The process of the dentist and technician. A denture story

Rachel Derby[1] and Julia Glancey[2]

Mr P. D, male age 62 years attended the practice for a new patient examination June 2021. His primary complaint is that he is losing his teeth and would like to get them sorted.

The Dentist's Process

First we completed the initial assessment; this allowed me to gather all the information needed.

This began with an open conversation detailing the patient's wants, and then looking into their past dental history, and ascertaining if there was any pain or discomfort. If there was, we would then prioritize these immediate needs. During this initial assessment we can also obtain an understanding of the patient's budget so that we can create a suitable and realistic treatment plan for him.

Mr PD stated he would just like to be able to smile again.

Having not seen a dentist for over 10 years due to a previous bad experience he admitted he is somewhat Dental phobic. He is aware however that his teeth are not in an optimal condition and is embarrassed to smile. He is also finding it difficult to eat due to the lack of teeth.

Fortunately Mr PD is not in any pain.

Following on from a thorough discussion and wanting to really understand why it was "Now" he had decided to visit a dentist and what his overall aims were for his oral health, it was then that Mr PD explained that his sister was getting married and that he was to walk her down the aisle.

He would love to be able to simply smile at his sister's wedding. The wedding would be taking place in six weeks!

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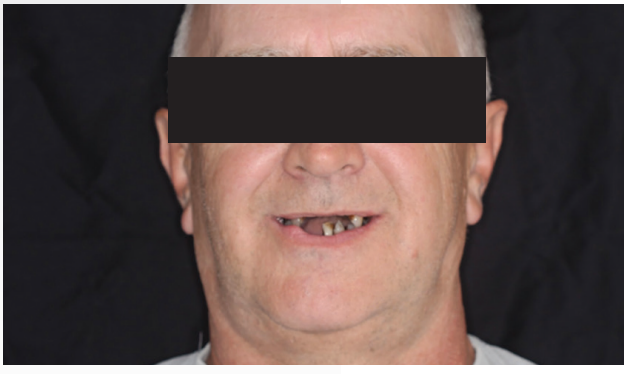


