

## Review Article

# A Systematic Approach to Problem Solving for Elderly Patients Wearing Complete Dentures

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## Abstract

This paper describes a systematic approach to identifying and managing problems encountered by elderly patients wearing complete dentures. Although the percentage of elderly persons in the U.S. Population will increase; persons who are edentulous will decline. However, the total number of edentulous persons will remain at about 10 million for the next 15 years. These older edentulous persons will be more diverse, frailer with more medical problems and will take a greater variety of medications which can influence their ability to wear dentures. Thus they will be less adaptable and so will have more problems. The diagnosis and treatment of these problems will require systematic questioning of the patient and a careful examination to determine if the problems are due to 1. Intra-oral anatomical problems; 2. Clinical factors; 3. Technical factors; 4. Esthetic problems; 5. Speech problems; or 6. Adaptational or psychological problems, so an appropriate treatment can be instigated.

**Keywords:** Complete dentures; Diagnosis; Problem solving; Treatment; Elderly

## Introduction

### A systematic approach to problem solving for elderly patients wearing complete dentures

Edentulism or the loss of all natural teeth has been an important indicator or measure of the oral status of a society. Thompson [1] has called it the “end stage of oral disease;” and it is a multifactorial process which is influenced by a number of sociodemographic factors such as age, gender, education, income, and being a member of an ethnic minority group [2,3]. The percentage of older edentulous patients in the U. S. population is decreasing; however, the total number of older persons will increase over the next 20 years [4]. Currently about 14.1% of the U.S. population is over the age of 65 years [5]. It has been estimated that due to the aging of the baby boomers (persons born between 1946 and 1964) approximately each day for the next 12 years 10,000 persons will turn 65 years of age [6]. It has been reported that between 1971 and 2001 persons in the lower socioeconomic group aged 65-74 had a decrease in edentulousness from 58% to 32%; for those in the high socioeconomic group it decreased from 30% to 9% [7]. In a comparison of two National Health and Nutrition Surveys (NHANES) 1998-1994 and 1999-2004, among adults aged 65-74 the prevalence of edentulism declined from 29% to 24% [8]. In 2002 Douglass, et al. [9] predicted that the total number of edentulous persons over age 65 would stay constant at about 9 million persons until the year 2020. Slade, et al. [10] in 2014 stated that edentulousness has declined because of “the passing of generations born in the mid-20<sup>th</sup> century” however they project that the predicted number of edentulous persons in 2050 will be between 8 to 10 million persons which is less than the 12.2 million which existed in 2010. Ettinger, et al. [11] surveyed general practitioners in Iowa and found that 68.1% had made at least one set of complete dentures in the last 3 months. Thus, elderly edentulous persons will still be a significant part of many general practices over the next 20 years.

### Characteristics of the edentulous population

The elderly population will become increasingly more diverse in terms of ethnicity, financial resources, and living conditions; however, many older adults who have been edentulous for a long time will have these projected personal characteristics which can be summarized as:

They will be medically compromised and physically frail and will take medications which are potentially xerostomic and may compromise their ability to wear new dentures [12-16].

They will have neurological diseases which will cause neuromuscular deficits, and make it difficult for them to learn to adapt to new complete dentures particularly the mandibular denture [17,18].

Nearly 50% will have been edentulous for more than 30 years [19,20].

The majority will be wearing dentures which are more than 20 years old.

A significant number will be on fixed income and will be in the lower income groups [2,3].

Many will no longer drive and may have transportation problems which will translate into access problems [21-23].

If questioned, more than 60 percent will respond that they have no treatment needs and will not have seen a dentist for at least five years [24,25]. A number of older adults will have much lower expectations of their complete dentures and will be more tolerant of functional deficiencies because tissue changes under their dentures are progressive allowing them to accommodate to the deteriorating fit of their dentures by eliminating from their diet foods that they find difficult to eat [26-29].

