

Occlusion Manual

**Occlusion for all Aspects of Dentistry
Treatment of Headaches
Temporomandibular Joint Problems
and
Appliance Therapy**

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Occlusion Part 1

The Introductory Course on Occlusion for Dentists and Technicians

The First part of the course will begin with:-

1. Impressions taking of participants (if participants do not have their own models)
2. Centric records
3. Face bow taking
4. Upper model mounting

Please read Page 17 on Mounting Lower Models

If you have any problems with the above ask us immediately

Please read the pages on mounting models

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Terminology

CENTRIC RELATION

The relationship of the mandible to the maxilla, when both condyles are in their most superior position in the fossa, irrespective of tooth contacts.

USES OF CENTRIC RELATION

- (1) Reliable reference position.
- (2) Starting point for restorative procedures

MAXIMUM INTERCUSPIDATION

The relationship of the upper and lower arches when the teeth are in maximum intercuspitation irrespective of the jaw relationship.

CENTRIC RELATION OCCLUSION

When the teeth are in Maximum Intercuspitation and the jaws are in centric relation simultaneously.

FUNCTIONAL SIDE (Working Side)

The side towards which the mandible moves.

NON-FUNCTIONAL SIDE (Balancing Side, or Non-Working Side)

The side away from which the mandible moves.

ECCENTRIC MOVEMENTS

All movements of the mandible away from centric relation.

ECCENTRIC CONTACTS.

Any contacts of the teeth during eccentric movements of the mandible.

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Anterior Guidance

POSTERIOR DISCLUSION

Can be Achieved by Two Different Types of Anterior Guidance:

- (1) Anterior Group Function
- (2) Canine Guidance
Neither is applicable for All Cases.

GROUP FUNCTION

Distribution of Lateral Forces to a Group of Teeth, Rather Than to a Particular Tooth.

ANTERIOR GROUP FUNCTION

Disclusion of the Posterior Teeth by Several Anterior Teeth Acting in Harmony.

USE OF GROUP FUNCTION

- (1) When Already Present and No Adverse Effects Present
- (2) When Distribution of Excursive Stresses is Advisable, e.g.
 - (a) Presence of Periodontal Breakdown
 - (b) Extensively Restored Teeth

INDICATIONS FOR ANTERIOR GROUP FUNCTION

- (1) When Already Present
- (2) Hypermobility of Canine Tooth
- (3) Canine Wear
- (4) Loss of Bony Support Around Canine Tooth
- (5) Anterior Porcelain Crowns Present

CANINE GUIDANCE/CANINE PROTECTED OCCLUSION

Disclusion by the Canine Teeth of All Other Teeth in Lateral Excursions.

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Principles of Occlusion **for** **Natural and Restored Dentitions**

1. The occlusal forces should be directed down the long axis of each posterior tooth.
2. As many posterior teeth as possible should contact in centric relation, no lateral slide being present when the teeth are clenched together. (a very slight slide forwards is acceptable).
3. The front teeth should separate the back teeth.
4. In eccentric movements, posterior tooth contacts should decrease as the anterior teeth take over guidance.
5. There should be no non-functional (balancing side) contacts.

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Exceptions To The Principles **Of** **Occlusion**

1. In Severe periodontal Cases, Non-Functional (balancing side) Contacts may be required to Reduce the Stresses on Anterior Teeth.
2. In Anterior Open Bite Cases and Severe "Class III" Cases, it may not be possible to Create Anterior Disclusion.
In such cases, Functional (non-working) Contacts on Posterior Teeth may be Necessary.

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Mounted Study Model Procedure

2 sets of models are set up on two articulators using two centric records. The accuracy of the mounting can be checked by marking the first contacts on each set of models after they are mounted and comparing the two set-ups. If they are the same or very nearly the same then the two sets are mounted accurately. The possibility of setting up two sets of models incorrectly and exactly the same is highly unlikely.

Impressions

Facebow Registration for a Hanau Semi-adjustable articulator

Centric Record Registration

Set-up

- 1) **Metal Tray**
(plastic trays are damaged by the Multiform Paste)
- 2) **Upper and Lower Perforated Alginate Impression Trays**
(Ensure that all the trays in the practice are clean and ready to use) (Anatomical Coe Trays are the best trays to use)
If there are any previous models use them to help select the correct size tray for the patient. Ensure that the tray extends beyond the back teeth and is not too tight
- 3) **2 Wax Rectangles (7 cm long)**
(Use a fairly soft type of wax. There will be a certain amount of distortion of the centric record when it is taken out of the patient's mouth and during the time before it is used to mount the lower model. When the models are put together with the centric record and gripped together the softer type wax will "distort" back to its original shape.
Hard waxes are unsuitable as they crack when this is done)
- 4) **Multiform Paste measured 1 and 1/2 inches from each tube**
(A type of Zinc Oxide and Eugenol paste which is suitable for making centric records being not too sticky and not too brittle)
- 5) **Vaseline**
(Used to help prevent the paste from sticking to the patient's teeth)
- 6) **4 Bowls of Alginate measured out**
(3 measures for each medium or small tray 3 measures for each large tray. Use three scoops if partial dentures are to be made on the models)
- 7) **4 Water Measurers plus water**
- 8) **2 Alginate Spatulae**
- 9) **Facebow with Wax added to the Fork**
- 10) **Tip-a-dilly Aspirator tip**
- 11) **Rece of paper with the patient's name on To identify the case**

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Study Model Impressions

The Procedure

1. Nurse chooses the trays by using any previous models of the patient **Otherwise** the Dentist chooses correct size of trays
2. Nurse mixes and loads tray (Dentist may prepare wax sheets for the centric records while waiting for the alginate to be mixed)
3. The Nurse places a small amount of alginate onto the pad of the Dentists first finger and holds the Alginate Tray the correct way up and in the right direction to go straight into the patient's mouth
4. The Nurse holds the tray somewhere other than by the handle which should be kept clear for the Dentist to hold
5. The Dentist smears Alginate on the biting surfaces of the teeth (this helps avoid trapping airbubbles)
6. The nurse orientates the tray in the correct direction to go into the patient's mouth
7. The Dentist inserts the tray into the patient's mouth
8. The Nurse mixes for the next impression
9. While the nurse is mixing the Dentist removes the tray when the Alginate is set and aspirates any Alginate left in the Patient's mouth (at the end of all the impression taking the patient is given a thorough rinse)
10. 2 Upper followed by 2 lower impressions are taken one after the other
- 11.

Care of the Impressions

- a. The impressions should be washed in cold water to remove saliva which would affect the hardness of surface of the model
- b. Vigorously shake the water of the impressions (If left on the impressions the plaster/stone mixture would be diluted on the surface of the model and would be soft when set)
- c. Cover the impression with a tissue and drop several drops of water on it This helps prevent the Alginate drying out
- d. Pour the impression within 15 minutes (after this time the Alginate begins to distort)
- e. Separate the impression from the model after 1 hour

SEPARATE AT LEAST WITHIN 3 HOURS

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Facebow Registration for the Artex Semi-adjustable Articulator

Purpose To enable the mounting of the patient's upper model on the articulator in the same relationship to the condyle as the patient's upper arch to their temporomandibular joint (jaw joint)

The Artex Face Bow Components

1. The bow
2. The bite fork which carries the wax
3. Universal locking joint

Artex transfer items

1. Transfer table
2. Transfer jig

Set-up Facebow Fork Preparation

1. The prongs of the bite fork are covered with wax by the chairside assistant.
2. The bite fork is attached to the face bow
3. The wax is warmed in a bowl of hot water by the assistant ready for the dentist to use.

The Procedure

1. The prepared face bow is held over the patients mouth by the assistant (using there left hand)
2. The assistant retracts the patients left cheek using a mirror with there right hand
3. The dentist inserts the bite fork into the patients mouth
4. The patient is told to bite onto the bite fork
5. The dentist holds onto the ends of the sliding parts of the bite fork (the assistant can now let go of the bite fork)
6. The sliding arms are gently pushed together inline with the ear holes and the patient is asked to push them in and to hold in place
7. The nasal rest is slid onto the nasion and held in place
8. The universal joint is tighten, making sure it is on the patents left

To remove the face bow

9. Slide nasal rest away and tighten
10. Slide arms out
11. Ask patient to open mouth and remove face bow and hand it over to the assistant

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Centric Record Registrations

SET-UP

- () 1) 2 Pink Wax rectangles (7 cm wide)
- () 2) Multiform Paste measured out 4 cm (1 and 1/2 inches) from each tube
- () 3) Water in an eyedropper bottle
- () 4) Cement Mixing Spatula (clean)
- () 5) Vaseline
- () 6) Pointed 5" Curved Scissors

THE PROCEDURE

Initial Planning

- a) Check to see if there are enough teeth opposing each other far enough apart from each other to provide 4 good " stops ".
- b) Having put the models together with the centric record between them it must be possible to grip the models together without their relationship to one another changing.

It may be necessary to add a bite block to part of the wax sheet to be used for the centric record where teeth are missing)

- c) Manipulate the patient into Centric Relation using the Dawson Hold and check for :-
 - a) The first contact in Centric Relation
 - b) The amount that the patient's lower jaw moves from this first contact to Maximum Intercuspitation
(The centric relation record should be taken with the patient's teeth sufficiently far apart so that the teeth do not touch. If this should occur the lower jaw may move out of centric relation. It may be necessary to make an Anterior Jig to keep the teeth apart so as to prevent the centric interferences contacting.)
- d) Decide whether or not to make an Anterior Jig
The wax handle at the front of the centric record may be rolled up so that the patient's front teeth are kept apart by the wax when the patient is closed up onto the centric record. The rolled up part is made thick enough to prevent the first contact of back teeth to occur.

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2. The Nurse mixes the Multiform paste as soon as possible, as it takes a long time to set.
(ADD 1 DROP of WATER to speed the setting. Adding more water will lengthen the setting time)

Making the wax Template

- a) The dentist warms the wax between his hands and inserts it into the patient's mouth
- b) The wax is placed on the upper arch and pressed up onto the upper central incisor teeth.

(This helps the relocation of the record in the patient's mouth)
- c) The patient is then asked to bite hard on the wax.
- d) The wax sheet is then removed from the mouth and excess wax cut off using a pair of curved scissors leaving a handle at the front
- e) 4 holes are punched in the wax using the tip of the curved scissors

(The position of each hole is selected where a cusp tip of a tooth closes into an opposing tooth somewhere along a line from one marginal ridge to another. The holes are best positioned in the first premolar and second or third molar regions whenever possible)

Making the Anterior Jig

- a) Tap the patient in Centric Relation onto their early contact, and decide how much opening is required to prevent these teeth from touching.
- b) Roll the Wax Template Handle up to make a jig that will contact the front teeth, and is thick enough to prevent the early contacts from touching.
- c) Place the Wax Template into the patient's mouth, on the upper teeth.
- d) Tap the patient into Centric Relation into the Anterior Jig.
- e) Check that there is no contact between the early contacts.

