Southern Cross Dental
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SCD CASE STUDY

Removable Partial Denture

The most common reason that is quoted for production and provision of a removable partial denture is to replace missing teeth in an economical way (Stefanac N., 2006).

Most practitioners will choose a removable partial denture if there is a need to restore lost residual ridge, achieve desirable aesthetics, improve masticatory function and phonetics and if implants or bridges are not able to be provided for financial reasons or patient preferences.

In other circumstances, removable partial dentures are selected as the treatment of choice of partially edentulous patients when:

- the edentulous span length does not permit a fixed (implant-supported) partial denture
- there is need for residual ridge support for mastication
- guarded periodontal prognosis
- excessive loss of residual ridge
- patient dexterity
- oral hygiene issues
- large maxillofacial defect requiring cross-arch stabilisation

Communicating Designs to the Laboratory (Bohnenkamp DM., 2014)

This should be completed with as much detail and accuracy as possible. Dentists should keep a copy of the signed authorisation form which can be easily scanned into the patient's file. The kind and type of service required from the laboratory should be clearly outlined as well as design details and material specifications to be used for the removable partial denture.

The following features and components of a removable partial denture should be described on the laboratory form:

1. Major connector

2. Type of metal and acrylic resin

- Framework only
- Fully fabricate
  i. Shade, mould and type of material for artificial teeth must be included
  ii. Denture base colour and characterisation

3. Tooth numbers

- Type of clasps
- Amount and location of retentive undercuts
- Type and location of metal rests

In order to streamline communication with the technical team the definitive removable partial denture design can be drawn in colour on the laboratory work authorisation sheet. It is prudent if the colour-coded design drawn on the work authorisation form is the same as the description written on the form.

Dentist's specifications on Laboratory Sheet:

1. Tooth 11 is a discoloured natural tooth with a buccal crack (asymptomatic). The patient is mainly concerned with appearance of 11 and 21.
2. The crown on 11 is to improve appearance and make the tooth lighter to match D2 shade of tooth 12, close midline diastema with denture tooth 21. Advice is sought for the best colour match and type of material suitable for denture.
3. 11 crown is to match 21 denture tooth being made at the same time.
4. There is a natural heavy contact on 11 with 41 and 42 causing tooth wear and 41 has grade I mobility. Please relieve the occlusion by having NO contact of 11 with 41 and 42 which will be having endodontic treatment in the future. Both 41 and 42 will require endodontic therapy.
5. The shade of tooth 11 was to be confirmed after seeing the denture tooth 21 which was to be used as a guide for the 11 crown.

Initial Presentation (Fig. 1)

Chief Complaints:

- Lost filling and chipped lower front teeth (teeth 41,42)
- Appearance of 11 and 21 are not aesthetic
- Would like old amalgam restorations replaced

History of Presenting Condition:

- All teeth are asymptomatic (no pain or sensitivity to biting/hot/cold)

Past dental history:

- Used to be a regular attender for cleaning, amalgam fillings. Reports unpleasant dental experiences while wearing braces.
- Front tooth (21) knocked out as an adult.

Oral hygiene:

- Brushes twice a day with hard pressure causing gingival recession and mild toothbrush abrasion.

Social history:

- Clenches during the day – when driving/stressed, reports no nocturnal parafunction
- Works as a mechanic and races cars as a hobby on weekends.

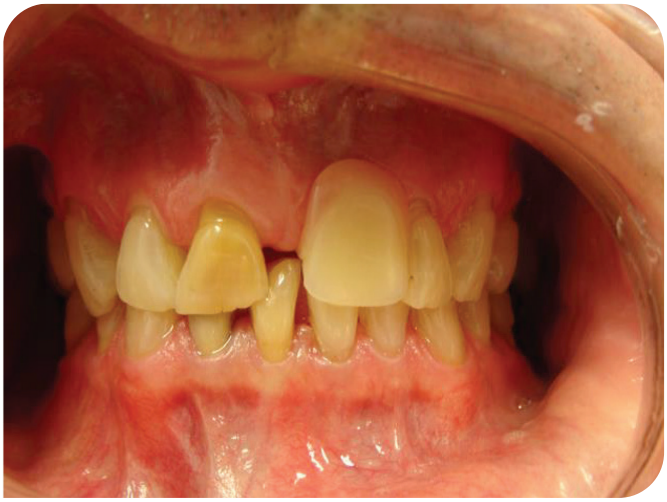

Fig. 1 Current flexible upper denture (asymmetric, unaesthetic)

Intraoral Examination

- Thin biotype with gingival recession
- Mild tooth brush abrasion lesions developing on upper anterior teeth and lower premolars
- Minimal calculus/plaque/staining

Occlusion:

- Deep overbite
- Teeth 11 and 41 have heavy contact

Dentition:

- 42 MLDI lost filling
- 41 DBI tooth wear and grade 1 mobility
- 11 has buccal crack (asymptomatic)
- 11 and 21 (denture tooth) have a large midline diastema and asymmetric size,colour and shape.