**Table 1:**

Diagnostic Points	Treatment
Support problems are often associated with complaints of pain under the dentures without there being any sign of ulceration. They sometimes can be diagnosed from pain being elicited on firm palpation of the tissues, such as when there is: --	In general, the treatment of support problems is to surgically remove the irritant and extend the denture to take advantage of the entire denture bearing area and in selected patients, the use of end steal implants as over dentures has been very useful if the patient is healthy enough for surgery and can afford the treatment.
1. A spiny crest of the residual ridge;	1. Surgically remove the sharp bone and reline the denture.
2. An exposed mental foramen associated with bony resorption (Figure 1).	2. Relieve the denture over the foramen or place 4-5 implants and make a fixed-detachable implant supported denture.
3. A trigger area or an amputation neuroma [48]	3. Inject the site or surgically remove the neuroma and reline the denture.
4. A prominent or calcified genial and/or mental tubercles;	4. If necessary, surgically remove the sharp bone and reline the denture.
5. A root fragment or foreign body;	5. Surgically remove the root fragment or foreign body and reline the denture.
6. A prominent lobulated tori or other exostosis or	6. Surgically remove the tori or exostosis and reline the denture.
7. A flabby or fibrous ridge can result in rocking, unstable dentures and insufficient space for extension of the denture bases between the residual ridges.	7. Use a special impression technique such as selective loading or a two tray technique to prevent displacement of the tissue (Figure 2A, B, C and D).

**Table 2:** Diagnostic Points & Cause.

A. Soreness of mucosa at the periphery of the denture	Treatment: Use "Pressure Indicator Paste" (PIP) to detect pressure areas and adjust the denture;
1. Overextension of denture borders;	1. Reduce, round, and polish the borders;
2. Ulceration of the frenum;	2. Relieve and polish the area;
3. Sharp peripheral borders;	3. Round and polish the borders;
4. Ulceration not related to the denture border, e. g., aphthous ulcer;	4. Symptomatic treatment, as it takes 10-14 days for an aphthous ulcer to heal;
B. Soreness of the palate or residual ridge which is localized	Treatment
1. Sharp edge or bleb on the denture surface;	1. Remove the irritant and polish the periphery;
2. Irritation or ulceration of the tissue surface;	2. Identify area with pressure indicating paste, and relieve the area;
3. Irritation or ulceration of thin mucosa over a bony exostosis or tori;	3. Identify with PIP, relieve pressure and/or refer for surgical re-contouring followed by a reline;
4. Ulceration or discomfort associated with the insertion or removal of the denture into an undercut area;	4. Use PIP to locate and relieve the area of the denture that interferes;
5. Ulceration of mandibular tissue which does not show a pressure area with PIP;	5. Evaluate the occlusion to see if maximum intercuspation coincides with centric relation, if not, remount the dentures and correct the occlusion as the ulcer is caused by the denture sliding into maximum intercuspation;
C. Generalized soreness of residual ridge or palate	Treatment
1. Excessive vertical dimension of occlusion;	1. Remount the dentures and grind posterior teeth to reduce vertical or replace teeth in one arch and correct the vertical dimension of occlusion, or remake the dentures;
2. Inadequate extension of the mandibular denture;	2. Use compound to extend the base and reline the denture;
3. Clenching habit;	3. Educate the patient. Use biofeedback training or meditation to help patients prevent clenching;
4. Bruxing habit;	4. Educate the patient so that dentures are removed at night;
5. Hyposalivation, resulting in infection by <i>candida albicans</i> or frictional trauma from the denture;	5. Prescribe artificial saliva or moisturizing gels, e. g., Oral Balance gel' or use with an antifungal as needed;
6. Occlusal discrepancy;	6. Remount the dentures and balance the occlusion;

Oral Balance – Glaxo SmithKline, Consumer Healthcare LP, Moon Township, PA 15108

More than 30% will have mucosal lesions in the mouth which are denture-related and a few may need a biopsy and a clinical follow-up [30-33].

Sadly, many will be mildly confused but the older they become the higher the risk of some form of dementia [34-36].

**Diagnosis of denture problems**

Over the years, many authors [37-44] have presented systematic approaches to problem solving for patients wearing complete dentures. Young [37] presented a three-part check during insertion of complete dentures. Morstad and Peterson’s [38] approach was a list of problems and solutions and divided the complaints into; comfort, function, esthetics and phonetics. Luebke and Scandrett

[42] emphasized that it takes time to diagnose and solve patients’ problems. They present an extensive table which evaluates the problem, diagnoses the problem and offers a treatment. Watt and MacGregor [40] also developed an excellent classification for the diagnosis of complete denture complaints. This paper presents a modification of all of these systems with an emphasis on some specific common problems.