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Taking The Centric Record

- a) Add a small amount of Multiform Paste to each side of each hole and :-
WAIT TILL THE PASTE BEGINS TO BECOME MODERATELY FIRM
(like putty or plasticene) BEFORE PLACING THE RECORD INTO THE PATIENT'S MOUTH

(Prepare the next wax record while the paste is setting)

- b) Vaseline the biting surfaces of the patient's teeth

The nurse may mix the Multiform paste for the second record at this stage so that it will be ready to be applied to the second record as soon as the first record has been placed into the patient's mouth

- c) Place the record into the patient's mouth using the indentations of the upper incisor teeth to relocate the record.
- d) Press the record gently onto the upper back teeth

Occasionally it may be helpful for the nurse to hold the record in place by placing her thumb on the record at the front to hold it against the upper teeth

- e) Close the patient's lower jaw into centric relation using the Dawson Hold.

Gently tapping the lower teeth into the Multiform paste produces indentations in the paste.

DO NOT CLOSE THE LOWER JAW SO THAT THE UPPER AND LOWER BACK TEETH COME INTO CONTACT

- f) Have the patient open their mouth a little while the paste is setting to prevent the patient biting on the record and distorting it
- g) Wait till the paste is set and then remove the record
- h) Repeat the procedure for the second centric record

Checking the Centric Record

While the paste is setting check the first record for :-

- a) Good cusp tip to tooth " stops "
 - b) No holes in the multiform paste indicating that the patient's teeth have come into contact
- Remove the second record and check it

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Mounting Lower Models

On Hanau, Denar, Fagmatic, Artex and Dentatus Articulators

IF MOUNTING STUDY MODELS CHECK THAT THE MODELS ARE MARKED "1" AND "2" (indicating that the models are mounted on articulators "1" and "2")

Do not put the Centric Record on the models till both have been adjusted as described later

Setting Up

1. Put a small amount of water into a plaster bowl
2. Place next to the bowl
 - a) A clean spatula
 - b) A scalpel
 - c) The Centric Records
 - d) The Lower Models
3. Remove Face-bow or mounting jig from the articulator
4. Remove the Upper Model from the articulator
5. Attach a mounting plate to the lower member of the articulator

Articulator Preparation

ARTEX

- a) Check that the Condylar Balls are as far forward as possible
- b) **Check that the Centric Locking Screws are locked**
- c) Stand the articulator upside down on its upper member

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(IDEALLY THE DENTIST TAKES THE RESPONSIBILITY FOR MOUNTING THE LOWER MODEL)

- d) **Set the incisal pin on 0, then open pin by 4 mm** to compensate for the thickness of the centric record

Centric Record and Model Preparation

- a) Check the occlusal surface of the upper and lower models for defects such as bubbles
- b) **Score the base of the lower model**
- c) **Check and adjust the Centric Record for sharp projections** which would prevent the models from seating into the record
- d) Place the Centric Record onto the upper model and check for distortion (it may be necessary to warm the record in warm water to help seating the record if there has been some distortion)
- e) Seat the lower model into the Centric Record and grip the two models tightly together. On releasing the grip, watch for "spring back"

If there is, remove the record, warm it, replace it and grip the models together. If there is still spring back it may be necessary to hold the models together after mounting the lower while the plaster sets
- f) With the two models seated into the centric record attach the Upper model to the upper member of the articulator.

Mounting the Lower Model

- a) Place a **very wet tissue** on the base of the lower model
- b) **Close the articulator and check the space** between the base of the lower model and the mounting plate to determine how much plaster will be needed
- c) Add Plaster to the Mounting Plate and the base of the model

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- d) Close the articulator and remove any excess plaster

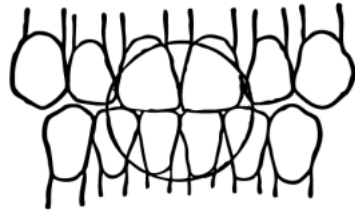
FINALLY

- e) **Grip the Upper and Lower models together to ensure that the models are seated correctly in the centric record**

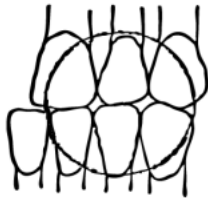
DO NOT PLAY WITH PLASTER WHILE IT IS SETTING

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Edge to Edge Contacts



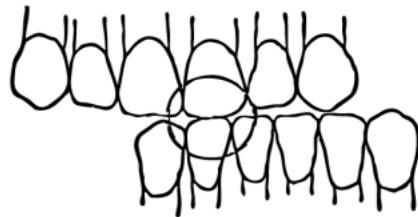
Protrusive



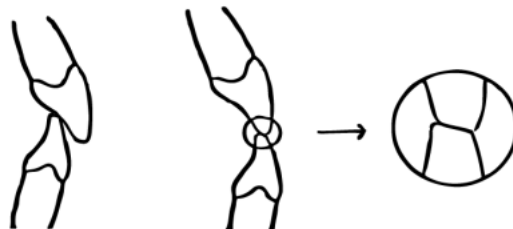
Lateral-Protrusive



Radial Lateral



Crossover



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Anterior Guidance

POSTERIOR DISCLUSION

Can be Achieved by Two Different Types of Anterior Guidance:

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- (2) Canine Guidance
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GROUP FUNCTION

Distribution of Lateral Forces to a Group of Teeth, Rather Than to a Particular Tooth.

ANTERIOR GROUP FUNCTION

Disclusion of the Posterior Teeth by Several Anterior Teeth Acting in Harmony.

USE OF GROUP FUNCTION

- (1) When Already Present and No Adverse Effects Present
- (2) When Distribution of Excursive Stresses is Advisable, e.g.
 - (a) Presence of Periodontal Break down
 - (b) Extensively Restored Teeth

INDICATIONS FOR ANTERIOR GROUP FUNCTION

- (1) When Already Present
- (2) Hypermobility of Canine Tooth
- (3) Canine Wear
- (4) Loss of Bony Support Around Canine Tooth
- (5) Anterior Porcelain Crowns Present

CANINE GUIDANCE/CANINE PROTECTED OCCLUSION

Disclusion by the Canine Teeth of All Other Teeth in Lateral Excursions.

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Occlusal Examination of Study Models

Name _____

Dynamic Analysis

Set the Condylar Angles to 20 degrees and Bennet Shift to 15 degrees unless otherwise indicated

1) **EARLY CONTACTS** in Centric Relation

- a) Lock the articulator in Centric
- b) Raise the Incisal Pin
- c) Close the articulator and look for any obvious interferences
- d) Open the articulator and place a square of **GREEN** silk over the lower teeth
- e) Close the articulator and tap the models together
- f) Check for early contacts
- g) Record the findings

_____ / _____
/

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

- a) Unlock the centric locking device Check that the Articulator moves freely
- b) Hold the upper Member of the Articulator in the one hand and the Lower Member in the other hand
- c) Holding the Articulator in Centric Relation close the Articulator
- d) After the first contact is reached close the articulator carefully into Maximum Intercuspitation
- e) Observe the direction of any slide from centric relation to Maximum Intercuspitation
- f) Record the findings e.g. short or long slide to the left or right

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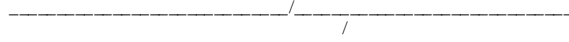
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3) **INTERFERENCES**

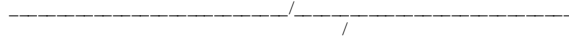
IN LEFT LATERAL MOVEMENT

- a) With the centric locking device unlocked close the articulator into centric relation
- b) Move the lower model to the patients left
- c) Observe whether the front teeth separate indicating a contact posteriorly
- d) Place a square of **RED** silk between the models and repeat the movement
- e) Describe the Interferences e.g. short or long slight or gross

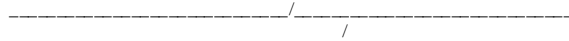
Non-functional (contacts on the right side)



Cross-over (after the left canines have crossed over each other

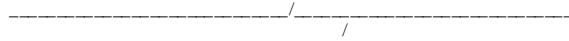


Functional (on the left side)

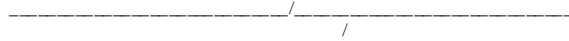


IN RIGHT LATERAL

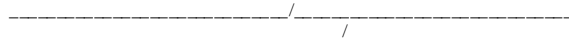
Non-functional (on the left side)



Cross-over (after the canines on the right side have crossed over each other



Functional (on the right side



4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS**

Protrusive _____ / _____
Left Lateral _____ / _____
Right Lateral _____ / _____
Left Lateral Protrusive _____ / _____
Right Lateral Protrusive _____ / _____

b) **LEFT LATERAL EXCURSION**

Smoothness of Guidance _____
Steepness of Anterior Guidance _____
Posterior Clearance or presence of Posterior Interferences
Right _____ Left _____

c) **RIGHT LATERAL**

Smoothness of Guidance _____
Steepness of Anterior Guidance _____
Posterior Clearance or presence of Posterior Interferences
Left _____ Right _____

d) **PROTRUSIVE**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

f) **RIGHT LATERAL PROTRUSION** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

OCCLUSAL PLANNING

Orthodontic Treatment _____

Removal of Teeth _____

Appliance Therapy _____

Posterior Cusp Tip Shortening and Reshaping / Additions to Fossae

Other Occlusal Equilibration Planning _____

Occlusal Correction by Restorative Treatment _____

Occlusal Management

ANALYSING an OCCLUSION

1) **EARLY CONTACTS** in Centric Relation

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

Slides in Centric Relation

Describing a slide:

long or short, to the left or right, protrusive, horizontal or vertical

Close gently into centric relation, ask the patient to close into Maximum Intercuspitation

3) **INTERFERENCES**

LEFT LATERAL:

Non-functional (contacts on the right side)

Cross-over (after the left canines have crossed over each other)

Functional (on the left side)

RIGHT LATERAL:

Non-functional (on the left side)

Cross-over (after the right canines have crossed over each other)

Functional (on the right side)

4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS:** Protrusive, Left Lateral, Right Lateral,
Left Lateral Protrusive, Right Lateral Protrusive

b) **LEFT LATERAL EXCURSION:** Smoothness of Guidance, Steepness
Posterior Clearance of Anterior Guidance,

c) **RIGHT LATERAL:** Interferences, Smoothness of Guidance, Steepness of Anterior Guidance,
Posterior Clearance

d) **PROTRUSIVE:** Smoothness of Guidance, Steepness of Anterior Guidance,
Posterior Clearance

e) **LEFT LATERAL PROTRUSIVE:**
(half way between left lateral and protrusive) Smoothness of Guidance, Steepness of Anterior
Guidance, Posterior Clearance

f) **RIGHT LATERAL PROTRUSIVE:**
(Half way between left lateral and Protrusive) Smoothness of Guidance, Steepness of
Anterior Guidance, Posterior Clearance

The Principles of Occlusion

- 1) The Occlusal Forces should be directed down the long axes of each posterior tooth
- 2) As many posterior teeth as possible should contact in Centric Relation
- 3) There should be no lateral slide from Centric Relation to Maximum Intercuspitation
- 4) As the patient moves away from Centric Relation tooth contacts on back teeth should decrease as the front teeth take over the guidance
- 5) The front teeth should protect the back teeth
- 6) There should be no non-functional (balancing) contacts

Occlusal Adjusting

Objective:

- * To produce as many stable centric stops on posterior teeth as possible
- * To reduce or remove posterior interferences
- * To produce a harmonious Anterior Guidance that reduces the stress on the back teeth as much as is possible in the circumstances and allows smooth gliding guidance in excursive movements

Methods of Altering Occlusions

The relevance and order varies with each patient

Remove

Restore

Reposition

Reshape

Appliance Therapy

DECIDE WHERE TO START

- the possibilities are :-

- a) Remove early contacts to establish centric relation occlusion
- b) Remove Non-functional Contacts
- c) Improve the Anterior Guidance
- d) All three at once

At first tackling all three at once is difficult. When learning the art of equilibration it is easier to adjust in centric relation first and to then adjust the Non-functional contacts and finally to adjust the anterior guidance.