Figure 1: Preoperative – full profile

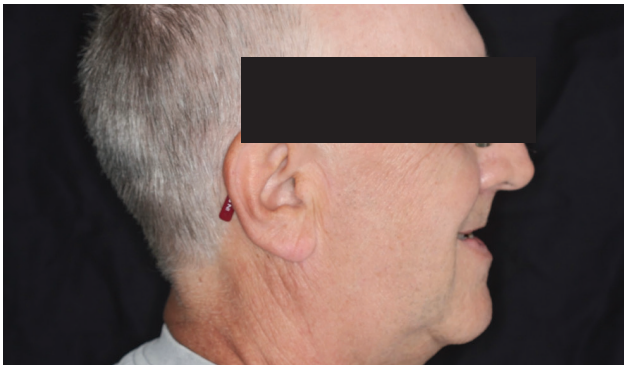


Figure 2: Preoperative – side profile

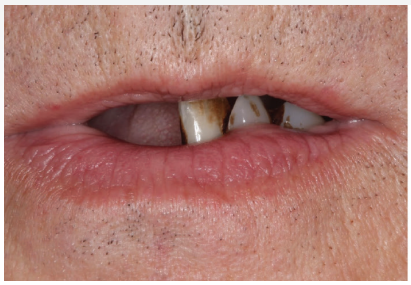


Figure 3: Preoperative – at rest

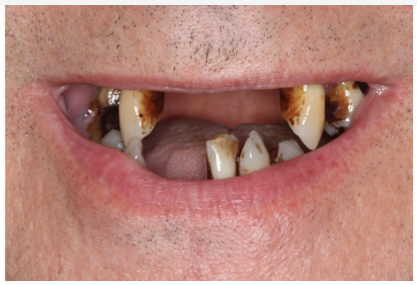


Figure 4: Preoperative – smile

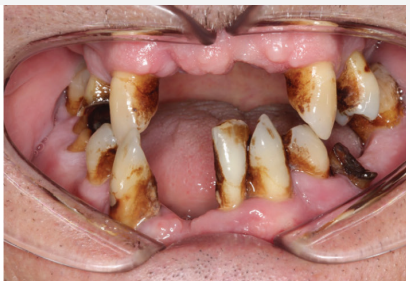


Figure 5: Preoperative – retracted

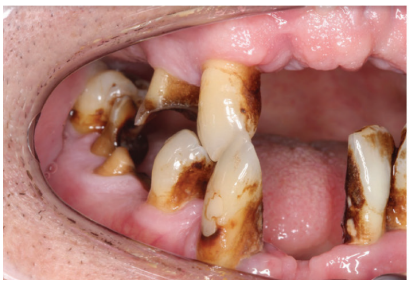


Figure 6: Retracted right-hand side

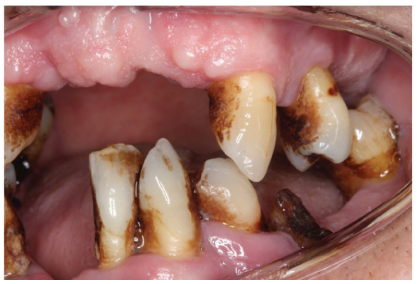


Figure 7: Retracted left-hand side

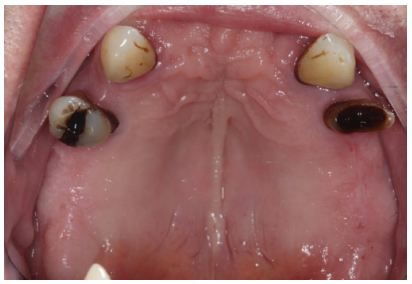


Figure 8: Upper arch

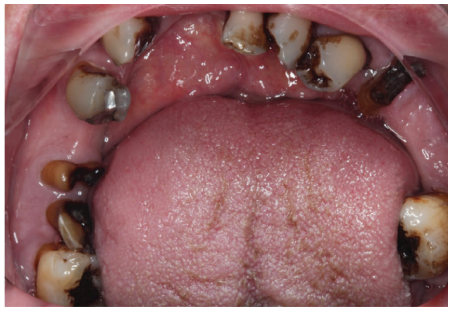


Figure 9: Lower arch

With understanding what the patient's wishes and expectations were, along with a full examination including radiographs and supported with a full photographic series. The patient was then invited back for a further appointment to discuss his treatment options.

Clinical Assessment

Facial profile: the patient has a skeletal class one base and has average facial proportions. Thankfully there is no loss of lower facial height, from this we can replicate the vertical dimension.

The nasal labial angle is obtuse at approximately 110degrees. There is a loss of fullness in the maxilla due to a loss of teeth.

Resting lip line shows predominantly lower teeth. There is a low smile-line, however, it is fair to say that this is probably not a Duchene smile.

One positive aspect is the lower lip curve. If we can plan the treatment correctly and place the anterior teeth in an optimal position, we should be able to deliver acceptable aesthetics.

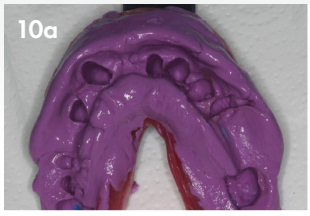
The Temporo-mandibular joint and muscles of mastication are in good health. The patient's field of motion is within normal range and no click or crepitus detected in the joint. There is no obvious asymmetry and soft tissues are healthy.

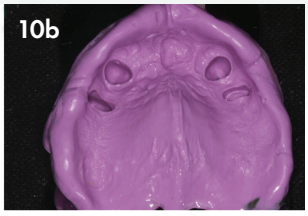
The periodontal assessment provided a diagnosis of generalized periodontitis, stage IV, grade C, unstable. There was considerable mobility present in the lower teeth and upper premolars.

Examination of all the dentition showed an unstable and irreproducible ICP. Caries was present on the lower left first premolar and lower right third molar. The upper right canine was in a mild crossbite with the lower right premolar.

