

# 5

## Trial visits and insertion

The prescription, delivery and, indeed, success of complete denture treatment depends on the often imperceptible interaction of skills of clinicians (plus the dental nurses), the dental technician and, most important of all, the patient. The clinician, the team and the patient will already have established the needs and expectations of the patient, and this aspect has already been emphasised. Good communication should already have been practised between the dentist and the technician over the quality of casts and record rims.

The previous chapter outlined the registration visit, and the result of this is a three-dimensional prescription, appropriate for each patient, on which the denture teeth will be placed. Although the technical aspects of the try-in and processing stages are outlined in general in Chapter 7, it is essential that there be efficient communication between the technician and the clinical team if the next stage is to result in the creation of a set-up that satisfies the aesthetic and functional needs of the patient.

As with the other clinical stages, it should be a *sine qua non* that appropriate infection control procedures are practised.

The trial denture visits(s) are often seen as clinically easier (especially by students), but we would recommend that, in order to ensure that the appropriate result is achieved, the trial denture

stage is practised meaningfully. In most instances, the trial dentures are delivered with the anterior teeth and posterior teeth in place and the wax bases contoured; if the appearance is perceived to be satisfactory to the patient and the dentist, and if the occlusion (generally only balanced occlusion in RCP) is perceived to be acceptable, then the denture is returned to the technician for processing. If, however, any changes are required to the arrangement of the teeth (either for aesthetic or functional reasons) then the technician is required to effect these changes and arrange for another trial visit.

Many clinicians feel less than comfortable about effecting these changes, and for this reason we recommend that two trial visits are arranged. The first is termed the aesthetic trial insertion.

In this visit, the trial dentures comprise the anterior teeth only in the maxillary and mandibular trial dentures, and the posterior segments comprise wax rims (Fig. 5.1). The clinician's task is simplified here, as there are five aspects to verify:

- That the anterior teeth have been selected appropriately, that the patient is content with the moulds selected and, further, that the arrangement of the teeth is to the liking of the patient. If the tooth moulds are incorrect, this may be easily modified by further discussion



**Fig. 5.1** Aesthetic (anterior) trial dentures.

with the patient (the other three tasks may still be practised and the second trial visit may proceed as normal). If, however, the positioning or arrangement of the teeth requires to be altered, then the clinician can do this with relative ease at the chairside, as only six – or at worst 12 – anterior teeth need to be adjusted. If the teeth require to be raised (e.g. the maxillary anterior teeth are perceived to be too long) then the clinician may either raise them or indicate on the teeth the level desired (using a sharp wax pencil or felt-tipped pen; Fig. 5.2) so that the technician can adjust them. A good tip is to view the patient from the side and ask him/her to smile – the lower lip should lie parallel to the tips of the teeth of the maxillary



**Fig. 5.2** A black felt-tipped pen has been used to indicate the desired incisal level of the maxillary anterior teeth.



**Fig. 5.3** The maxillary teeth conform to the smile line of the lower lip (note  $\perp\perp$  represents incisal plane).

denture (Fig. 5.3). NB: If the maxillary teeth are to be raised and the mandibular teeth to be kept at the same level (or *vice versa*) then the OVD needs to be lowered accordingly, and this needs to be communicated to the technician.

- That the retruded contact position (RCP) is acceptable. In simple terms this means that the wax rims representing the posterior occlusal segments contact evenly on both sides and along their lengths. If not, then this should be rectified by adding/removing wax accordingly. This is a relatively straightforward task for all clinicians to do.
- That the freeway space (FWS) determined is appropriate. This may be measured indirectly via an instrument such as the Willis bite gauge or similar, and related to that previously determined (see above). If an error has occurred, then the OVD may be increased or reduced as above.
- That speech is not impaired. This may partly be assessed in the verification of the FWS for sibilant sounds (ask the patient to say 'street', or count from 60 to 70; if prolonged 'S' sounds are detected this tends to indicate that the closest speaking distance is compromised, and the OVD should be reduced appropriately. Another useful tip here is to check labiodental sounds (e.g. 'f' or 'v'); in general, for English-speaking patients the tip of the maxillary central incisor teeth contacts the vermilion border of the lower lip.