As soon as possible, however, begin to look at all three aspects of occlusal adjusting.

a) Establishing Centric Relation Occlusion

The Temporomandibular Joint (Jaw Joint) is made up of the following structures :-

1. The Head of the Condyle (the highest point of lower jaw)
2. The Articular Disc
3. The Glenoid Fossa (the depression in the base of the skull into which the Head of the Condyle fits

One of the objectives of occlusal equilibration is to establish stable centric stops, with properly seated Head of the Condyles in the Glenoid Fossa and relaxed muscles.

Mark the Early Contacts using Green Silk on models, Red Silk in the mouth.

Analyze each marking:

1) Markings on Anterior Teeth:

Contacts on anterior teeth in centric relation are not wanted unless the teeth are in such an alignment that the forces can be directed down the long axis of the teeth involved. Lightly remove contacts on anterior teeth in centric relation

As a rule remove markings from front teeth when adjusting in centric relation, unless there are insufficient centric stops on healthy posterior teeth.

Contacts in centric relation occlusion on front teeth are undesirable unless there are few back teeth present i.e. poor posterior support. In this case some help may be required from the front teeth to take the forces of occlusion in centric relation. Occasionally front teeth may be in edge to edge occlusion in which case the forces of occlusion will be directed down the long axes of the teeth. However contacts on front teeth will most often be on slopes which although not ideal is a better situation than having too much force exerted on the few remaining back teeth. The principles of occlusion are principles not rules and must be adapted to the situation being dealt with.

If the front teeth are in an edge to edge relationship, the forces will be directed down the long axis of the teeth, and are acceptable.

2) Markings on Posterior Teeth:

- a) Markings on slopes

These are unstable and may result in a slide from Centric Relation to Maximum Intercuspitation

Decide the ideal place to move a contact i.e. mesially, distally, lingually, or buccally

Is it going to be possible to produce a stable centric stop in this particular situation?
If not, remove the contact straight away and continue adjusting elsewhere

Stage 1 **Adjust Contacts on Slopes**

" The Occlusal Forces should be directed down the long axes of the teeth "

Remove markings from slopes

When adjusting study models, use the spoon end of the Le Cron carver for adjusting fossae and slopes, and use the blade for adjusting and recontouring cusp tips. In the mouth, use a round diamond for the fossae and the short flame diamond for cusp tips.

If cusp tip or fossa becomes sensitive, remove tooth structure from the non sensitive part.
Take care when working near cusp tips so that cusp tip is not reduced inadvertently.

When removing a contact from a slope, be careful not to remove anything from the fossa below the slope, as the fossa will become deeper. This may result in it being difficult to obtain a centric stop on that tooth.

Stage 2 **Adjust Centric Stops to bring other potential Centric Stops into contact.**

The objective is to bring as many Centric Stops into contact as possible

"As many posterior teeth as possible should contact in Centric Relation "

When a few stable centric stops have been created, they will need to be reduced in order to produce additional stops on other teeth.

Deepening a fossa will allow the opposing cusp tip to occlude deeper into the fossa. This may result in producing or worsening a non functional contact. If this is a danger, adjust the cusp tip. Keep cusp tips reasonably pointed

How much to remove ?

This depends on the clinical judgement of the operator taking into account the following factors :-

How gross is the interference?

The relationship between the importance of the problem to be solved, the importance of the result to be achieved and the amount of tooth structure to be removed. In some situations the amount of tooth reduction may not be merited as the problem being solved is very minor whereas in other situations it may be necessary to make gross reductions in tooth structure or even the extraction of a tooth in order to solve a gross problem

How close is the progress towards an end result?

(The closer to the end result, the less should be removed)

How sensitive are the teeth?

Removing 1 mm at the back of the mouth results in a closure of 3 mm at the front.

From which tooth should the removal be made?

* If the cusp tip is also a non-functional contact, remove from the cusp tip not the fossa

* Removing from the fossa allows the cusp tip to be positioned deeper into the opposing tooth and increases the severity of the non-functional contact

* Removing from the cusp tip lessens the severity of the non-functional contact

Adjusting Anterior Teeth

The objectives are to produce a harmonious Anterior Guidance that reduces the stress on the back teeth as much as is possible in the circumstances and allows smooth gliding guidance in excursive movements. If the guidance is not smooth a tooth or several teeth may be traumatized during bruxism and may be damaged and/or loosened.

If by reducing the contact on a loose front tooth, a non-functional contact is created this may be necessary to prolong the life of this tooth. If it is possible to transfer the guidance onto teeth further forwards, this is preferable.

If there is a contact between the tip of a lower front tooth and the palatal surface of an upper tooth, and the tip is shortened, the edge-to-edge contacts can be altered, and back teeth may be brought into contact.

A decision has to be made as to which contact to reduce. Reducing the tip may lead to posterior interferences.

Beware of losing centric stops from the mesial marginal ridges of the upper teeth, and from the distal marginal ridges in the lower.

Before beginning an occlusal adjustment, look for deep fossae where it is possible to add to the filling (or tooth), and shorten the opposing cusp tip to return the tooth to its original form. Light cured composite should be used as it can be adjusted when set - cut a small cavity in the amalgam filling after adjusting the opposing cusp, insert some composite and close the patient into the composite. Open and set the composite.

Teeth that have large amalgam fillings may have thin and fragile cusps. In this case, ensure that all centric stops are on the amalgam filling. **DO NOT** have any centric stops or contacts on the cusp tips as the cusps will fracture.

When nearing the completion of an equilibration and you can hear that one tooth is touching before the rest, but you have several markings, tap the patient (or models) together in centric relation with articulating foil or silk and then tap together without.

Then check to see whether any of the ink markings have been cleared in the centre of the marking. If this is the case, then this is the first contact. This type of marking is known as a "halo".

Splying of Front Teeth

Splying of front teeth in moderate to advanced periodontal cases is often due to the lower teeth hitting in centric relation and sliding forwards into the front teeth. When these cases are equilibrated in centric relation and the slide eliminated there may well be a space between the upper and lower front teeth when the teeth are in centric relation occlusion. The front teeth may move back of their own accord, into their original positions or may need to be retracted orthodontically.

Historic Markings

When a decision has been made to remove tooth structure from only one of two teeth that are contacting the marking on the other tooth still remains.

This is known as a "Historic Marking" and is no longer relevant. The marking ink must be removed from this tooth at the same time as the tooth structure is removed from the opposing tooth. Unless this is done, irrelevant markings may remain and cause confusion later on. Occasionally a mark may be a smudge and not a true marking. Watch out for this.

When a non-functional contact on a cusp tip is also a centric stop, it may be necessary to reduce the cusp tip to eliminate the non-functional contact and to thus sacrifice a centric stop. Hopefully there will be another centric stop on the tooth.

When a lot of smudges or markings present, clean them off with a toothbrush and start again, or ask the patient to grind on a tissue or piece of gauze held in a pair of articulating paper holders.

Protecting a cusp tip

When adjusting non functional contacts, preserve centric stops where possible. If 2 cusp tips touch in excursions i.e. non functional contacts it may be necessary to lose one or other. Sacrifice the stop from tooth with most stops.

Anterior Guidance

Canine guidance is easier to deal with than Group Function as all the other teeth separate due to the discluding effect of the canines.

Group Function has the advantage of distributing the forces of occlusion over several teeth

Adjusting contacts on front teeth which are contacting in centric relation:

If upper or lower front teeth are to be shortened, check first to ensure that interferences at the back are not going to be produced. If interferences are produced, decide whether it is still wise to go ahead, or make provision to adjust them later.

In cases of steep anterior guidance where there is no possibility of creating Non-functional contacts it is easier to adjust the fossa rather than the cusp tip. It is more difficult to reshape cusp tips.

Steepness of Anterior Guidance -

General principle - flattening the anterior guidance decreases TMJ problems

Steep Anterior Guidance i.e. in Class 2 division 2 cases produces immediate disclusion. Steep anterior guidance, however, can be a problem for the temporomandibular joint

Flattening the anterior guidance can help temporomandibular joint problems.

Changing the Angulation of the Anterior Guidance:

1. If the anterior guidance is flattened, interferences may be produced on the back teeth.
2. Flattening the anterior guidance can help in Temporomandibular Joint problems.
3. Steepening the anterior guidance may help reduce posterior interferences but produce joint problems.

When checking Anterior Guidance:

1. Edge-to-edge position
 - a. protrusive
 - b. left lateral
 - c. right lateral
 - d. left lat protrusive
 - e. right lat protrusive
2. Check left lateral; note guiding teeth & look for non-functional contacts on the right
3. Check right lateral; note guiding teeth & check non-functional contacts the left
4. Protrusion; check guiding teeth & protrusive interferences
5. Left Lateral Protrusive
6. Right Lateral Protrusive

When checking edge-to-edge positions:-

Check for interferences on posterior teeth

Adjusting Edge-to-edge Contacts - Whether to adjust upper or lower front teeth depends on which gives best aesthetics

Adjusting front teeth

When adjusting the length of front teeth, always consider the appearance.

The appearance of front teeth is personal to that person. Alterations of the appearance need to be done with the consent of that person. Alterations to the aesthetics need to be done gradually, with the patient watching in a hand mirror, or looking at the results as the procedure progresses.

STOP adjusting the front teeth when the patient is happy with the appearance.