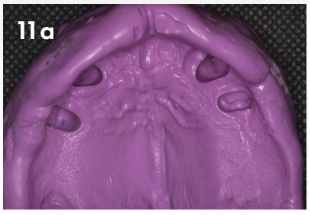
Full mouth radiographs were undertaken. Pathology was present on the lower right second premolar and the lower right canine had a loss of lamina dura, it also had a negative response to endo frost when I had completed the sensibility testing.

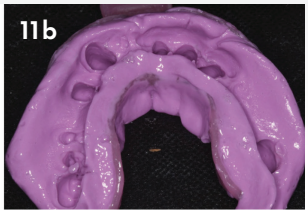
Bone loss ranged from 30-70% with vertical bone loss on the upper premolars.





Figures 10a and 10b: Primary impressions





Figures 11a and 11b: Secondary impressions

Treatment Planning Phase:

As indicated from the clinical assessment the majority of P.D's teeth were of poor prognosis. What we know from the original discussion with our patient is that he wants to be able to eat, and he wants to be able to smile again, with his main concern being his sister's wedding. He had mentioned that he couldn't afford implants so this was not an option that we could further discuss. It was decided that an upper and lower immediate denture would be the best form of treatment.

Treatment Planning Thought Process:

It would be ideal to try and keep as many teeth as possible to help retain the denture, however, the lower teeth were non-viable due to caries and being periodontally involved. The teeth were also not in the optimal position with heavy tilting and drifting. It was decided that all the lower teeth would have be extracted and a complete lower denture would be fitted.

The upper arch needed more consideration. The premolars had poor prognosis and so it was decided to extract them. However, could we use the canines?

The advantage of keeping the canines would of course be for retention but for how long? There is bone loss present and the patient has been diagnosed with periodontal disease. Placing a denture by these teeth could potentially exacerbate the periodontal disease and thus bone loss. The canines were also over erupted, would we be able to achieve an aesthetic result despite this?

What does our patient want? P.D had explained his phobia of dentists and does not want to keep returning and would really like a more definitive solution. Based on the above facts, it was decided to extract all the upper teeth.

Treatment Plan: full mouth extraction and the provision of immediate complete upper and lower dentures with the view to fabricate and place definitive dentures in 6-12months.

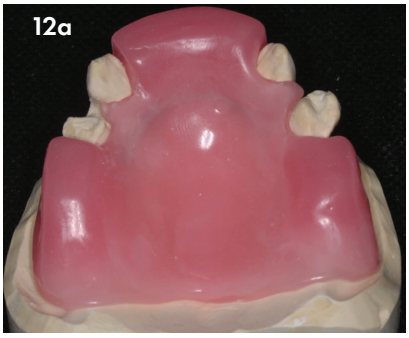
I planned to visit the lab to discuss the treatment plan in full with Julia. Who throughout this article will intersect with the technical considerations.

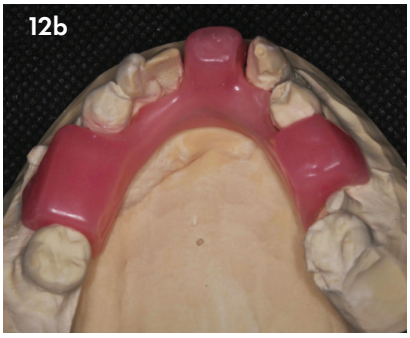
Visit One:

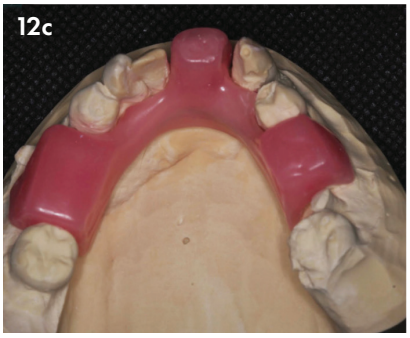
Primary impressions were taken of the upper and lower arch. Stock trays were customised to enable the best impression possible. The primary impression is extremely important with the success of the denture resting entirely on the accuracy of this impression.

I paid a visit to Julia at Ceramic Designs.