- That the waxwork (gingival matrix) surrounding the teeth is appropriate and that it is acceptable to the patient. For example, some patients prefer to have the gingival matrix stippled, whereas others do not. Further details on waxing-up are presented in Chapter 7.

If the above checks are deemed to be acceptable, then the aesthetic trial dentures may be returned to the technician for conversion into the definitive trial dentures, ready for the second trial visit. This is termed the definitive trial insertion.

In this visit, the following six aspects have to be assessed/verified by the clinician:

- That the arrangement of the teeth meets with the agreement of the patient (and the clinician). We recommend that the patient be given some time to wear the trial dentures in the surgery, to enable them to become familiar with the feel of them before examining them in a mirror. It may also be useful for a friend/relative of the patient to be present (if the patient consents) to let them see what is being prescribed. Consent to proceed may then be recorded and verified if a 'witness' is present. Again, some personalisation of the dentures may be required. This may take the form of minor alteration to the arrangement of the teeth, or it may be a cosmetic inclusion in the denture, e.g. a gold inlay (Fig. 5.4) or spacing (Fig. 5.5). Another check concerns the placement of the mandibular posterior teeth over the residual ridge in the



**Fig. 5.4** Gold inlays have been added to the maxillary premolar teeth.



**Fig. 5.5** Spacing has been incorporated. (NB: The clinician and the patient must decide whether the space is to be left 'as is' or filled with translucent acrylic – the latter is indicated where the space is minimal.)

interests of (mandibular) denture stability. This may be done by placing a wax knife on that portion of the impression surface corresponding to the residual ridge and then comparing that to the position of the central fossae of the posterior teeth (Fig. 5.6). Aberrant positioning should result in the trial denture being returned to the technician for appropriate placement of the teeth.

- That RCP is acceptable. This should be as per the previous visit. Failure to obtain a reproducible RCP may indicate that occlusal pivots are required; if this clinical option is



**Fig. 5.6** A useful guide to verify that, in the interests of stability, the central fossae of the mandibular posterior teeth are positioned over the residual ridge.

not to be employed, then the clinician should reregister the RCP by removing the posterior teeth (e.g. of the maxillary trial denture) and re-registering the RCP. If this situation occurs, then the clinician should ask why an error has resulted and seek to eliminate clinical errors. Some patients, however, through no fault of their own, are unable to provide a reproducible RCP and, as has been mentioned above, assistance in the form of occlusal pivots may be worthy of consideration (see Case Study 2).

- That the FWS is appropriate. This should have been verified at the aesthetic trial insertion stage.
- That balanced articulation, if required, is present. This can only be partly assessed, as the teeth are held in place by wax and are not therefore able to withstand undue occlusal contacts. For that reason, if balanced articulation is required the clinician should stabilise the mandibular denture by placing his/her fingers on the wax flanges and requesting the patient to move from RCP into lateral and protrusive excursions (Fig. 5.7). Locking or tripping of the dentures during these excursions should be noted and the interferences marked. The clinician may remove the interferences (see below) or request that the technician do so prior to processing.
- That speech is not constrained. Again, this should have been checked at the aesthetic trial insertion stage.



**Fig. 5.7** The dentures have been moved into right lateral occlusion – the balancing points on the right are in contact.

- That the gingival matrix around anterior and posterior teeth conforms to prosthodontic norms appropriate for the patient. Included in this stage is the assessment of the wax periphery/extension. If the trial denture is overextended then the processed denture will be overextended. The clinician should therefore ensure that the periphery does not interfere with action of the cheeks, lips or tongue. This will be covered in greater detail in the section on insertion of processed dentures.