How to Progress

- 1) Start with isolated adjustments that are obviously necessary :-
 - a) Reshaping opposing cusp tips before restoring a tooth when the cusp tip occludes deep into the occlusal surface of the opposing tooth
 - b) Remove obvious interferences in centric relation
 - c) Remove gross non-functional contacts
 - d) Recontour anterior teeth that are over-erupted where there is no chance of creating non-functional contacts by doing so
- 2)
 - a) Take two sets of study models of patients who you consider would benefit from alterations in their occlusion
 - b) Adjust one set and record any particularly significant changes you think should be made to the patient
 - c) Equilibrate the patient
- 3) Equilibrate the study models at the same time as you equilibrate i.e. adjust the models a little and then adjust the patient and repeat the process

The advantages are :-

a) The patient sees the work you are doing on their behalf (charging the patient for the adjustment of their models when they are not present is fully justified Seeing the adjustment being performed may help them rationalize the fee)

b) The adjustment made on the model is fresh in your mind when you are adjusting in the mouth

4) **When in doubt fit an appliance before equilibrating**

5) Stop if the patient experiences pain

6) At first do not

a) treat patients who are particularly neurotic

b) overly persuade patients to have an equilibration Choose patients who are enthusiastic and good patients

Appointing Patients for Occlusal Equilibration Appointments

It is not possible to predict exactly how long an equilibration will take

Book patients for an initial appointment with the understanding that further appointments may be necessary

Relate the length of an appointment to the patient's ability to pay
i.e. arrange shorter appointments for patients who need to spread out the payments.

Be flexible

General Screening

NAME: _____ DATE: ____/____/____

Initial Requests _____

- | | | |
|--|---|-------------------------------------|
| <input type="checkbox"/> General Health | <input type="checkbox"/> Recent Visit to Doctor | <input type="checkbox"/> Allergies |
| <input type="checkbox"/> Serious Illnesses | <input type="checkbox"/> Bleeding Problems | <input type="checkbox"/> Medication |
| <input type="checkbox"/> Rheumatic Fever | <input type="checkbox"/> Blood Pressure | <input type="checkbox"/> Diabetes |
| <input type="checkbox"/> Heart Problems | <input type="checkbox"/> Arthritis | |
| <input type="checkbox"/> Headaches | <input type="checkbox"/> Migraine | |

 Any Dental Problems? _____

 Comfortable Bite _____

Sensitive Teeth _____

Grinding _____

Jaw Joint Pain Noises (Clicking, Popping, Grating)

Difficulty in Moving Jaw Pain on Moving Jaw

 Sinuses _____

Ears _____

CLINICAL EXAMINATION

Soft Tissues _____ Preauricular Palpitation _____

Lat. Ext. Aud. Meatus _____ Tap, Tap, Tap Test _____

Early Contacts (EC) Test _____ Presence of Slide (CR-CO) _____

Non Functional Contacts (NFC) _____

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Tooth Charting Vitality

Looseness Gum Check

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Occlusal Examination of Study Models

Name _____

Dynamic Analysis

Set the Condylar Angles to 20 degrees and Bennett Shift to 15 degrees unless otherwise indicated

1) **EARLY CONTACTS** in Centric Relation

- a) Lock the articulator in Centric
- b) Raise the Incisal Pin
- c) Close the articulator and look for any obvious interferences
- d) Open the articulator and place a square of **GREEN** silk over the lower teeth
- e) Close the articulator and tap the models together
- f) Check for early contacts
- g) Record the findings

----- / -----
/

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

- a) Unlock the centric locking device Check that the Articulator moves freely
- b) Hold the upper Member of the Articulator in the one hand and the Lower Member in the other hand
- c) Holding the Articulator in Centric Relation close the Articulator
- d) After the first contact is reached close the articulator carefully into Maximum Intercuspitation
- e) Observe the direction of any slide from centric relation to Maximum Intercuspitation
- f) Record the findings e.g. short or long slide to the left or right

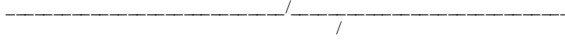
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3) **INTERFERENCES**

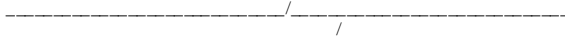
IN LEFT LATERAL MOVEMENT

- a) With the centric locking device unlocked close the articulator into centric relation
- b) Move the lower model to the patients left
- c) Observe whether the front teeth separate indicating a contact posteriorly
- d) Place a square of **RED** silk between the models and repeat the movement
- e) Describe the Interferences e.g. short or long slight or gross

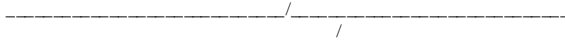
Non-functional (contacts on the right side)



Cross-over (after the left canines have crossed over each other

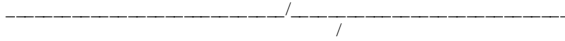


Functional (on the left side)

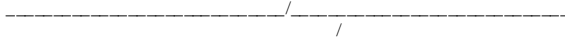


IN RIGHT LATERAL

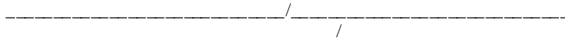
Non-functional (on the left side)



Cross-over (after the canines on the right side have crossed over each other



Functional (on the right side



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4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS**

Protrusive _____ / _____
Left Lateral _____ / _____
Right Lateral _____ / _____
Left Lateral Protrusive _____ / _____
Right Lateral Protrusive _____ / _____

b) **LEFT LATERAL EXCURSION**

Smoothness of Guidance _____
Steepness of Anterior Guidance _____
Posterior Clearance or presence of Posterior Interferences
Right _____ Left _____

c) **RIGHT LATERAL**

Smoothness of Guidance _____
Steepness of Anterior Guidance _____
Posterior Clearance or presence of Posterior Interferences
Left _____ Right _____

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d) **PROTRUSIVE**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

f) **RIGHT LATERAL PROTRUSION** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

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Occlusal Planning

Orthodontic Treatment _____

Removal of Teeth _____

Appliance Therapy _____

Posterior Cusp Tip Shortening and Reshaping / Additions to Fossae

Other Occlusal Equilibration Planning _____

Occlusal Correction by Restorative Treatment

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Clinical Occlusal Evaluation Form for Patients

Name _____

1) **EARLY CONTACTS** in Centric Relation

(Using the Dawson Hold close the patient until you feel the first tooth contact
Then ask the Patient to if they notice any tooth touching before any other
Record their reply e.g. left or right side near the front or back)

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

(Close the patient into centric relation using the Dawson Hold
After first contact is reached ask the patient to close tight
Observe the direction of any slide from centric relation to Maximum Intercuspitation
Record the findings e.g. short or long slide to the left or right)

3) **INTERFERENCES**

LEFT LATERAL (put finger on left canine, ask patient to slide towards it

Observe whether the front teeth separate indicating a contact posteriorly If there is no apparent separation place some articulating silk between the posterior teeth on the right side and repeat the exercise pulling on the articulating paper holders

Describe the Interference e.g. short or long slight or gross

Non-functional (contacts on the right side) _____

Cross-over (after the left canines have crossed over each other)

Functional (on the left side) _____

RIGHT LATERAL

Non-functional, on the left side _____

Cross-over (after the canines on the right side have crossed over each other)

Functional (on the right side) _____

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4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS**, (put finger on central incisors & ask patient to slide towards it)

Protrusive _____

Left Lateral _____

Right Lateral _____

Left Lateral Protrusive _____

Right Lateral Protrusive _____

b) **LEFT LATERAL EXCURSION**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Right _____ Left _____

Clearance

c) **RIGHT LATERAL**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior

Clearance Left _____ Right _____

d) **PROTRUSIVE**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Right _____ Left _____

Clearance

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive.

put finger on lateral incisor and ask patient to slide towards it)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Right _____ Left _____

Clearance

f) **RIGHT LATERAL PROTRUSION** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior

Clearance Left _____ Right _____

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Occlusal Examination of Study Models

Name _____

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- d) Open the articulator and place a square of **GREEN** silk over the lower teeth
- e) Close the articulator and tap the models together
- f) Check for early contacts
- g) Record the findings

----- / -----
/

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

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- d) After the first contact is reached close the articulator carefully into Maximum Intercuspitation
- e) Observe the direction of any slide from centric relation to Maximum Intercuspitation
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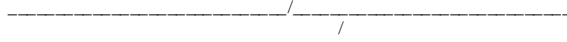
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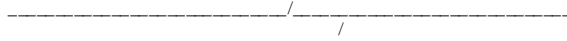
IN LEFT LATERAL MOVEMENT

- a) With the centric locking device unlocked close the articulator into centric relation
- b) Move the lower model to the patients left
- c) Observe whether the front teeth separate indicating a contact posteriorly
- d) Place a square of **RED** silk between the models and repeat the movement
- e) Describe the Interferences e.g. short or long slight or gross

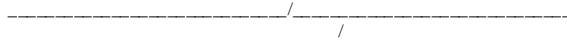
Non-functional (contacts on the right side)



Cross-over (after the left canines have crossed over each other)

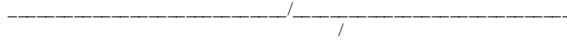


Functional (on the left side)

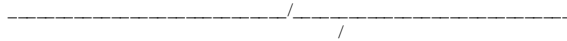


IN RIGHT LATERAL

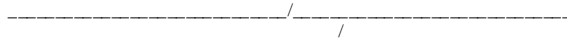
Non-functional (on the left side)



Cross-over (after the canines on the right side have crossed over each other)



Functional (on the right side)



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4) ANTERIOR GUIDANCE

a) EDGE TO EDGE CONTACTS

Protrusive _____ / _____
Left Lateral _____ / _____
Right Lateral _____ / _____
Left Lateral Protrusive _____ / _____
Right Lateral Protrusive _____ / _____

b) LEFT LATERAL EXCURSION

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

c) RIGHT LATERAL

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

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d) **PROTRUSIVE**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

f) **RIGHT LATERAL PROTRUSION** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

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Occlusal Planning

Orthodontic Treatment _____

Removal of Teeth _____

Appliance Therapy _____

Posterior Cusp Tip Shortening and Reshaping / Additions to Fossae

Other Occlusal Equilibration Planning _____

Occlusal Correction by Restorative Treatment

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Clinical Occlusal Adjustment Procedure

Items required for the Occlusal Adjustment Procedure

STORAGE TRAY

1. 1 Tupperware Container 15 cm x 18 cm containing
 - a) Pre-cut Red Silk
 - b) 2 x Articulating Paper Holders set up with Red Silk ready to use
2. 4 or more Articulating Paper Holders set up with BLACK foil
3. 1 Suture box containing pre-cut Black Foil
4. 1 Box Shimstock pre-cut to 1/2 inches, 4 cm or the width of a small post-it
5. Horseshoe Articulating Paper (for denture adjustments)

The Black foil and the Red silk should be cut neatly to the length of a large post-it with a pair of straight scissors
The Red Silk dries out if left out and does not mark the occlusal contacts

Burs

Short Flame Diamond (Intensive 255 from Metrodent)
Round Diamond Horico 001025 Glover Dental
Long Flame Diamond F.G563 (for aesthetic adjustment)
or Intensiv 311 from Metrodent

Other items

Plastic Salivary Ejectors, CUT IN HALF
This item is extremely useful in salivary control when held by the chairside assistant and used as the dentist dries the teeth with the 3-in 1 syringe