**Systemic issues**

Older edentulous adults are susceptible to a variety of chronic debilitating diseases which either by themselves or their treatment causes a decrease in tolerance of wearing complete dentures. An accurate medical history is important, but more important is an understanding of the oral consequences of that medical and drug

**Table 3:**

Diagnostic Points	Treatment
1. A V-shaped palate with an extremely active soft palate (Figure 3).	1. Adjust the posterior border of the denture so that it does not impinge on the soft palate;
2. A midline fissure or pseudo-fissure which crosses through the post dam region, causing a loss of seal (Figure 4 A & B).	2. Make sure the post dam seal fills the fissure and that the knife-edged extension of the denture base into the fissure is not removed by a technician [44].
3. An inadequate post dam seal;	3. Replace the post dam seal with compound or with Iowa wax <sup>1</sup> then with acrylic resin;
4. An inadequate extension of the border of the denture, resulting in a poor fit;	4. Add modeling compound or heavy bodied polyvinyl siloxane to the denture border and border mold and replace with acrylic resin. If the fit is poor, reline or rebase the denture; (Figure 5).
5. There is adequate extension of the borders but an inadequate width, resulting in a loss of peripheral seal;	5. Use modeling compound or heavy bodied polyvinyl siloxane to fill the mucobuccal fold - reline the dentures;

<sup>1</sup>Iowa wax – D-R Miner Dental Specialty Wax

**Table 4:**

Diagnostic Points	Treatment
If centric relation and maximum intercuspation do not coincide, the patient may complain that there is pain during eating, or that the dentures loosen when eating. Examination of the soft tissues shows inflammation or ulceration in a circumscribed area, usually on the lingual side of the anterior lower ridge, which can be identified with pressure indicator paste only if the patient is asked to bite together.	Occlusal equilibration by mounting the dentures on an articulator and balancing the teeth by grinding is the treatment of choice <i>if</i> the discrepancy is less than half of a cusp. If it is greater, the posterior teeth may need to be removed and reset.

**Table 5:**

Patients may also complain of the following:	Treatment
1. Clicking of teeth or noisy teeth;	1. Remove the posterior teeth and reset them at the correct vertical height;
2. Gagging or retching when wearing the dentures for any length of time;	2. Remake the mandibular denture if the maxillary denture is adequate and the occlusal plane is correctly oriented;
3. Earache;	3. Remake both dentures;
4. Difficulty in swallowing;	4. Remount the dentures and reduce the vertical height. If this is not possible, remake the denture;
5. Sore throat, especially if there is an associated over-extension of the lingual flanges; or,	5. Reduce the length of the lingual flange and remount the dentures and reduce the vertical;
6. Pain on the crest of the alveolus without there being any sign of irritation, or the whole mandibular ridge may be inflamed;	6. Remount the denture and reduce the vertical – be sure the patient is not clenching the teeth;

**Table 6:**

Specific Esthetic Problems	Treatment
1. Wrong tooth size or shade;	1. Replace with new teeth, chosen by the patient and the family or "significant other;"
2. Spouse or "significant other" unknown to the dentist who may influence the patient's acceptance of the dentures after the patient approved the set-up of the teeth;	2. Remove the teeth. Reset teeth with "significant other" present for a new try-in;
3. Insufficient vertical overlap of the anterior teeth;	3. If flat cusped teeth have been used, change to cusped teeth if vertical overlap is now desired by the patient;
4. Upper lip is sunken in because anterior teeth were set too far lingually;	4. Reset teeth towards the labial;
5. Fullness under the nose;	5. Reduce anterior labial flange as much as possible;
6. Too much tooth is showing and the vertical dimension is too great and the plane of occlusion is set too low;	6. Remake dentures and raise the occlusal plane;

history [45-47]. For example, the medical treatment of a patient with hypertension, coronary artery disease, and depression would include a diuretic, a calcium channel blocker, an angiotensin-converting enzyme (ACE) inhibitor and a selective serotonin uptake inhibitor and possibly nitroglycerin as required. This therapy may induce hyposalivation and xerostomia. The depression acts on the salivary centers in the brain and each of the medications can potentially induce a dry mouth. The xerostomia reduces the flushing and lubricating action of the saliva, changing the oral environment, so that the tissues are more susceptible to trauma and infection by *Candida albicans*.