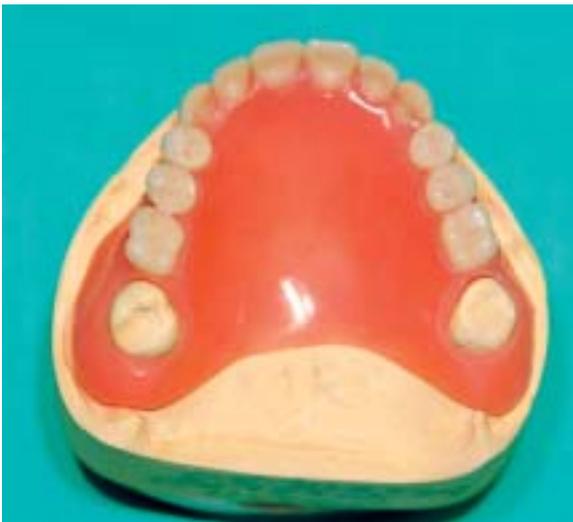
If these checks highlight errors, then a further trial insertion visit is indicated. If they prove that the trial dentures are acceptable then the clinician should verify that any further customisation is agreed and the information be conveyed to the technician.

Additional aspects to be conveyed to the technician are:

- **Type of base.** The usual base is made of poly (methyl) methacrylate (PMMA). The PMMA may be ‘conventional’ or strengthened by copolymers or other strengthening agents, e.g. fibres of carbon or other polymers. Sometimes patients prefer to have a metal base. This should ideally have been determined at the initial visit. Readers are reminded that if a metal base, e.g. cobalt–chromium, is prescribed then the postdam area should be so designed as to enable rebasing at a later date. If the patient has an allergy to PMMA, then an alternative base should be requested, e.g. polycarbonate, although only a few laboratories are equipped to offer this material.
- **Characteristics of the base.** Included in this are ethnic hues and perhaps translucent resin if it is felt that any spacing might result in the trapping of food (Fig. 5.8). Another option is that the patient’s mandibular ridge is sufficiently atrophic to merit the prescription of a resilient lining (Fig. 5.9); equally, where patients have been prescribed resilient linings in previous dentures, they may prefer to have resilient linings!
- As was mentioned previously, the patient may request that a **restoration or a cosmetic feature** be incorporated in their denture (see Fig. 5.4). These features may not significantly



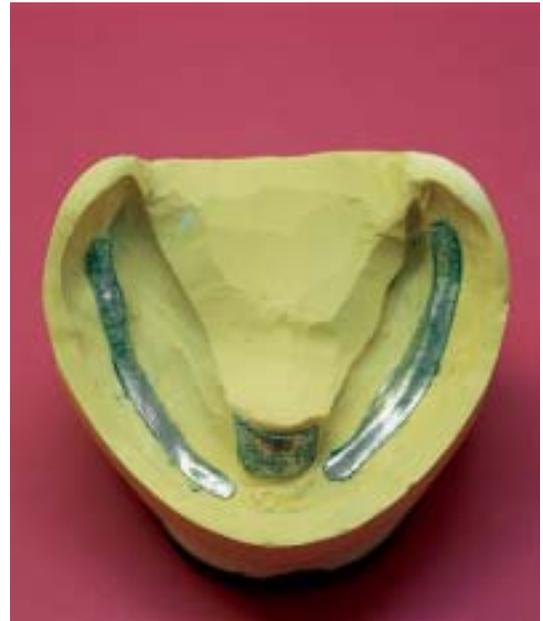
**Fig. 5.8** Transparent resin imparts a semblance of spacing.



**Fig. 5.9** A silicone rubber lining has been provided for this denture.

influence the retention, stability or function of the dentures, but they might significantly influence their acceptance by the patient.

- **Areas of relief that may be desired on the master cast prior to processing.** This may be indicated where there is overtly displaceable tissue (Fig. 5.10), or where the palatal rugae are deeply fissured (Fig. 5.11).
- **Provision of rugae where appropriate.** This feature is not commonly provided, but the authors commonly recommend it when, in rare cases, mandibular complete dentures are not



**Fig. 5.10** The master cast has been relieved to avoid pressure over the patient's mobile mandibular ridge.



**Fig. 5.11** Plaster has been added to the inter-rugae areas to reduce the potential for irritation caused by movement of the maxillary denture over/in these areas.

provided. In this instance the rugae may usefully provide a means of enhancing trituration of food by the tongue.