Investigations:

- CO2: negative 42,41,31; positive 44,43,32
- Mobility: 41 (Grade 1)

Diagnosis

1. Patient unmotivated, financial constraints
2. Brushing too aggressively
3. 42 broken tooth requires root canal to be finished (was only extirpated by previous dentist 30 years ago) asymptomatic.
4. Occlusal trauma 41,42 with tooth 11.
   42pulpal necrosis
   41 occlusal trauma
5. Amalgams to be removed and replaced with new restorations.
6. Unaesthetic due to intrinsic staining (dark dentine), midline diastema, missing 21.
7. Lack of posterior support

Treatment plan – Control phase

1. Supragingival scaling, oral hygiene instruction, monitor/restore tooth brush abrasion lesions
2. 42 restored with composite resin
3. Relieve heavy occlusion on 41 by 11 (partial dentures to provide posterior support).
4. Plan for reconstructive phase: Study models – include existing denture; photos, OPG, mock-up

Treatment Plan – Conservation Phase

1. Restorations charted (replace 17 O and 27 MO amalgam, restore 38 Occlusal and 48 Occlusal).
2. Composite resin build ups for 13,12,22,23 for aesthetic reasons to complement the new 11 crown and 21 denture tooth (Fig. 2).

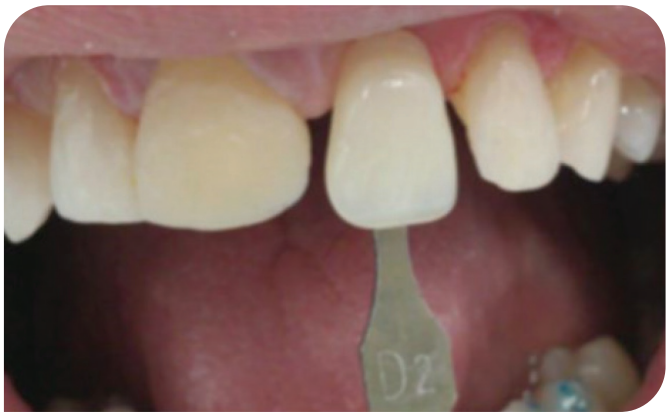

Fig. 2

After the composite build-up was completed a mock-up with Luxatemp was shown to the patient as a guide to the final outcome (Fig. 3).

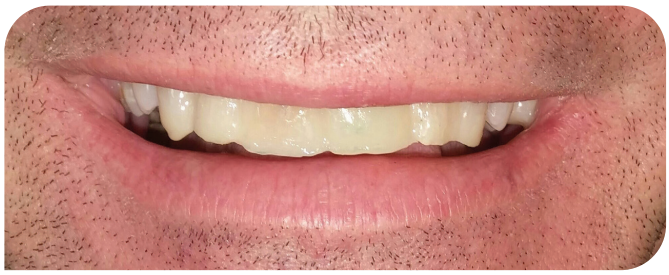

Fig. 3

3. Root canal treatment and restoration of 41,42 (Patient wishes to delay this treatment and focus on the aesthetics of the upper anteriors first).

Treatment Plan – Reconstructive Phase

1. Anterior veneer. Patient wants 11 veneer to match 21 denture tooth and close diastema (Fig. 4)

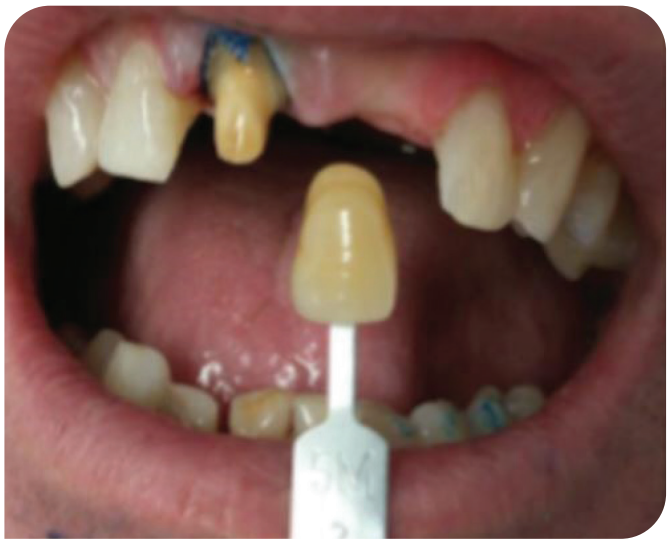

Fig. 4

2. Partial upper flexible/Partial cast chrome removable
   Lower denture with occlusal rests for stability provides posterior support.
   Patient is concerned that a lower denture will be uncomfortable.
2. Occlusal splint (for daytime clenching) – consider lower splint with canine rise.