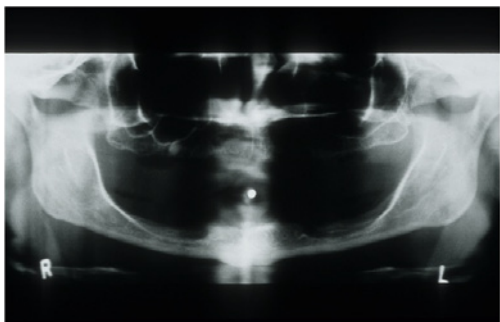
Another example is a patient with Parkinson's disease who has facial tremors, even when controlled by levodopa. Such a person loses a great deal of neuromuscular control -so necessary for the successful wearing of mandibular complete dentures. He/she also has a tendency to clash and grit his/her teeth, resulting in damage to the supporting

tissues and making denture wearing difficult.

### Dental and Denture Problems

The dental and denture history and expectations influence a patient's tolerance to dentures, and this knowledge often may help a dentist interpret the patient's symptoms or his/her complaints. For example, an older patient who has successfully worn dentures for 20 years will not easily accept that new dentures require the learning of new manipulative skills, even when there has been adequate communication between the dentist and the patient.

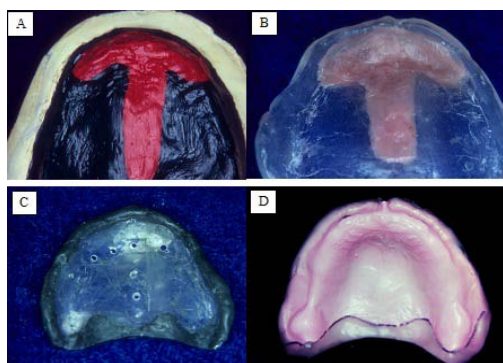
When an edentulous patient seeks treatment, it is important to establish clear communication with that patient. However, many edentulous older adults are unable to give a clear description of their difficulties, and may simply state "my teeth are worn and I cannot chew anymore." This complaint may mean the dentures have poor stability or retention, or that the teeth are worn and the vertical dimension has



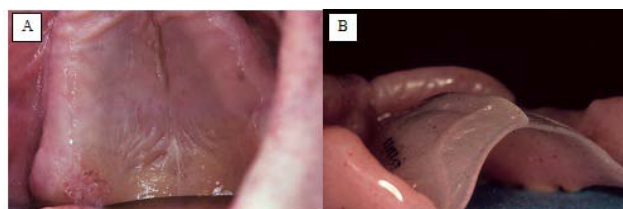
**Figure 1:** Female aged 76 who have worn complete dentures continuously day and night since she was 24 years old. She has a history of hypertension and osteoarthritis as well as osteoporosis. Her mental foramina are on the crest of the ridge and because of the thinness of her mandible she is at risk of a pathological fracture through the mental foramen.



**Figure 3:** This is the maxilla of a 68 year old male who has a V-shaped palate or high vault which can compromise the retention of a maxillary complete denture. The soft palate is very moveable and is nearly at right angles which require that the complete denture has an accurate posterior extension and does not impinge on the soft palate.



**Figure 2A,B,C and D:** This is the maxillary cast of a female age 65 who for 10 years wore a maxillary complete denture against a mandibular arch which had teeth #22 to #27 and a RPD. The remaining anterior teeth of the mandible were extracted 6 months ago due to periodontal disease and she now needs a new maxillary and mandibular complete denture. The anterior maxilla has mobile tissue, in order to make a fitting and stable maxillary denture a special impression technique was used. The initial impression was made with irreversible hydrocolloid and on the cast (Figure 2A) the mobile tissue is marked in red. In (Figure 2B) a relief area in wax was placed over the mobile tissue and a baseplate made. The baseplate was then border molded with compound (Figure 2C) and in preparation for the impression, the wax was removed and relief holes placed. The final impression was made in a polyvinyl siloxane with a functional postdam in lowa wax (Figure 2D).



**Figure 4A and B:** This is the maxilla of a 73 year old man who has a pseudocleft (Figure 4A) to achieve a postdam seal the maxillary complete denture must extend into the pseudocleft which crosses the postdam region as shown in (Figure 4B).