Rachel and I discussed in full all aspects of Mr P D's case. From clinical considerations to desired aesthetic outcomes. It was at this stage that I suggested we fabricate spaced custom trays and bite rims. The design of the trays had to take into account that the existing dentition was mostly over erupted and mobile so we ensured that the tray design would allow for all relevant information to be recorded with







Figures 12a, 12b and 12c: Bite registration

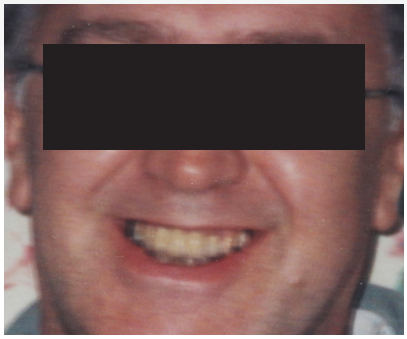
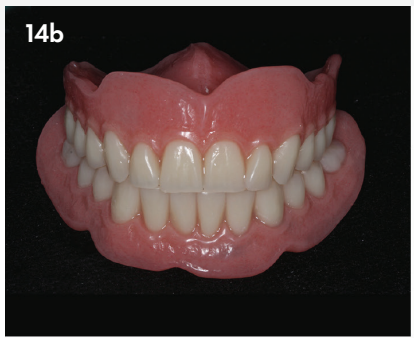
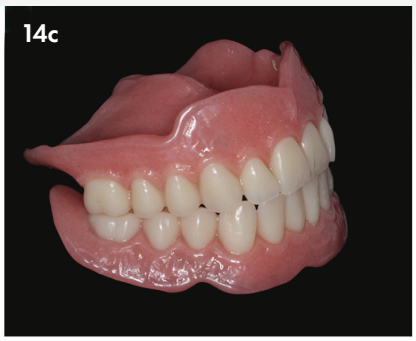
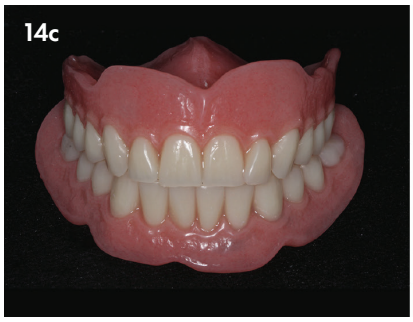


Figure 13: Patient's own photo – smiling





Figures 14a, 14b, 14c and 14d: Denture



minimal risk to the standing teeth.

As you can see from the photographs there were varying degrees of height between the teeth and soft tissues. Due to this factor an initial impression was taken with putty in the edentulous areas and wax added to the peripheries to acquire full sulcus depth. Excess putty was then cut away and alginate was placed and impression retaken to ensure that all landmarks and information were recorded accurately.

Secondary Impression and Bite Stage

As there were time restraints it was decided to carryout both the secondary impression and bite registration stage together.

The trays were tried in and adjusted in the areas that were overextend. Putty was placed in areas of under extension and a final alginate impression completed.

The Freeway Space was measured and recorded at 4mm (RVD 70mm - OVD 66mm). Therefore we could work to the current vertical height. The upper rim was adjusted to allow a 90degree nasal labial angle.

The wax rims were heated and bite recorded in centric relation. Whilst setting a micro brush into the rims parallel to the interpupillary line to give the laboratory the required information as to the correct aesthetic horizontal plane.

The patient was then asked to bring in any photographs of him smiling so that we could see what his original teeth were like so that the lab could try to mimic this.

A shade of A2 was chosen with the patient as a brighter but age appropriate colour. It was important to our patient that his teeth were imperfect. He did not want it to be obvious that he was wearing a denture.

Laboratory Stages:

Once I had received the secondary impressions and bite rims it was time to begin creating Mr PD's new smile.

First things first.

The new models needed mounting on an articulator to see if we had to adjust the current OVD taking into account the freeway space that Rachel had previously recorded after examining the situation it was clear we were already at the optimum OVD.

It was then time to transfer all the markings that Rachel had recorded on the bite rims to the models for my reference points.

As technicians we all have our own individual ways of working, for me I prefer to work from exact measurements. This enables me to extract all the teeth from the model giving me a blank canvas to work with.