SET-UP

Plastic Tray,
Storage tray,
Mouth mirror,
4 or more pairs of Articulating paper holders plus black foil,
(ensure that all the other free Articulating paper Holders are set up with black foil)
2 pairs of articulating holders plus red silk,
Large round in No 1 handpiece,
Short flame diamond in No 2 handpiece,
Tweezers plus a Cotton Pellet, (for removal of individual unwanted markings)
A Toothbrush, (for brushing of old markings)
Tip-a-dilly plus a shortened plastic salivary ejector,

THE PROCEDURE

In order for the dentist to manipulate the Jaw into Centric Relation both his hands are required It is therefore necessary to have effective chairside support from a dental assistant

The dental assistant should aspirate and place the Articulating Foil or Silk into the patients mouth while the Dentist dries the teeth and manipulates the Jaw The dental assistant should dry the foil or silk thoroughly after each time they are used using a tissue otherwise they will not mark the teeth The assisting needs to be fast and accurate as the procedure is repetitive and requires good coordination between the dentist and the assistant It is important that the assistant keeps ahead or at least up

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with the dentist. As soon as the dentist moves his hand towards the 3-in-1 syringe the assistant should place the aspirator into the mouth. The dentist dries the teeth with the 3-in-1 Syringe as the dental assistant aspirates with her left hand at the back of the patient's mouth on the side that the dentist is drying. The dental assistant holds the Articulating paper holders in her right hand ready to place in the patient's mouth as the dentist removes the 3-in-1 Syringe from the patient's mouth. The dental assistant clearly knows which side to place the articulating paper holders having observed which teeth the dentist has dried.

The articulating paper holders must be placed in the mouth at the same time as the aspirator is removed in order to prevent saliva wetting the foil or silk unnecessarily. The articulating paper holders should be held against the upper teeth as this jaw does not move while the lower does move. There is not enough time to change hands during the procedure so it is necessary for the assistant to develop the use of her right hand to place the articulating paper into the left and right hand sides of the patient's mouth. When the procedure is actively in progress the Articulating Paper Holders should be held up near the mouth ready to place in the mouth. The Articulating Paper Holders need to be placed in the mouth as the Dentist removes the 3-in-1 syringe, otherwise there is a risk of the teeth becoming wet with saliva. Constantly dry the Red silk during the procedure otherwise it will not mark the teeth. The dentist will indicate when the black foil or the red silk is to be used.

Preserving markings

If the teeth have been marked and for some reason the dentist is not ready to make the necessary adjustments the patient must be prevented from closing. This may well cause the markings to be rubbed off. To prevent this happening the assistant should rest the aspirator tip or the tip of a finger on the tips of the lower front teeth to discourage the patient from closing.

Placing the Articulating paper holders into the patient's mouth

- 1) Which side to place it
(This will be indicated by the dentist as it will be the side that he dries with the 3-in-1 syringe)
- 2) Hold the Holders ready in the direction that they will be placed into the patient's mouth
- 3) Aim the holders up towards the patient's palate almost touching it. Then move it using a finger movement between the teeth ensuring that it is in the line of the arch and in the region which the dentist dried the teeth. Placing the articulating paper holders accurately this way will help prevent the foil or silk being folded over by the patient's tongue.
- 4) Move the Foil around a little while the patient's teeth are being tapped together in order to ensure better markings. By doing this a fresh area of foil is ready to mark the teeth.

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Tips

- 1) To help detect first contacts tap the patient into Centric Relation using the Dawson Hold and ask the patient to put their finger on the tooth that touches first
- 2) If a patient experiences difficulty in moving their jaw in the correct direction sometimes the cause can be that only one pair of articulating forceps have been put into the patient's mouth. By placing two in the patient's one each side may overcome this problem
- 3) The Quick Method of Occlusal Adjusting
 - a) Have the patient grind around on some red silk.
 - b) Look at the markings and decide on the markings where contact is definitely not needed or wanted.
 - c) Remove these markings.
- 4) Decide on the amount of tooth structure that needs to be removed

Early in the procedure more may be removed whereas later only a minute amount may need to be removed
The bur being used should be applied to the tooth using a light brush stroke Post Treatment Presentation

Explain the following things to the patient

1. They may find that their teeth feel rough for several days
2. Their symptoms get worse for a few days. This is not a bad sign. It is due to the patient being more aware of their bite having had it altered. Their symptoms will settle down after a few days
4. They may feel hot and cold pain for a few days

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Mounting Models on an Articulator

The reason for mounting models on an articulator is to enable a patient's upper and lower models to be related to one another in the same way as the patient's upper and lower dental arches

The different types of articulators may be divided into three groups

- 1) The simple hinge types
- 2) The semi-adjustable types
- 3) The fully adjustable types

The temporomandibular joint is represented in the simple hinge articulator by a simple hinge. This type of articulator will only reproduce opening and closing movements in a vertical plane

Fully adjustable articulators have condylar assemblies programmable to simulate the patient's temporomandibular joint movements and will reproduce the movements of the mandible

Between these two extremes there is a whole range of articulators which will reproduce the movements to a greater or lesser degree. These are known as semi-adjustable articulators. The condylar pathways are usually represented by a movement in a straight line on the articulator whereas the human temporomandibular joint does not. Some articulators have curved pathways that can to a degree simulate human paths of condylar movement

The accuracy to which the movements are simulated will depend on the accuracy of the mounting procedures and the complexity of the articulator used. Total accuracy can never be achieved

Ultimately the patient is the most accurate "articulator"

THE CHOICE OF WHICH TYPE OF ARTICULATOR TO USE

The choice of which articulator to use will be dictated by the needs of each particular case being treated and depends on what movements are required to be simulated

For example:-

In a severe class II division 2 case the posterior teeth are immediately separated in excursive movements due to the lower front teeth gliding down the palatal surfaces of the upper front teeth. The guidance at the front is so steep that there is little possibility of building interferences into crown and bridge cases

In this case only a simple hinge movement is required for posterior tooth restorations. This however assumes a basic understanding of the fundamentals of occlusion on behalf of the dentist and technician

In a severe class II division 1 case the separation of the back teeth by the front teeth is minimal if at all. The guidance, being almost flat, considerably increases the possibility of building interferences into a crown and bridgework. The movements of the mandible must be reproduced accurately. A semi-adjustable or fully adjustable articulator is required in these cases. Even then minor adjustments may need to be performed in the mouth

Semi-adjustable articulators are required for anterior crown and bridgework in order to establish or copy a predetermined anterior guidance. It may be necessary to use a custom anterior guide table when the anterior guidance has already been established

The Choice of which Articulator to buy

The first essential is an understanding of the fundamentals of occlusion resulting in the ability to make a decision on the best way to approach case. A decision on the mechanical equipment to be used in the execution of the diagnosis and restorative work necessary can then be made

Semi-adjustable Articulators

All the articulators in this group produce similar movements and each has minor advantages and disadvantages

They can be used for simply reproducing a hinge movement as well as being able to be moved in excursive movements. Due to the relatively crude condylar assemblies the simulation is not highly accurate. They can however be used very successfully even when average values are used

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The following are desired characteristics of a good semi-adjustable articulator: -

- 1) It should be possible to lock the condylar assembly so that only a simple hinge movement can be made. In situations when it is desirable to mount models accurately in centric relation this is a very important characteristic. A positive centric latch or locking screw is required.
- 2) When the condylar assembly is locked, it should not become unlocked unintentionally.
- 3) It should be sufficiently robust and durable.
- 4) It is helpful if the upper member of the articulator can be separated from the lower. This is a characteristic particularly helpful to technicians. It should not be possible for separation of the upper and lower members to occur unintentionally.
- 5) It should not be unduly expensive.
- 6) It should be easy to use.
- 7) It should have sufficient room between the upper and lower members of the articulator to allow the mounting of pinned working models.

METHODS OF MOUNTING MODELS

1) Using a facebow

The advantages of using a facebow registration are:-

- a) It provides a convenient place to locate the upper model when mounting it on an articulator.
- b) The upper model can be mounted at approximately the same distance from the hinge of the articulator as the patient's upper arch is to the temporomandibular joint.

This means that the model will move in the same arc when being closed up after a centric record has been removed when the models are moved in lateral excursions they will also move in a similar arc to the patient's dental arches when the mandible is moved laterally.

2) Hand mounting without a facebow

For single crowns on posterior teeth when there is steep guidance by the anterior teeth in excursive movements it may be acceptable to hand mount models without using a centric record.

METHODS OF MOUNTING LOWER MODELS

1) Using some type of interocclusal record

The taking of accurate centric records and the subsequent mounting of models in centric relation on an articulator requires a high degree of skill and should only be performed when the situation merits it. Use a centric record for mounting study models and full dentures.

When a centric record is used,

- a) it may be inaccurate.
- b) the articulator must be closed after the record is removed in order to achieve tooth contact. The arc of closure of the articulator may not be the same as that of the patient even if a facebow is used.

2) Hand mounting with plaster to plaster contact without a full interocclusal record.

Hand mounting of accurate models with plaster to plaster contact is the most accurate way of mounting models. There is also the advantage that the models are mounted at the same vertical dimension that restorative work will be constructed.

Use for mounting all crown and bridge cases.

Where an occlusal adjustment has been performed to eliminate interferences in centric relation and in excursive movements Maximum Intercuspitation will be in centric relation. Hand mounting models will result in the models being mounted in centric relation and in Maximum Intercuspitation.

If Maximum Intercuspitation and centric relation do not coincide and an occlusal adjustment is not to be performed then there is no point in mounting models in centric relation.

When hand mounting it may be necessary to take a sectional record of the area where teeth have been prepared, with the teeth in Maximum Intercuspitation, in order to relate the models together in a stable way.

It is better not to involve the teeth either side of the prepared teeth in the record as the resistance of the material can lead to the patient sliding into an incorrect occlusal relationship.

