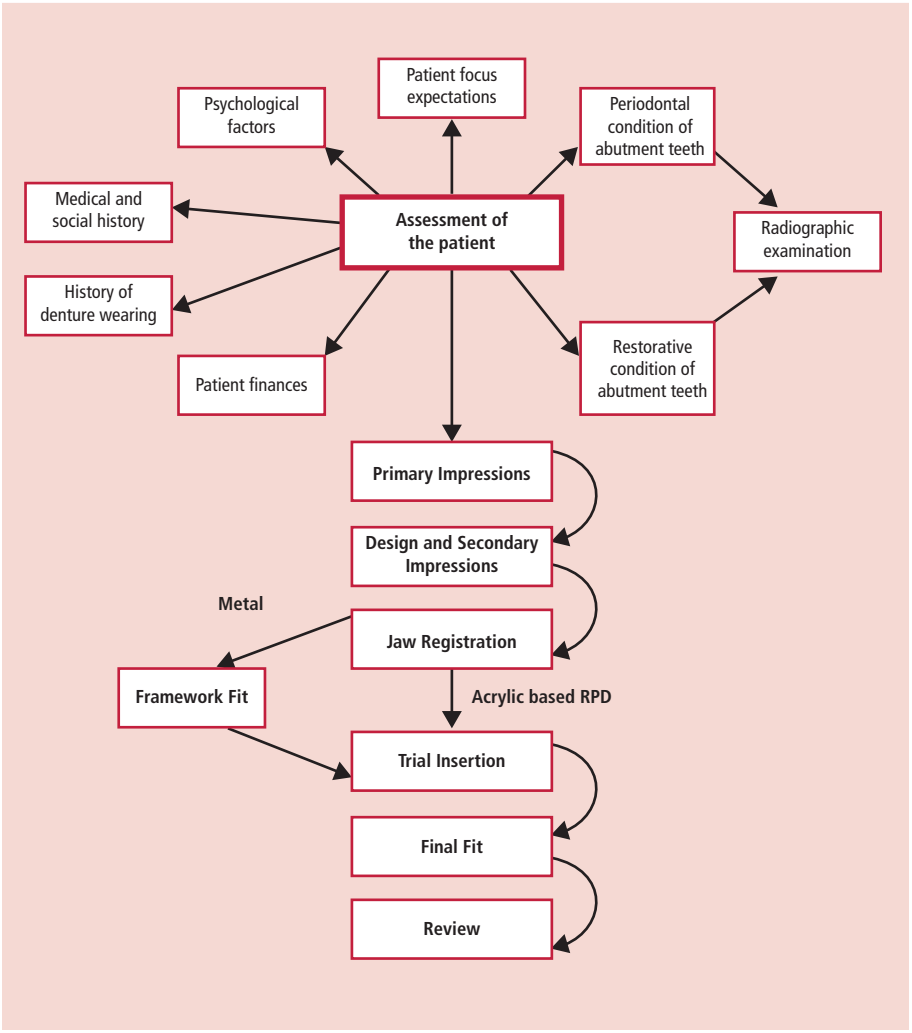
The laboratory technician

The GDC expect that members of the dental team 'will work effectively together'.[8,14] While this might appear an obvious aspiration for those in the same building, frequently the technician is based away from the clinic, sometimes nowadays even abroad. Wherever he or she is based, communication with the dental technician is clearly essential in the construction of RPDs. Communication is usually done with a written prescription form, provided by the laboratory. The Dental Laboratory Association[19] states that the minimum requirements for a prescription form for a device are:

- The laboratory's name and address
- The dentist's name
- The clinic name and address
- The patient's name
- Space for the written and diagrammatic design requirements of the appliance.

Further space may be used for a pictogram of upper and lower arches of teeth, a shade for the teeth to be used and a date for return of each stage. However, ideally, the clinician will have telephone contact details for the technician carrying out this work, and vice versa. Hopefully if the work is carried out in a large commercial laboratory in the UK, then an arrangement can be made where the same technician carries out all the work for each clinician. It is important to remember that communication is a two-way process. The technician needs to have access to the clinician to be able to query prescriptions which are not clear. The better the relationship between the clinician and the technician, the more likely it is that the communications will also be more efficient and effective.