This always helps me visualize how I am going to create the new smile.

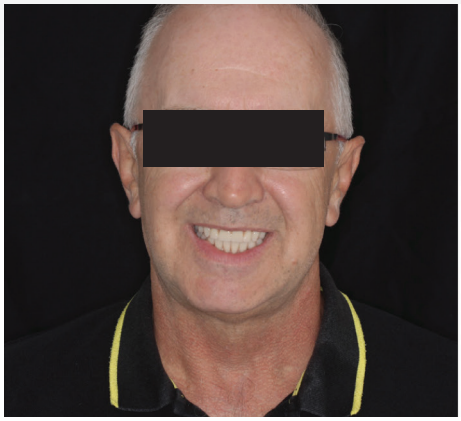


Figure 15: After – full profile

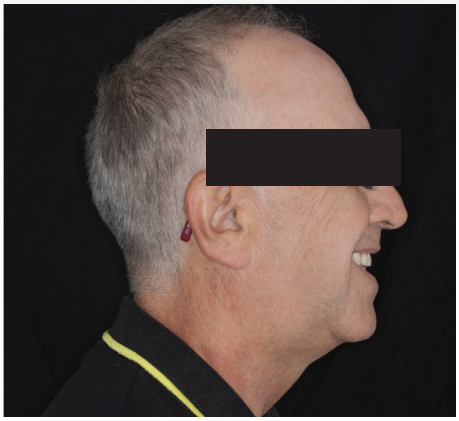
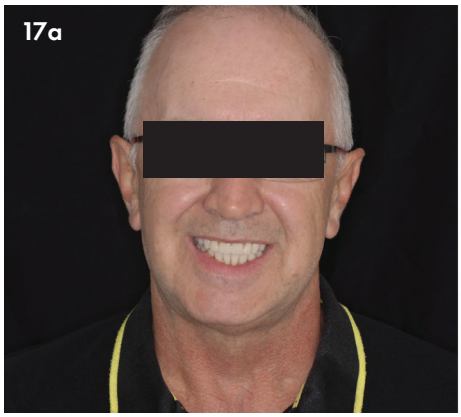
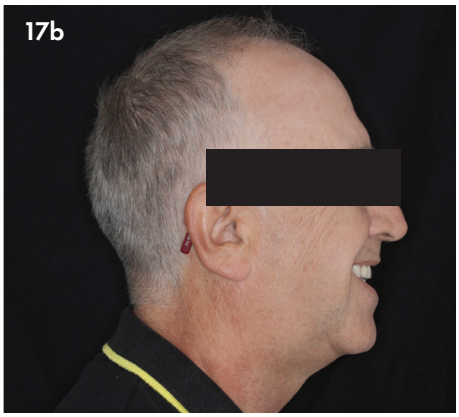


Figure 16: After – side profile





Figures 17a and 17b: Before and after comparisons

"Immediate" cases like these are always difficult because there just isn't the opportunity for any try-in's in order to verify that you are on the right track, so this highlights that it is imperative that communication between patient, clinician and technician is clear and concise.

Once the teeth were set in position and the dentures had been fabricated in wax, it was time to process them in acrylic. On finishing the dentures I had decided to fully contour the pink gum work and to also add any natural ware facets to the teeth. This was to help give the patient the natural look that he was hoping for.

Extraction and Fit Appointment:

The patient being Dental phobic requested for his teeth to be extracted under sedation. So an external service was used to carry out the sedation. Midazolam was used.

All teeth were extracted under local anesthetic and the extraction process was uneventful.

The dentures were then fitted and the patient, although drowsy was very happy.

Review Appointment:

The patient was extremely happy with the appearance of his dentures. He was able to walk his sister down the aisle and smile in the photographs say it all.

The patient did of course have to take time to get used to his dentures. An approach that proved successful was to concentrate on wearing the upper denture first, having got used to that he was then able to introduce the lower denture.

Summary

As a dentist, I could not have completed this case as successfully without the support from my lab technician. Due to the time limit on this case there was a lot of pressure to be able to deliver each stage accurately. Julia's artistic flair really shone through with this denture and exceeded our patient's expectations.

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