#### INSERTION STAGE

In the previous section we highlighted the benefits of approaching trial insertion in two stages/visits.

After a successful outcome, the dentures are processed and 'customised' if this is felt necessary. Proficiency in the trial insertion stage should mean that few clinical problems should be encountered at the insertion stage. Nevertheless, this stage should be performed in two temporal sections.

### Assessment prior to the delivery of the dentures to the patient

Before the dentures are inserted into the patient's mouth, the clinician should carefully examine their three surfaces, namely the impression or 'fitting' surface of each denture, the polished surfaces of each denture, and the occlusal surfaces of each denture.

#### Impression surfaces

The surfaces should be examined independently and sharp or rough areas removed. These may be identified by palpation of those areas of the denture base that will be in close contact with the denture-bearing tissues or via teased cotton wool (Fig. 5.12). An acrylic bur may then be used to smooth the surface. As the processed dentures should be returned on the master casts or replicas of them, the clinician should ensure that the dentures do not rock on the casts, as this might indicate potential instability in the inserted dentures. This is most commonly assessed by



**Fig. 5.12** Sharp areas on the impression surface may be palpated even with a gloved finger.



**Fig. 5.13** Poor technique has resulted in acrylic resin flashes covering the denture teeth.

pressing with the index fingers on the premolar teeth, first on one side and then the other.

#### Polished surfaces

These surfaces should be closely examined to ensure that the gingival matrix has been proficiently finished. Typical points to look out for are flashes of pink extending on to the teeth (Fig. 5.13). This indicates a less than ideal technical procedure and the dentures should be returned to the technician for correction. Equally, as was indicated in Chapter 3, the peripheral roll should have been preserved on the master cast and the periphery should conform to this if proficient, non-patient-determined retention is to be achieved.

#### Occlusal surfaces

Three areas are important here. First, the occlusal and incisal surfaces should be assessed to ensure that no roughened areas or chipped surfaces are present. The second relates to the placement of the mandibular posterior teeth over the residual ridge in the interests of (mandibular) denture stability. This was covered in the section on trial insertion (Fig. 5.6).

The third area to examine is the occlusion. The processed dentures should ideally be returned from the laboratory on the master casts, and either on an articulator or on mounting plates

such that the dentist may assess the occlusion of the dentures *in vitro*. A necessary attribute of all dentures is that there should be balanced occlusion in RCP – this is easily checked on the articulator by ensuring that the posterior teeth touch uniformly and evenly. If balanced articulation was requested, then this should be demonstrable on the articulator; this means that there is even sliding contact of the supporting cusps of the posterior teeth from RCP to right and left lateral and protrusive excursions. Equally, the incisor teeth should not cause tripping of the mandibular denture in protrusion.

When these assessments have been performed, the dentures should be placed in an appropriate infection control medium before being prepared for the second phase of predelivery inspection.

## Assessment of the dentures in the patient

If the initial assessment is favourable, the clinician may then proceed with an *in vivo* assessment of the processed dentures. There are a variety of ways in which this may be carried out, but we recommend that it be done in three stages.

### Assessment of the maxillary denture

Having ensured that there are no blemishes on the impression surface (that might induce support problems), the maxillary denture may be inserted. Pain on insertion may indicate the presence of undercuts. These may be located via pressure-indicating paste and relieved (Fig. 5.14). Not all undercuts, however require to be relieved: indeed some may well be used to optimise retention (Fig. 5.15).

The stability of the denture may be assessed by digital pressure on the premolar teeth to ensure that no rocking occurs. If it does, this generally indicates a discrepancy between the denture-bearing tissues and the impression surface of the denture – an impression for a rebase is generally indicated. Another aspect of stability of the maxillary denture is the periphery. Placing the index finger of the left hand on the middle of the palate, tug gently on the right cheek; if



**Fig. 5.14** Pressure-indicating paste has been removed from the denture at an undercut area of the tuberosity.



**Fig. 5.15** The undercut inherent in the anterior ridge may be utilised by having an upwards and backwards path of insertion – the path of insertion is indicated on the master cast.

displacement/movement of the denture occurs, the periphery is overextended. Again, pressure-indicating paste is a useful clinical tool to locate the area of overextension. The excess may be removed with an acrylic bur and the process repeated to ensure that the (right) buccal periphery of the denture is not overextended. A similar procedure may then be used to ensure that the left periphery is not overextended.