Fig. 1 A step-by-step RPD pathway appropriate for primary dental care



However, the likelihood of one technician carrying out all the procedures and processes for an individual clinician appear to be limited. Many laboratory processes are carried out on a production line basis, with, for instance, one person casting the impressions, another trimming the models, another for waxing up, another flasking and de-flasking. This devolving of responsibilities to many different people means the communication of the clinical requirements of the patient to the laboratory assume even greater importance. A single point of contact between the clinician and the laboratory to ensure accountability is essential. The possibility that the laboratory is at some distance from the practice, or even abroad, makes this process even more fraught with complications.

Examples of written instructions are shown in Table 1. If a consistent relationship is possible with the technician, a standardised set of instructions could be given to the technician for their records, minimising the amount of information required on the individual laboratory prescription (Box 2).

The laboratory prescription should always include a date for return of the work. Some clinicians prefer to ask for work to be returned one day before the patient's actual appointment, so that the work can be checked before the patient arrives. If the work is incorrect, or inadequate, this can be clarified with the technician before the patient's arrival, thus avoiding embarrassing explanations in the presence of the patient. The various stages of denture construction appropriate for primary dental care are shown in Figure 1.

At the design stage of the process, it is advisable to both draw and write the design of the denture on the laboratory prescription (Figs 2 and 3, and Box 3). In addition, it may be helpful to draw the location of some features

Fig. 2 A completed denture

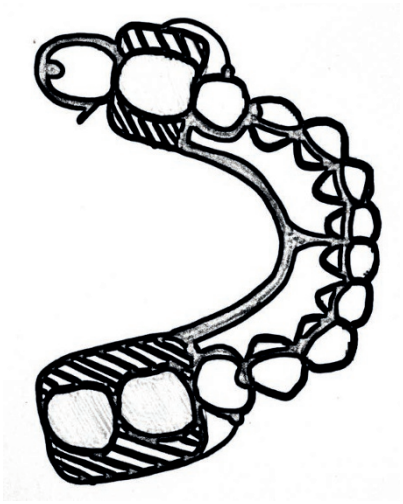


Fig. 3 Drawn prescription for the technician

of the design on the stone cast itself. Despite this information, Barsby and Schwarz[20] found that only 10% of laboratories returned a cobalt chromium casting with the lower border of a lingual bar conforming to such marking. Even if this deficiency is ignored, they also found only 50% of the laboratories provided a casting which conformed to the overall prescription. These findings highlight the importance of checking returned work from the laboratory before the arrival of the patient.

It is important to remember that designing the denture is the clinician's responsibility. Only the clinician is aware of the all the relevant clinical findings needed to design the denture so that, for instance, the design is not reliant on the retention and support of teeth with doubtful prognoses.

Box 3 Written prescription of metal framework for the denture shown in Figures 1 and 2

Please cast cobalt chrome framework with a lingual bar extending from 45 to 35, together with a continuous connector (modified Kennedy connector), freeing the gingival margin anteriorly and lingually. I bars 45, 35, ring clasps with distal rest 37, mesial rest 34, mesial rest 45.

Communication with the dental nurse

Most practitioners work well and regularly with the same dental nurse together as a team. A well trained dental nurse will know what equipment and materials are required for each stage of construction of a denture.

Just as the GDP will provide the technician with a standard set of instructions, the dental nurse should prepare the surgery as required without prompting. Their role in the construction of a denture, apart from manipulating materials correctly and optimising infection control, is one of providing patient focus and reassurance. Denture construction is one of the few procedures where there is an opportunity for the nurse to talk with the patient, for instance while the clinician is trimming a record rim. They also have a pivotal role in re-explaining what the clinician is doing and also as a patient advocate in the choice of shade and mould of anterior teeth. Reinforcement in these discussions of the explanations and expectations given to the patient at the initial planning stages is often helpful. Reassurance and encouragement during impression taking is also of assistance to the patient and clinician alike.

The nurse's role will also involve checking that the laboratory prescription is completed correctly with the correct return date. The dental nurse should have enough confidence and understanding of the processes involved to tell the clinician if they observe an error – eg, a prescription incorrectly completed or information omitted. The nurse may also notice if an impression has pulled away from the impression tray and be able to inform the clinician appropriately.

Conclusion

This paper has stressed the importance of a patient focus, centred on effective communication in the manufacture of partial dentures. Good communication with the dental laboratory will lead to a well-made denture. Poor communication with the dental technician may mean a less well-made prosthesis. However, poor communication with the patient, no matter how good the denture, may well lead to a rejected denture.

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