**Figure 5:** This 75 year woman had received new complete dentures 2 weeks ago and her chief complaint was that the maxillary denture was not retentive. In evaluating the denture it was found that the denture was stable but the peripheral seal was lacking. Compound was added to the periphery and border molded to reestablish the peripheral seal. The compound was replaced with acrylic resin in the laboratory.

changed so that they can no longer chew comfortably. It may even mean that the patient is dissatisfied with his/her appearance. The diagnosis and treatment will depend on:

Systematically questioning the patient to determine his/her primary complaint which needs to include an evaluation of his/her medical history and medication use;

Carefully examining the facial and oral tissues including appropriate radiographs so as to interpret the signs and symptoms reported by the patient;

Carefully examining the dentures and evaluating the dentures in a systematic way;

Defining the problem and deciding if the problem is due to:

Intra-oral anatomical factors such as “Support Problems”

Clinical factors such as “Retention Problems”

Technical factors such as “Muscular Balance Problems” or “Occlusal Problems”

“Esthetic Problems”

“Speech Difficulties”

“Adaptational or Psychological Problems”

Offering the patient a treatment plan which will help to solve his/her problems.

**Support problems**

Support is defined as the oral tissues on which the dentures rest





**Figure 6:** This 67 year old male complained that his old lower dentures were not stable and were moving when he talked. In evaluating his mandibular denture, it did not cover the retromolar pads nor did it extend down to the mylohyoid ridges on each side. Figure 6 shows the old and new dentures and the differences in the extensions of the borders.

and which bear the load of mastication when the dentures are in function [40].

To evaluate the patient for support problems digital palpation of the soft tissues is followed by examination of the dentures in the mouth. A forefinger is placed on the premolar area on each side, pressure is applied vertically, followed by an attempt to rock the denture (Tables 1 and 2).

### Retention problems

Retention is defined as “the resistance of the denture to dislodgment from the mouth” [40].

### Maxillary Denture

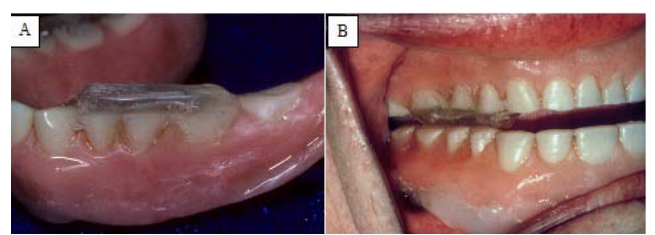
The denture is examined to make sure that the posterior border passes through the vibrating or “AH” line, that the maxillary tuberosities are covered, and that the denture periphery passes through the pterygomaxillary notch. The denture border should fill the mucobuccal sulcus. The retention is tested by pulling down on the anterior teeth. Pressure is applied with the thumb and forefinger labially on the central incisors. This tests the effectiveness of the post dam seal. A defective post dam seal will often show air bubbles escaping from under the denture. When force is applied buccally in the area of the canine and first premolar on each side it tests the effectiveness of the peripheral seal.

### Treatment

If the maxillary denture dislodges when yawning, use PIP to look for an overextension of the denture borders in the posterior region and adjust it.

If the denture dislodges during talking or drinking examine the peripheral or post dam seal and add the appropriate material or relin the denture.

If the denture dislodges when the jaw moves from side to side use PIP to identify where the buccal flange is interfering with the



**Figure 7A and B:** This 82 year old patient had been wearing the same dentures for 28 years and was unhappy because they no longer fitted. She was not in good health and taking a variety of medications which had a xerostomic potential. The dentures were unstable and the denture teeth were heavily worn resulting in a loss of vertical dimension of occlusion. She needed new dentures but we did not believe she could accommodate to new dentures so the dentures were stabilized with tissue conditioner and occlusal pivots were used to reestablish her vertical dimension of occlusion. (Figure 7A) shows the contoured occlusal pivots and (Figure 7B) shows the dentures in the mouth.

coronoid process and then adjust the flange appropriately.

If the denture loses its seal when lateral pressure is applied, there is a defective peripheral seal. Try adding compound to the buccal flange on the opposite side and then either replace the compound with acrylic resin or relin the denture.