Correspondence between dentist (D) and clinical dental team at Southern Cross Dental (SCD):

D: Case situation: Denture and crown for patient "BY". I have a case of a patient missing 21 and 25 who requires a flexible denture. This patient also requires a crown (or veneer) on tooth 11. (In addition to root canal treatment on 41, 42).

1. For the upper denture what material options would you suggest? Is the flexible Duraflex™ similar to Valplast™?

SCD: Yes. Duraflex™ is the more advanced material. Both Duraflex™ and Valplast™ and now a stronger option Vertex™ ThermoSens cannot be relined or repaired or added to so remakes are required for any alterations. The technical team will review the occlusion due to the deep overbite and advise if a flexible will be suitable.

2. In what situations would the tooth coloured or clear clasps be used and are there additional charges for using these material options?

SCD: Either tooth-coloured clasps or clear clasps would be needed for aesthetic situations. The clear or white clasp virtually blends into the surrounding area of the mouth once moistened with saliva. There is an extra fee for these clasps.

3. The patient needs a crown on tooth 11 with either a PFM or all-ceramic crown. The upper two centrals have to match and close a large midline diastema. A wax-up is now being done for this patient. In order to gain patient acceptance, the wax-up will be presented to the patient. Photos will be emailed for assistance with the technical work-up in

order to assist aesthetic enhancement of the case.

SCD: The technician will welcome all information to enhance the outcome.

4. Please send out some denture teeth (11, 21) of a few different sizes/shapes for the patient to view and then this can be returned.

SCD: The technician will source the correct teeth and provide colour guidance.

5. Can study models be sent for a try-in with denture teeth? Can any additional teeth also be sent as a guide for the crown?

SCD: This is possible.

6. Can PVS material be used to make dentures?

SCD: There is growing popularity to use PVS in dentistry in many circumstances. It is critical that a generous amount of light body is used to cover all the teeth and palatal area and that the tray is well covered with heavy body. Drag is evident when only medium or heavy body is used with undesirable consequences of ill-fitting dentures or castings.

After discussion of this case with the treating dentist and Southern Cross Dental Technical Team the following treatment was recommended:

• Metal crown with CERAMAGE® facing:11 (changed from PFM requested in laboratory sheet) (Fig. 5)
• upper chrome denture (changed from Duraflex™ denture requested in lab sheet)

The dentist was advised that the deep overbite would be a contraindication for a flexible denture. Flexible dentures are indicated for short spans only and undesirable in free-end saddle situations or in heavy occlusal loading situations.

An upper chrome was fabricated with a retentive lug over which CERAMAGE® was overlaid to match the metal/CERAMAGE® crown on 11.
• lower chrome denture
• upper occlusal splint.

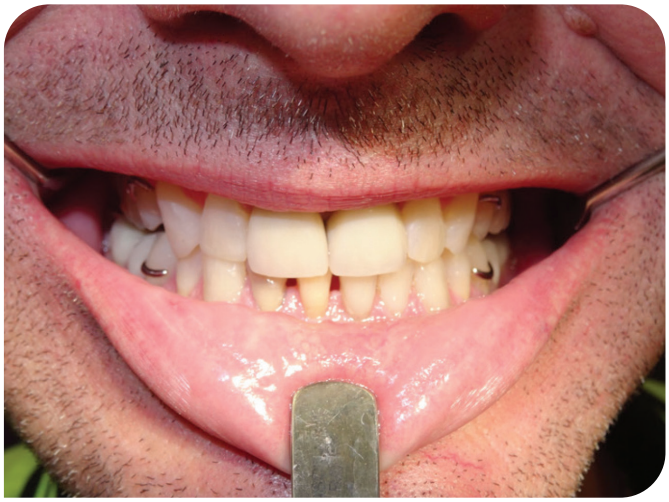

Fig. 5

The dentist and the patient were happy with the final aesthetic and functional outcome of this case. Should any additional modifications be required on either chrome over time, this will be done with minimal inconvenience for the patient.

Southern Cross Dental would like to thank Dr Tiffany Dowling, Queensland for the submission of this case.

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