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WHEN TO MOUNT MODELS IN CENTRIC RELATION

- 1) Study models to be used for the analysis of a patient's occlusion
(a centric record must be used)
- 2) Full upper and full lower denture cases (unless the condition of the temporomandibular joint indicates otherwise)
- 3) All crown and bridge cases when the patient is in centric relation and Maximum Intercuspitation simultaneously (unless the condition of the temporomandibular joint indicates otherwise)
These cases are best hand mounted.
If it is considered necessary to perform an occlusal equilibration this should be carried out before any crown and bridgework is performed

WHEN NOT TO MOUNT MODELS IN CENTRIC RELATION

If centric relation and Maximum Intercuspitation are not coincident and an equilibration is not to be performed then there is no point in mounting models in centric relation
They are best hand mounted in Maximum Intercuspitation i.e. maximum intercuspitation

SETTING THE CONDYLAR ASSEMBLIES

The Simple Hinge Articulator solves the problem by having no possibility of any adjustments due to the fact that only a simple hinge movement is possible
Semi-adjustable articulators may be adjusted in several ways Owing to the relative simplicity of these types of the articulator the movements of the human temporomandibular joint are not reproduced with great accuracy
Their advantages lie in their relatively lower cost compared to the fully adjustable articulator and the relative ease with which they can be used

METHODS OF SETTING CONDYLAR ANGLES

on semi-adjustable articulators:-

- 1) After mounting the models on the articulator have the patient move in a lateral direction
Observe the degree of separation of the back teeth, if any, and alter the condylar angle to reproduce the same separation on the articulator
Repeat the same exercise in protrusive Choose the shallower of the angles for restorative cases
There is less likelihood of building non-functional interferences by doing this
This method of setting condylar angles of semi-adjustable articulators is probably the most accurate
- 2) Have the patient close into some soft wax with the jaw in a protrusive position Place this record between the mounted models of the patient
Having unlocked the centric locking mechanism Adjust the condylar articulator so that the models seat into the wax record
Fully adjustable articulators are programmed after complex records have been taken of the patient using an elaborate facebow type structure known as a pantograph
Generally speaking semi-adjustable articulators will reproduce most of the movements necessary for diagnostic analysis, crown and bridgework and prosthetic procedures

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Possible Effects of Occlusal Disharmony

Occlusal Disharmony

Adaptation

Lack of Adaptation

Asymptomatic Occlusion

Symptomatic Occlusion

Local Symptoms

Peripheral Symptoms

Oral Symptoms

LOCAL SYMPTOMS

1. Clicking & Crepitus
2. Pain on Movement
3. Decreased Mobility
4. Fatigue
5. Tenderness to Palpation
6. Trismus
7. Hypermobility

PERIPHERAL SYMPTOMS

1. Headache
2. Vertigo
3. Burning Sensation in the Tongue & Ears
4. Mild Catarhal Deafness
5. Tinnitus
6. Pain In and Around the Ears
7. Dryness of the Mouth
8. Painful Muscles of Neck & Back
9. Tenderness to Palpation

ORAL SYMPTOMS

1. Bruxism
2. Clenching
3. Periodontal Breakdown
4. Tooth Facets
5. Tooth Fracture
6. Tooth Mobility
7. Hypersensitivity
8. Awareness of Occlusion

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Occlusion Part 2
Treatment of
Headaches
Temporomandibular
Joint Problems
and
Appliance Therapy
For Dentists and Technicians

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Terminology and Principles of Occlusion
(See Occ. Part 1)

Anterior Guidance (See Occ. Part 1)

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General Screening

NAME: _____ DATE: ____/____/____

Initial Requests _____

General Health Recent Visit to Doctor Allergies Serious Illnesses Bleeding Problems

Medication Rheumatic Fever Blood Pressure Diabetes Thyroid Problems

Heart Problems Arthritis Headaches Migraine

Any Dental Problems? _____

Comfortable Bite _____

Sensitive Teeth _____

Grinding _____

Jaw Joint Pain Noises (Clicking, Popping, Grating)

Difficulty in Moving Jaw Pain on Moving Jaw

Sinuses _____

Ears _____

CLINICAL EXAMINATION

Soft Tissues _____ Preauricular Palpitation _____

Lat. Ext. Aud. Meatus _____ Tap, Tap, Tap Test _____

Early Contacts (EC) Test _____ Presence of Slide (CR-CO) _____

Non Functional Contacts (NFC) _____

Tooth Charting _____ Vitality _____

Looseness _____ Gum Check _____

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Temporomandibular Joint and Occlusal Examination Sheet

Name _____

Preauricular Palpation At Rest _____

Opening _____

Closing _____

To the Left _____

From the Left _____

To the Right _____

From the Right _____

Forwards _____

Back _____

Lateral External Auditory Meatus Palpation

At Rest _____

Opening _____

Closing _____

To the Left _____

From the Left _____

To the Right _____

From the Right _____

Forwards _____

Back _____

Occlusal Evaluation Early Contacts _____

Slide from Centric Relation to Maximum Intercuspitation _____

Non-functional Contacts on Left _____

Non-functional Contacts on Right _____

Protrusive Edge to Edge _____

Left Lateral Edge to Edge _____

Right Lateral Edge to Edge _____

Left Lateral Protrusive Edge to Edge _____

Right Lateral Protrusive Edge to Edge _____

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Mounted Study Model Procedure
(See Occ. Part 1)

Centric Record Registrations
(See Occ. Part 1)

Mounting Lower Models
(See Occ. Part 1)

Occlusal Management
(See Occ. Part 1)

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Analysing an Occlusion

1) **EARLY CONTACTS** in Centric Relation

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

Slides in Centric Relation

Describing a slide:

long or short, to the left or right, protrusive, horizontal or vertical

Close gently into centric relation, ask the patient to close into Maximum Intercuspitation

3) **INTERFERENCES**

LEFT LATERAL:

Non-functional (contacts on the right side)

Cross-over (after the left canines have crossed over each other)

Functional (on the left side)

RIGHT LATERAL:

Non-functional (on the left side)

Cross-over (after the right canines have crossed over each other)

Functional (on the right side)

4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS:** Protrusive, Left Lateral, Right Lateral,
Left Lateral Protrusive, Right Lateral Protrusive

b) **LEFT LATERAL EXCURSION:** Smoothness of Guidance, Steepness of Anterior Guidance, Posterior Clearance

c) **RIGHT LATERAL:** Interferences, Smoothness of Guidance, Steepness of Anterior Guidance, Posterior Clearance

d) **PROTRUSIVE:** Smoothness of Guidance, Steepness of Anterior Guidance, Posterior Clearance

e) **LEFT LATERAL PROTRUSIVE:**
(half way between left lateral and protrusive) Smoothness of Guidance, Steepness of Anterior Guidance, Posterior Clearance

f) **RIGHT LATERAL PROTRUSIVE:**
(Half way between left lateral and Protrusive) Smoothness of Guidance, Steepness of Anterior Guidance, Posterior Clearance

The Principles of Occlusion

1) The Occlusal Forces should be directed down the long axes of each posterior tooth

2) As many posterior teeth as possible should contact in Centric Relation

3) There should be no lateral slide from Centric Relation to Maximum Intercuspitation

4) As the patient moves away from Centric Relation tooth contacts on back teeth should decrease as the front teeth take over the guidance

5) The front teeth should protect the back teeth

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6) There should be no non-functional (balancing) contacts

Occlusal Adjusting

Objective:

- * To produce as many stable centric stops on posterior teeth as possible
- * To reduce or remove posterior interferences
- * To produce a harmonious Anterior Guidance that reduces the stress on the back teeth as much as is possible in the circumstances and allows smooth gliding guidance in excursive movements

Methods of Altering Occlusions

The relevance and order varies with each patient

Remove

Restore

Reposition

Reshape

Appliance Therapy

DECIDE WHERE TO START

- the possibilities are :-

- a) Remove early contacts to establish centric relation occlusion
- b) Remove Non-functional Contacts
- c) Improve the Anterior Guidance
- d) All three at once

At first tackling all three at once is difficult. When learning the art of equilibration it is easier to adjust in centric relation first and to then adjust the Non-functional contacts and finally to adjust the anterior guidance.

As soon as possible, however, begin to look at all three aspects of occlusal adjusting.

a) Establishing Centric Relation Occlusion

The Temporomandibular Joint (Jaw Joint) is made up of the following structures :-

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1. The Head of the Condyle (the highest point of lower jaw)
2. The Articular Disc
3. The Glenoid Fossa (the depression in the base of the skull into which the Head of the Condyle fits)

One of the objectives of occlusal equilibration is to establish stable centric stops, with properly seated Head of the Condyles in the Glenoid Fossa and relaxed muscles.

Mark the Early Contacts using Green Silk on models, Red Silk in the mouth.

Analyze each marking:

1) **Markings on Anterior Teeth:**

Contacts on anterior teeth in centric relation are not wanted unless the teeth are in such an alignment that the forces can be directed down the long axis of the teeth involved. Lightly remove contacts on anterior teeth in centric relation

As a rule remove markings from front teeth when adjusting in centric relation, unless there are insufficient centric stops on healthy posterior teeth.

Contacts in centric relation occlusion on front teeth are undesirable unless there are few back teeth present i.e. poor posterior support. In this case some help may be required from the front teeth to take the forces of occlusion in centric relation. Occasionally front teeth may be in edge to edge occlusion in which case the forces of occlusion will be directed down the long axes of the teeth. However contacts on front teeth will most often be on slopes which although not ideal is a better situation than having too much force exerted on the few remaining back teeth. The principles of occlusion are principles not rules and must be adapted to the situation being dealt with.

If the front teeth are in an edge to edge relationship, the forces will be directed down the long axis of the teeth, and are acceptable.

2) **Markings on Posterior Teeth:**

a) **Markings on slopes**

These are unstable and may result in a slide from Centric Relation to Maximum Intercuspitation

Decide the ideal place to move a contact i.e. mesially, distally, lingually, or buccally

Is it going to be possible to produce a stable centric stop in this particular situation?

If not, remove the contact straight away and continue adjusting elsewhere

Stage 1 **Adjust Contacts on Slopes**

" The Occlusal Forces should be directed down the long axes of the teeth "

Remove markings from slopes

When adjusting study models, use the spoon end of the Le Cron carver for adjusting fossae and slopes, and use the blade for adjusting and recontouring cusp tips. In the mouth, use a round diamond for the fossae and the short flame diamond for cusp tips.

If cusp tip or fossa becomes sensitive, remove tooth structure from the non sensitive part.

Take care when working near cusp tips so that cusp tip is not reduced inadvertently.

When removing a contact from a slope, be careful not to remove anything from the fossa below the slope, as the fossa will become deeper. This may result in it being difficult to obtain a centric stop on that tooth.

Stage 2 **Adjust Centric Stops to bring other potential Centric Stops into contact.**

The objective is to bring as many Centric Stops into contact as possible

"As many posterior teeth as possible should contact in Centric Relation "

When a few stable centric stops have been created, they will need to be reduced in order to produce additional stops on other teeth.

Deepening a fossa will allow the opposing cusp tip to occlude deeper into the fossa. This may result in producing or

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worsening a non functional contact. If this is a danger, adjust the cusp tip. Keep cusp tips reasonably pointed

How much to remove ?

This depends on the clinical judgement of the operator taking into account the following factors :-

How gross is the interference?

The relationship between the importance of the problem to be solved, the importance of the result to be achieved and the amount of tooth structure to be removed. In some situations the amount of tooth reduction may not be merited as the problem being solved is very minor whereas in other situations it may be necessary to make gross reductions in tooth structure or even the extraction of a tooth in order to solve a gross problem.

How close is the progress towards an end result?

(The closer to the end result, the less should be removed)

How sensitive are the teeth?

Removing 1 mm at the back of the mouth results in a closure of 3 mm at the front.

From which tooth should the removal be made?