### Specific problems of the maxilla

When the maxillary denture is placed in the mouth with the teeth slightly parted and lips and cheeks relaxed the denture drops, or the patient complains that the denture loosens when drinking fluids, the lack of retention may be related to one or all of these problems (Table 3).

### Mandibular Denture

The dentures are examined to make sure that a greater portion of the retromolar pad is covered and that the denture border extends to the external oblique ridge on the buccal. Lingually, it should extend to the full depth of the mylohyoid ridge and as deeply as possible into the retromylohyoid area (Figure 6). With the denture in place and the mouth at rest, a periodontal probe is placed between the central incisors and light pressure is applied to lift the dentures.

### Treatment

If the denture lifts when talking, evaluate the border extensions on the lingual and adjust as necessary;

Also, look at the contour of the lingual flange to make sure it is not concave and that the teeth are not set too lingual. If it is possible, reduce the width of the teeth on the lingual; if not, reset the posterior teeth back into the neutral zone

### Muscular Balance Problems

Muscular balance suggests that the forces acting on the denture are in balance, maintaining the denture’s position on its support in the neutral zone so that it is not dislodged during speaking or eating.

### Diagnostic points

Muscular balance problems are those which may result in speech difficulties, such as loosening of the dentures when speaking as a result of the denture impinging on active muscles, as when there is an over-extension on to the soft palate or insufficient clearance for

a frenum. It may also be associated with cheek, tongue, or lip biting because of the incorrect position of the artificial teeth, resulting in an inadequate horizontal overlap.

The patient may have an atypical tongue position or a tongue thrust when swallowing (infantile swallow). The patient will need education to keep the tongue forward in the mouth behind the mandibular incisors.

### Maxillary denture

To check the peripheral extensions, the patient is asked to open his/her mouth widely to simulate laughing or yawning. Over-extensions will cause the dentures to drop. With the mouth slightly open, the mandible is moved from side to side. If the denture drops, the denture is too wide and is pushed away by the mandibular ramus.

### Mandibular denture

To check the peripheral extensions, the patient is asked to open his/her mouth. If the lower denture rises, there are over-extensions in the buccal or labial peripheries. The patient is asked to lift the tongue slowly and protrude it to touch the upper lip. If the denture lifts, there is lingual interference on the periphery and the tongue space is being violated.

### Treatment

To achieve adequate muscular balance the dentures should have the following characteristics:

The artificial teeth must lie in the neutral zone;

The polished buccal and labial surfaces must form an adequate peripheral seal within the mucobuccal fold;

The denture base must not interfere with movable frena or the soft palate;

There must be adequate freedom from the ascending ramus to allow lateral movement; and

There must be adequate tongue space. The polished lingual surfaces must not encroach on the floor of the mouth and may be slightly concave, but they must not be undercut. If they do, then reduce the width of the teeth or reset new teeth into the neutral zone;

If there is an overextension use PIP or disclosing wax to identify the specific peripheral border area which needs reduction.

## Occlusal Problems

The occlusal analysis requires an assessment of the horizontal component to determine whether centric relation and maximum intercuspation coincide. To achieve occlusal harmony requires that the artificial teeth interdigitate maximally in a position where the condyle is in a retruded physiological (unstrained) position in the glenoid fossa for a given degree of vertical opening. The relationship of the teeth, one to another, must be such that lateral and protrusive excursive movements may be freely carried out.

An assessment of the vertical component of the occlusion is necessary to determine whether there is an adequate interocclusal distance. The techniques for these assessments are well known and require no further explanation in (Table 4).

## Inadequate Interocclusal Space

As stated previously, the occlusion has not only a horizontal component but a vertical one, and the problem may be manifested as insufficient interocclusal distance. The patient may state: "I do not have room for my teeth," or "My teeth are too large," or "My gums hurt, especially after I have been wearing my teeth the whole day, but they are fine in the morning," or "The roof of my mouth becomes tinglingly if I wear my bottom teeth."

Examination of dentures shows that:

The mentalis muscle is hyperactive when the lips are closed;

The teeth clash together with sibilant "S"; or,

There is very little measurable interocclusal space (Table 5).

## Excessive Interocclusal Space

If there is an excessive interocclusal distance because of over closure, there may be drooling of saliva from the corners of the mouth or an associated angular cheilitis with folding of the corners of the mouth.