Problems of support may be further tested by standing behind the patient and gently pressing

the denture into the denture-bearing tissues by the (gloved) fingertips of the operator. Areas of discomfort may be identified with pressure-relief paste and subsequently relieved.

Overextension of the labial flange may be assessed by asking the patient to purse his/her lips; if the denture drops, then the periphery should be reduced after the area of excess has been identified via the use of impression paste.

NB: The roughened areas of the periphery arising out of removal of overextension should be polished before delivering the dentures definitively.

### Assessment of the mandibular denture

Essentially the same procedures advocated for the maxillary denture should be followed for the mandibular denture. The principal difference concerns the assessment of the extension of the lingual aspect of the mandibular denture. Placing the index fingers on the buccal flanges of the denture, the operator should ask the patient to touch the tip of the upper lip with the tongue. If the denture is displaced, the lingual periphery is overextended; using pressure-indicating paste on first the left then the right peripheries will identify areas of overextension (Fig. 5.16), which may then be relieved. In contrast, however, if the patient can protrude his/her tongue fully without displacing the denture, then the denture is underextended lingually and serious consideration should be given to recording an impression for



**Fig. 5.16** The overextension in the posterior lingual sulcus is indicated by the removal of pressure-indicating paste.



**Fig. 5.17** Greenstick tracing compound has been moulded to form an appropriate lingual extension prior to relining the denture. This should improve resistance to lateral movement of the denture.

relining of the mandibular denture, after the extension has been appropriately moulded using, for example, greenstick tracing compound (Fig. 5.17).

### Assessment of occlusion

This requires that the maxillary and mandibular dentures be inserted; to avoid any unnecessary discomfort to the patient, it is recommended that the mandibular denture is inserted first, followed by the maxillary denture. This is because the appropriately extended maxillary denture will support the lips and cheeks, and subsequent insertion of the mandibular denture might stretch the tender tissues at the angles of the mouth.

The first aspect to assess is that balanced occlusion occurs in RCP. Articulating paper may be used to ensure that there are even contacts between the supporting cusps of the maxillary premolar and molar teeth (palatal cusps) and the central fossae/marginal ridges of the mandibular premolar and molar teeth. The same rationale is expected for the supporting cusps of the mandibular posterior teeth (the buccal cusps) and the central fossae/marginal ridges of the posterior maxillary teeth. Figure 5.18 illustrates an example of even contacts on the opposing maxillary/mandibular teeth. In this instance no remedial action is required. Figure 5.19, however, illustrates



**Fig. 5.18** Even bilateral contacts on the posterior teeth.



**Fig. 5.20** The areas marked indicate where the buccal cusps of the posterior teeth need to be relieved to correct a protrusive slide.



**Fig. 5.19** Obvious contacts on maxillary central fossae and marginal ridges plus mandibular supporting cusps and marginal ridges.

an example where there is a heavy contact on the patient's right molar teeth. This should be rectified by easing the heavy contacts **in the central fossae and marginal ridges, not the supporting cusps**.

If there is a protrusive slide from RCP into ICP, amounting to a half cusp width, this may

be remedied by identifying the premature contacts and easing the **mesial-facing** cusps of the maxillary buccal cusps and the **distal-facing** cusps of the mandibular buccal cusps (Fig. 5.20). Where the protrusive slide equates to more than a quarter of the cusp width, the occlusion should be reregistered and the posterior occlusion reset.

With respect to balanced articulation (and assuming that it is prescribed for the patient) the authors tend not to be overcritical of the assessment of lateral excursions at this visit, owing to the fact that some degree of displacement of tissues and some adjustment of the patient to the new dentures is likely to occur. For that reason, the assessment of excursive movements will be dealt with in Chapter 6.