- * If the cusp tip is also a non-functional contact, remove from the cusp tip not the fossa
- * Removing from the fossa allows the cusp tip to be positioned deeper into the opposing tooth and increases the severity of the non-functional contact
- * Removing from the cusp tip lessens the severity of the non-functional contact

Adjusting Anterior Teeth

The objectives are to produce a harmonious Anterior Guidance that reduces the stress on the back teeth as much as is possible in the circumstances and allows smooth gliding guidance in excursive movements. If the guidance is not smooth a tooth or several teeth may be traumatized during bruxism and may be damaged and/or loosened. If by reducing the contact on a loose front tooth, a non-functional contact is created this may be necessary to prolong the life of this tooth. If it is possible to transfer the guidance onto teeth further forwards, this is preferable.

If there is a contact between the tip of a lower front tooth and the palatal surface of an upper tooth, and the tip is shortened, the edge-to-edge contacts can be altered, and back teeth may be brought into contact. A decision has to be made as to which contact to reduce. Reducing the tip may lead to posterior interferences.

Beware of losing centric stops from the mesial marginal ridges of the upper teeth, and from the distal marginal ridges in the lower.

Before beginning an occlusal adjustment, look for deep fossae where it is possible to add to the filling (or tooth) and shorten the opposing cusp tip to return the tooth to its original form. Light cured composite should be used as it can be adjusted when set - cut a small cavity in the amalgam filling after adjusting the opposing cusp, insert some composite and close the patient into the composite. Open and set the composite.

Teeth that have large amalgam fillings may have thin and fragile cusps. In this case, ensure that all centric stops are on the amalgam filling. **DO NOT** have any centric stops or contacts on the cusp tips as the cusps will fracture.

When nearing the completion of an equilibration and you can hear that one tooth is touching before the rest, but you have several markings, tap the patient (or models) together in centric relation with articulating foil or silk and then tap together without.

Then check to see whether any of the ink markings have been cleared in the centre of the marking. If this is the case, then this is the first contact. This type of marking is known as a "hab".

Splaying of Front Teeth

Splaying of front teeth in moderate to advanced periodontal cases is often due to the lower teeth hitting in centric relation and sliding forwards into the front teeth. When these cases are equilibrated in centric relation and the slide eliminated there may well be a space between the upper and lower front teeth when the teeth are in centric relation.

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occlusion The front teeth may move back of their own accord, into their original positions or may need to be retracted orthodontically

Historic Markings

When a decision has been made to remove tooth structure from only one of two teeth that are contacting the marking on the other tooth still remains.

This is known as a "Historic Marking" and is no longer relevant. The marking ink must be removed from this tooth at the same time as the tooth structure is removed from the opposing tooth. Unless this is done, irrelevant markings may remain and cause confusion later on. Occasionally a mark may be a smudge and not a true marking. Watch out for this.

When a non-functional contact on a cusp tip is also a centric stop, it may be necessary to reduce the cusp tip to eliminate the non-functional contact and to thus sacrifice a centric stop. Hopefully there will be another centric stop on the tooth.

When a lot of smudges or markings present, clean them off with a toothbrush and start again, or ask the patient to grind on a tissue or piece of gauze held in a pair of articulating paper holders.

Protecting a cusp tip

When adjusting non-functional contacts, preserve centric stops where possible. If 2 cusp tips touch in excursions i.e. non-functional contacts it may be necessary to lose one or other. Sacrifice the stop from tooth with most stops.

Anterior Guidance

Canine guidance is easier to deal with than Group Function as all the other teeth separate due to the discluding effect of the canines.

Group Function has the advantage of distributing the forces of occlusion over several teeth.

Adjusting contacts on front teeth which are contacting in centric relation:

If upper or lower front teeth are to be shortened, check first to ensure that interferences at the back are not going to be produced. If interferences are produced, decide whether it is still wise to go ahead, or make provision to adjust them later.

In cases of steep anterior guidance where there is no possibility of creating non-functional contacts it is easier to adjust the fossa rather than the cusp tip. It is more difficult to reshape cusp tips.

Steepness of Anterior Guidance -

General principle - flattening the anterior guidance decreases TMJ problems

Steep Anterior Guidance i.e. in Class 2 division 2 cases produces immediate disclusion. Steep anterior guidance however, can be a problem for the temporomandibular joint.

Flattening the anterior guidance can help temporomandibular joint problems.

Changing the Angulation of the Anterior Guidance:

1. If the anterior guidance is flattened, interferences may be produced on the back teeth.
2. Flattening the anterior guidance can help in Temporomandibular Joint problems.
3. Steepening the anterior guidance may help reduce posterior interferences but produce joint problems.

When checking Anterior Guidance:

1. Edge-to-edge position
 - a. protrusive
 - b. left lateral
 - c. right lateral
 - d. left lat protrusive
 - e. right lat protrusive

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2. Check left lateral; note guiding teeth & look for non-functional contacts on the right
3. Check right lateral; note guiding teeth & check non-functional contacts the left
4. Protrusion; check guiding teeth & protrusive interferences
5. Left Lateral Protrusive
6. Right Lateral Protrusive

When checking edge-to-edge positions:-

Check for interferences on posterior teeth

Adjusting Edge-to-edge Contacts - Whether to adjust upper or lower front teeth depends on which gives best aesthetics

Adjusting front teeth

When adjusting the length of front teeth, always consider the appearance.

The appearance of front teeth is personal to that person. Alterations of the appearance need to be done with the consent of that person. Alterations to the aesthetics need to be done gradually, with the patient watching in a hand mirror, or looking at the results as the procedure progresses.

STOP adjusting the front teeth when the patient is happy with the appearance.

How to Progress

- 1) Start with isolated adjustments that are obviously necessary : -
 - a) Reshaping opposing cusp tips before restoring a tooth when the cusp tip occludes deep into the occlusal surface of the opposing tooth
 - b) Remove obvious interferences in centric relation
 - c) Remove gross non-functional contacts
 - d) Recontour anterior teeth that are over-erupted where there is no chance of creating non-functional contacts by doing so
- 2)
 - a) Take two sets of study models of patients who you consider would benefit from alterations in their occlusion
 - b) Adjust one set and record any particularly significant changes you think should be made to the patient
 - c) Equilibrate the patient
- 3) Equilibrate the study models at the same time as you equilibrate i.e. adjust the models a little and then adjust the patient and repeat the process

The advantages are :-

- a) The patient sees the work you are doing on their behalf (charging the patient for the adjustment of their models when they are not present is fully justified Seeing the adjustment being performed may help them rationalize the fee)
 - b) The adjustment made on the model is fresh in your mind when you are adjusting in the mouth
- 4) **When in doubt fit an appliance before equilibrating**
 - 5) Stop if the patient experiences pain
 - 6) At first do not
 - a) treat patients who are particularly neurotic
 - b) overly persuade patients to have an equilibration Choose patients who are enthusiastic and good patients

Appointing Patients for Occlusal Equilibration Appointments

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It is not possible to predict exactly how long an equilibration will take

Book patients for an initial appointment with the understanding that further appointments may be necessary

Relate the length of an appointment to the patient's ability to pay

i.e. Arrange shorter appointments for patients who need to spread out the payments.

Be flexible

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Clinical Occlusal Evaluation Form

Name _____

occxm1

1) **EARLY CONTACTS** in Centric Relation

(Using the Dawson Hold close the patient until you feel the first tooth contact
Then ask the Patient to if they notice any tooth touching before any other
Record their reply e.g. left or right side near the front or back)

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

(Close the patient into centric relation using the Dawson Hold
After first contact is reached ask the patient to close tight
Observe the direction of any slide from centric relation to Maximum Intercuspitation
Record the findings e.g. short or long slide to the left or right)

3) **INTERFERENCES**

LEFT LATERAL (put finger on left canine, ask patient to slide towards it)

Observe whether the front teeth separate indicating a contact posteriorly. If there is no apparent separation place some articulating silk between the posterior teeth on the right side and repeat the exercise pulling on the articulating paper holders

Describe the interference e.g. short or long slight or gross

Non-functional (contacts on the right side) _____

Cross-over (after the left canines have crossed over each other)

Functional (on the left side) _____

RIGHT LATERAL

Non-functional, on the left side _____

Cross-over (after the canines on the right side have crossed over each other)

Functional (on the right side) _____

4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS**, (put finger on central incisors & ask patient to slide towards it)

Protrusive _____

Left Lateral _____

Right Lateral _____

Left Lateral Protrusive _____

Right Lateral Protrusive _____

b) **LEFT LATERAL EXCURSION**

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Smoothness of Guidance_____

Steepness of Anterior Guidance_____

Posterior Right _____ Left _____
Clearance

c) **RIGHT LATERAL**

Smoothness of Guidance_____

Steepness of Anterior Guidance_____

Posterior _____
Clearance Left _____ Right _____

d) **PROTRUSIVE**

Smoothness of Guidance_____

Steepness of Anterior Guidance_____

Posterior Right _____ Left _____
Clearance

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive.
put finger on lateral incisor and ask patient to slide towards it)

Smoothness of Guidance_____

Steepness of Anterior Guidance_____

Posterior Right _____ Left _____
Clearance

f) **RIGHT LATERAL PROTRUSION** (half way between left lateral and protrusive)

Smoothness of Guidance_____

Steepness of Anterior Guidance_____

Posterior _____
Clearance Left _____ Right _____

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Clinical Occlusal Adjustment Procedure

Items required for the Occlusal Adjustment Procedure

STORAGE TRAY

1. 1 Tupperware Container 15 cm x 18 cm containing
 - a) Pre-cut Red Silk
 - b) 2 x Articulating Paper Holders set up with Red Silk ready to use
2. 4 or more Articulating Paper Holders set up with BLACK foil
3. 1 Suture box containing pre-cut Black Foil
4. 1 Box Shimstock pre-cut to 1/2 inches, 4 cm or the width of a small post-it
5. Horseshoe Articulating Paper (for denture adjustments)

The Black foil and the Red silk should be cut neatly to the length of a large post-it with a pair of straight scissors
The Red Silk dries out if left out and does not mark the occlusal contacts

Burs

Short Flame Diamond (Intensive 255 from Metrodent)
Round Diamond Horico 001025 Glover Dental
Long Flame Diamond F.G563 (for aesthetic adjustment)
or Intensiv 311 from Metrodent

other items

Plastic Salivary Ejectors, CUT IN HALF
This item is extremely useful in salivary control when held by the chairside assistant and used as the dentist dries the teeth with the 3-in-1 syringe

SET-UP

Plastic Tray,
Storage tray,
Mouth mirror,
4 or more pairs of Articulating paper holders plus black foil,
(ensure that all the other free Articulating paper Holders are set up with black foil)
2 pairs of articulating holders plus red silk,
Large round in No 1 handpiece,
Short flame diamond in No 2 handpiece,
Tweezers plus a Cotton Pellet, (for removal of individual unwanted markings)
A Toothbrush, (for brushing of old markings)
Tip-a-dilly plus a shortened plastic salivary ejector,

THE PROCEDURE

In order for the dentist to manipulate the Jaw into Centric Relation both his hands are required It is therefore necessary to have effective chairside support from a dental assistant

The dental assistant should aspirate and place the Articulating Foil or Silk into the patients mouth while the Dentist dries the teeth and manipulates the Jaw The dental assistant should dry the foil or silk thoroughly after each time they are used using a tissue otherwise they will not mark the teeth The assisting needs to be fast and accurate as the procedure is repetitive and requires good coordination between the dentist and the assistant It is important that the assistant keeps ahead or at least up with the dentist As soon as the dentist moves his hand towards the 3-in-1 syringe the assistant should place the aspirator

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into the mouth. The dentist dries the teeth with the 3-in-1 Syringe as the dental assistant aspirates with her left hand at the back of the patient's mouth on the side that the dentist is drying. The dental assistant holds the Articulating paper holders in her right hand ready to place in the patient's mouth as the dentist removes the 3-in-1 Syringe from the patient's mouth. The dental assistant clearly knows which side to place the articulating paper holders having observed which teeth the dentist has dried.