The patients may vocalize their concerns by saying, "My teeth are dull, they need sharpening," or they may say, "My face is falling in." Measurement of the interocclusal distance will usually be greater than 5 mm.

### Treatment

In such patients, it may be possible to reline the dentures, but it usually requires that the dentures to be remade. In older patients, it may be wiser to stabilize the dentures with tissue conditioners and rebuild the occlusion with autopolymerizing acrylic resin occlusal pivots [49] until occlusal harmony can be established (Figures 7A and B). At this point, which usually requires some weeks, the old dentures may be relined and the teeth replaced as one would do for a copy denture. Duplicate or copy dentures [50-52] are useful for patients whose ability to adapt to dentures can be predicted to be poor as the copy dentures can be easily modified. Another possibility is to use the old dentures for functional impressions. Interocclusal records can be made at the same time and one can proceed to a try-in for new dentures at the next appointment. One should only do this if the old dentures are unwearable, otherwise, it is safer to copy the old dentures prior to using them.

## Esthetic Problems

These have been discussed in detail by many authors. The most common complaints are the teeth are too dark, or too big, or too irregular, or too visible. However, communication with the patient and especially with the family is the key to success. Many older patients want "small white teeth set up like a picket fence," while we try to give them something which is more realistic. In these circumstances we must compromise or the patients will reject the dentures. Some want their friends to identify that they have new dentures and that the "new teeth are lovely and white" while others will go to extraordinary lengths so that nobody knows that they have dentures.

In general, we should try to place the upper teeth so they restore the lost soft tissue and are not set over the crest of the ridge. The position of the lower teeth is determined by speech and the recontouring of the

Table 7:

Speech Difficulties	Treatment
1. Patient has not yet accommodated to the new dentures and learned the new skills required;	1. Do not make major changes for 6-8 weeks, as the patient will usually adapt to the new dentures;
2. Excessive lingual flange thickness doesn't allow adequate room for the tongue;	2. Reduce the thickness of the lingual flange;
3. Upper anterior teeth are set too far to the lingual and make "T" sound like "Th";	3. Reposition anterior teeth to give more tongue space;
4. There is incorrect placement of the upper anterior teeth either vertically or horizontally and this makes "F" and "V" sounds indistinct;	4. Reposition the anterior teeth so that the incisal edge of the anterior teeth touch the mandibular wet and dry lip line (vermillion border);
5. Loss of air through the palatal vault which causes whistling;	5. Place soft wax on palate of the maxillary denture to see if this corrects the problem. If it does, change wax into acrylic resin; Consider consulting a speech pathologist if the changes don't correct the speech difficulties;

Table 8:

Miscellaneous Problems	Treatment
1. Faulty adaptation of the denture;	1. Reline or remake the denture;
2. An under extended denture;	2. Correct the under extension and relin the denture;
3. An inexperienced denture wearer;	3. Educate patient, that it will take time to learn the new neuromuscular skills;

lower lip. It is also important to set the maxillary teeth to harmonize with the lower lip as a person smiles (Table 6).

## Speech Difficulties

Speech adaptation is one of the more rapid adjustments that patients wearing complete dentures make. However, the older the patient and the longer they have worn their old dentures, the more difficult it will be for them to adjust to new dentures (Table 7).

### Adaptational or psychological problems

When dentists cannot satisfy the demands of a patient, it is easy to console one that they are psychologically rejecting their dentures. There are, however, two situations which require some comment.

The first is the true psychological "gagger" or patient who is unable to wear dentures because of continuous retching. Before a person is labeled with that diagnosis, it is imperative that the dentist ensure that:

The dentures fit accurately on their supporting tissues and have adequate retention;

There are no over-extensions, especially on the soft palate, and there is an adequate post dam seal;

The vertical dimension of occlusion is not excessive;

The contours of the denture base or the teeth do not impinge on tongue space; or,

The occlusion is balanced and does not create instabilities when the teeth occlude.

If all of these problems have been corrected then the patient should try to desensitize their palate by using a soft brush to massage it. Often, coating the dentures with topical anesthetic before insertion of the maxillary denture can be an aid. Drugs which selectively depress the parasympathetic portion of the visceral (autonomic) nervous system have also been used.