#### INSTRUCTIONS TO THE PATIENT

It is good practice to provide written advice to patients with regard to:

- How to cope with new dentures
- When to attend for review
- How to look after the dentures
- Future maintenance of the dentures.

Many dental practitioners have booklets on the above: indeed, many booklets on denture care are provided by commercial companies. A simple leaflet informing patients how to cope with new dentures is illustrated in Figure 5.21.

**UNIVERSITY DENTAL HOSPITAL, MANCHESTER**

**DEPARTMENT OF PROSTHETIC DENTISTRY**

**INSTRUCTIONS TO PATIENTS RECEIVING**  
**FULL DENTURES**

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A great deal of care and skill has been used in the production of the denture(s) which you have received. To enable you to learn to use the dentures as quickly as possible and get the greatest benefit from them you are asked to note the following advice:—

- (1) Eating may be difficult at first. Cut your food into small pieces, and take your time chewing. Avoid tough and sticky foods over the learning period.
- (2) Remove your dentures and clean them after each meal. A soft brush with soap and cold water are satisfactory for cleaning. Alternatively, a proprietary denture cleaner may be used, following the manufacturers' instructions.
- (3) Remove your dentures at night and store in water to prevent them drying out and warping.
- (4) Pain and soreness sometimes occur with new dentures. Adjustment may be required. If the pain is severe, leave the dentures out and arrange an appointment with your dentist as soon as possible. Wear the dentures the day you return to the dentist so that the sore area may be seen.

Never attempt to adjust the denture yourself.

a

Fig. 5.21 (a)

**UNIT OF PROSTHODONTICS**  
**0161 275 6642**

**CARE FOR YOUR DENTURES**

• **WHY IS TO IMPORTANT TO LOOK AFTER THEM?**

- **Prevent bad breath**
- **Keep them looking good**
- **Help your mouth to stay healthy**

• **HOW SHOULD YOU LOOK AFTER THEM?**

Our recommendations for effective cleansing of plastic dentures are:-

- Rinse denture after every meal.
- Remove debris by brushing with a soft brush, soap and cold water.
- Ensure this is done over a sink of water to avoid breakage should the denture fall.
- Soak denture for 10 minutes each evening in Dentural or Milton solution.
- Rinse thoroughly with cold water, then soak overnight in water in a closed container.  
(This is not always practical)

• **SPECIAL SITUATIONS**

**We recommend the following procedures to deal with specific instances**

Tartar on Dentures:

Hard deposits (calculus) on dentures are difficult to remove.

Acid based cleansers such as Denclen and Deepclean are most effective (*but not to be used for metal dentures*), if deposits persist see your dentist.

Metal Based Dentures:

Any dentures containing metal can be damaged by **ACID** cleansers such as Denclen, Deepclean etc.,

If you buy a proprietary cleaner be sure it is **NOT ACID !!! – (ACIDIC)**

It is safe to soak metal based dentures in effervescent cleansers such as Steradent or Boots Effervescent/Double Action for fifteen minutes. Alternatively soak in Dentural or Milton for ten minutes each evening.

Soft Linings:

These are prone to damage – **AVOID**

- Hard brushes
- Toothpaste and effervescent cleansers (Steradent, Boots Effervescent/Double Action)

• **PLEASE REMEMBER**

- Always follow manufacturers, instructions when using proprietary cleansers
- If you have any questions – please ask our staff
- Have your mouth and dentures checked regularly by a professional. **TIG 80/99**

b

Fig. 5.21 (a) and (b) Patient information leaflets.

Many clinicians are of the opinion that delivery of replacement dentures is an end- process. Experienced clinicians recognise that this is not the case and that it is most unlikely that no future treatment will be required in the short term. What is certain, however, is that residual ridge resorption is continuous and irrevocable, and therefore

the dentures will need to be relined/rebased or even replaced after 5 years or more. For some people this period may be shorter than 5 years. For that reason, it is important that the clinician is aware of his/her responsibilities for what is required for review and maintenance. This is the subject of Chapter 6.