If these methods fail, the patient can be referred to a clinical psychologist for training in relaxation techniques, such as:

Progressive relaxation;

Biofeedback training; or, Hypnosis.

If, however, the patient has a true denture neurosis, then psychiatric evaluation may be required.

The second category of patients is those elderly patients who either have no dentures and have been edentulous for many years, or have been successfully wearing an inadequate denture for at least ten years. One can construct for these patients a technically perfect denture and find that they are unable to accommodate them. Wyke [53] has explained the problem as follows:

The wearing of dentures is a learned art, and with age, the learning process with respect to the acquisition of neuromuscular skills becomes more difficult. The older the persons are when they become edentulous, the less able they are to learn to function with dentures. This ability is only possible when the neuromuscular control process is primarily reflex (that is, it operates largely at an unconscious level), using the fusimotor-muscle spindle loop system, which controls mandibular posture. If a person must consciously think about using his or her dentures, control is then exercised mainly through the  $\alpha$ -motorneuron system directly from the cerebral cortex, and the use of dentures requires continuous concentration and becomes intolerable. Thus, elderly persons may not persevere and learn to use new dentures, even if the dentures are technically faultless.

This hypothesis could also explain the difficulties of accommodation to dentures that patients with disabilities have who suffer from cognitive, psychiatric or neurologic disorders such as dementia, cerebral arteriosclerosis, and Parkinson's disease.

Therefore, before new dentures are constructed for elderly patients, it is necessary to evaluate their capacity to benefit from them. If they already have dentures, it may be better to modify the fit by use of tissue conditioners and restore vertical dimension by "occlusal pivots" before relining, remaking, or duplicating the dentures, so that the degree of neuromuscular adaptation required is kept to a minimum, or making copy dentures.

In certain situations where it can be predicted that the patient

will not tolerate a lower denture, construction of an upper denture only has been suggested. Ritchie and Fletcher [54] have reported that Everett had suggested modifying the maxillary occlusal plane so that the posterior occlusal table of the denture carried inverted cusp teeth or contoured acrylic blocks and was set at a position lower than the "normal" occlusal plane. The teeth are arranged to make even contact with the mandibular edentulous ridge when the patient is in the maximum closed position. This position is decided by the height of the anterior teeth.

## Miscellaneous Problems

Into this category can be placed all the other problems. A common complaint is that food gets under the mandibular denture (Table 8).

Another common complaint is loss of taste when wearing dentures. This may be due to the patient swallowing larger pieces of food and not giving enough time for the food to reach the taste buds. Also, there is an atrophy of taste buds with age, and the patient may be taking medications which cause hyposalivation; and there may not be enough saliva available to dissolve the food for the taste buds.

A burning mouth also can be a problem. If it is on the palate or the lip it may be due to pressure on the incisive papilla or the mental nerve. The treatment in either case is to identify the area and relieve the pressure area in the denture. A burning tongue is much more complex and many therapies have been tried, such as antifungal treatment, Vitamin B treatment and estrogens. If necessary, refer the patient to a specialist in oral medicine, but counsel the patient to clean the dorsal surface of the tongue. If the patient is addicted to using mouth washes have him/her change to one without alcohol, and avoid spicy foods.

## Conclusion

Every denture moves in function, therefore the wearing of complete dentures can cause problems. Some patients adapt to the problems and accept discomfort as the norm for wearing complete dentures. Some problems are transient while others are significant enough that the patient seeks the services of a dentist to try and correct them. Some patients have totally unrealistic expectations from their dentures and go from dentist to dentist seeking the perfect denture.

This paper presents an approach to problem solving for the patient wearing complete dentures. Several studies [55-57] have shown that many patients' complaints have a significant relationship to denture faults or the condition of the mucosa and bone supporting the denture. Thus, for most patients it is possible to find a solution to their complaints but a small but persistent percentage will not be able to physically adapt to the dentures or to psychologically accept them. For those who can afford it and are healthy and willing to have surgery, implant supported dentures may be a possible solution; for the others they will continue to seek a solution by going from dentist to dentist.

The older the patients are when they become edentulous; the longer will be the time needed will to learn the neuromuscular skills to manipulate a denture especially a mandibular denture in function. If at all possible, it is wise to try and save a few key teeth on the mandibular arch for an interim removable partial denture or over denture to transition an older person into complete dentures.

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