The articulating paper holders must be placed in the mouth at the same time as the aspirator is removed in order to prevent saliva wetting the foil or silk unnecessarily. The articulating paper holders should be held against the upper teeth as this jaw does not move while the lower does move.

There is not enough time to change hands during the procedure so it is necessary for the assistant to develop the use of her right hand to place the articulating paper into the left and right hand sides of the patient's mouth. When the procedure is actively in progress the Articulating Paper Holders should be held up near the mouth ready to place in the mouth. The Articulating Paper Holders need to be placed in the mouth as the Dentist removes the 3-in-1 syringe, otherwise there is a risk of the teeth becoming wet with saliva. Constantly dry the Red silk during the procedure otherwise it will not mark the teeth. The dentist will indicate when the black foil or the red silk is to be used.

Preserving markings

If the teeth have been marked and for some reason the dentist is not ready to make the necessary adjustments the patient must be prevented from closing. This may well cause the markings to be rubbed off. To prevent this happening the assistant should rest the aspirator tip or the tip of a finger on the tips of the lower front teeth to discourage the patient from closing.

Placing the Articulating paper holders into the patient's mouth

- 1) Which side to place it
(This will be indicated by the dentist as it will be the side that he dries with the 3-in-1 syringe)
- 2) Hold the Holders ready in the direction that they will be placed into the patient's mouth
- 3) Aim the holders up towards the patient's palate almost touching it. Then move it using a finger movement between the teeth ensuring that it is in the line of the arch and in the region which the dentist dried the teeth. Placing the articulating paper holders accurately this way will help prevent the foil or silk being folded over by the patient's tongue.
- 4) Move the Foil around a little while the patient's teeth are being tapped together in order to ensure better markings. By doing this a fresh area of foil is ready to mark the teeth.

532-90 Tips

- 1) To help detect first contacts tap the patient into Centric Relation using the Dawson Hold and ask the patient to put their finger on the tooth that touches first.
- 2) If a patient experiences difficulty in moving their jaw in the correct direction sometimes the cause can be that only one pair of articulating forceps have been put into the patient's mouth. By placing two in the patient's one each side may overcome this problem.
- 3) The Quick Method of Occlusal Adjusting
 - a) Have the patient grind around on some red silk.
 - b) Look at the markings and decide on the markings where contact is definitely not needed or wanted.
 - c) Remove these markings.
- 4) Decide on the amount of tooth structure that needs to be removed.

Early in the procedure more may be removed whereas later only a minute amount may need to be removed. The bur being used should be applied to the tooth using a light brush stroke.

Post Treatment Presentation

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Explain the following things to the patient

1. They may find that their teeth feel rough for several days
2. Their symptoms get worse for a few days This is not a bad sign It is due to the patient being more aware of their bite having had it altered Their symptoms will settle down after a few days
3. They may feel hot and cold pain for a few days
4. They may be more aware of their bite for a few days

The Use of Articulator (See Occ. Part 1)

Possible Effects of Occlusal Disharmony (See Occ. Part 1)

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APPLIANCE THERAPY

INDICATIONS FOR APPLIANCE THERAPY

- * Hot Joint
- * ? Psychological assessment
- * ? Best route
- * Appliance therapy versus occlusal equilibration
- * Patient is bruxing and wearing & damaging teeth and restorations
- * Patient has joint sounds with pain
- * ? Before restorative work if patient has joint sounds with no pain
- * Patient wishes to try to reduce joint sounds

- Dentist unsure whether centric relation can be achieved, & wishes to seat condyles and relax muscles before equilibration

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Tanner Appliance Shell Construction

Analysis of Mounted Models

() 1) **Set the Condylar Angles to 20 degrees and the Bennet Shift to 15 degrees** unless otherwise indicated

() 2) **Perform an Occlusal Analysis**

() 3) **Check for undercuts** that might cause the appliance to become stuck while being relined

1) Excessive Soft Tissue Lingual Undercuts

2) Instanding Teeth

3) Missing Teeth

4) Pontics

4) **Check the Models for the following:-**

() 1) Missing Teeth - An appliance is best placed in the arch with the least teeth present

() 2) Loose Teeth - The appliance may help by protecting loose teeth

() 3) Lower Incisal Edge Levels - If the levels are very uneven, a lower appliance covers up the uneven incisal edges making the adjustment easier than if an upper appliance

5) **Occlusal Evaluation** to develop an understanding of :-

() 1) The problems that the Tanner Appliance will need to overcome

() 2) The specific design of the appliance necessary for this particular patient

6) **Setting the Articulator**

() a) Lock the Articulator in Centric

() b) Lower the Incisal Pin to provide 1-2 mm clearance between the First Contacts

() c) Set the Condylar Angle (arbitrarily to 20 degrees)

() d) Set the Bennet Shift (arbitrarily to 15 degrees)

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7) Preparing the Lower Model

- () a) Draw a line round the model buccally 2 mm below the buccal cusp tips and the Incisal edges
- () b) Draw a line Lingually down to near the depth of the sulcus to mark the outline of the Appliance
- () b) Cut a strip of Red Boxing Wax 2 mm wide and the length of the pencil line
- () c) Fit the Strip to the model below the pencil line labially.
- () d) Seal the strip to the model with a hot instrument.
- () e) Block out any excessive soft tissue lingual undercuts
- () f) Block out any undercuts due to missing teeth or misplaced teeth
- () g) Adapt a layer of Tin Foil over the model

8) Open Incisal Guide Pin of the Articulator 2mm

9) Making the Shell

- () 1) Vaseline the Tanner Former and Roller
- () 2) Vaseline Finger Tips
- () 3) Mix some Acrylic
- () 4) Wait till it reaches the Cobweb Stage
- () 5) Roll into a "sausage"
- () 6) Adapt to the Tanner Former
- () 7) Roll flat using the Roller
- () 8) Trim of the excess using a scalpel
- () 9) Fit to the Occlusal and Lingual surfaces of the Lower Model
- () 10) Close the Articulator until the Pin Touches the Anterior Guide Table
- () 11) Cut of the excess acrylic buccally with a scalpel
- () 12) Open the Articulator and cut off any obvious excess acrylic lingually
- () 13) Close the Articulator and hold firmly closed

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- () 14) Insert some fingers from the back between the models and press the acrylic against the lingual surfaces of the lower teeth and jaw
- () 15) When Set open the articulator
- () 16) Remove the Shell
- () 17) Remove the Tin Foil
- () 18) Replace the Shell on the Articulator
- () Put on Protective Glasses and a Mask
- () 19) Draw a line round the periphery of the shell to mark any excess that needs to be trimmed off
- () 20) Trim off any excess using the Acrylic Trimming Bur
- () 21) Reseat on the model and repeat as necessary

9) Occlusal Reduction

- () 1) Mark the depths of the Indentation of the Upper Cusps in pencil

Exercise

The purpose of this exercise is to practice refining the appliance before refining it in the mouth

- () 1) Check the Shell for stability on the lower model
 - 2) If unstable:-
 - a) Vaseline the occlusal surfaces in the first premolar and second molar regions
 - b) Add a small amount of acrylic to the Fitting Surface in the first premolar and second molar regions to provide stability on the study model
 - c) Seat the Shell onto the model
 - d) Allow to set while continuing

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Working and Non-working Pathways Exercise

- () 1) Remove the Upper Model
- () 2) Attach the Modified Mounting Plate **loosely**
- () 3) Insert the Modified Fillastre Jig on the Right side of the articulator
- () 4) Position the Pencil in the most forward " fossa " on the occlusal surface of the appliance
- () 5) Unlock the Articulator so that the lower model will move in a Working Movement, Lower model to the **Right**
- () 6) Raise the Incisal Pin roughly a centimetre
- () 7) Hold the Upper Member of the Articulator in the **Left** hand
- () 8) Hold the Lower Member with the **Right** hand
- () 9) With the Pencil touching the Shell move the lower model in a Working Movement **carefully drawing a line on the appliance**
- () 10) Observe the direction of the line
- () 11) Repeat the exercise for the Non-functional Movement (moving the articulator to the **Left** side)
- () 12) Repeat for all the fossae on the right side
- () 13) Remove the Jig and fit it on the Left side
- () 14) Repeat the exercise for the Left Side
- () 15) Using an Acrylic Trimming Bur Groove out the lines on the occlusal surface of the appliance protecting the centric Stops

Centric Stop Adjustment

- () 1) Lock the Articulator in Centric
- 2) Seat the Appliance
- () 3) Check that the Pin is raised sufficiently to allow the upper teeth to occlude with the appliance
 - 4) Place a square of **Green Silk** over the appliance
 - 5) Tap the Articulator together
 - 6) Check the markings
- () 7) Adjust the markings
- () 8) Repeat till there are sufficient Centric Stops

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Functional and Non-functional and Anterior Guidance Adjustment

() a) Adding to the Appliance to alter the Anterior Guidance

1) Insert the Appliance

2) Move the Articulator in Left lateral and Right Lateral Excursions

3) Observe the Anterior Guidance and the Posterior Clearance

The Anterior Guidance needs to be sufficient to allow a small amount of clearance posteriorly and must allow smooth movements of the mandible in all excursive movements

() 4) Decide on the necessity of adding Acrylic to improve the Anterior Guidance

5) Add as appropriate

() b) Adjusting the Anterior Guidance

Only just enough acrylic is needed at the front of the appliance to ensure clearance at the back
Excessive acrylic adds unnecessary bulk to the appliance making it more difficult to wear

1) Place **RED** silk over the lower model

2) Close the Articulator and move the Lower model to the extreme Left and then extreme Right

3) Place a square of Green Silk over the Lower model

4) Tap the Articulator together

5) Check the Markings

6) Remove the Appliance

() 7) Remove the Non-functional Contacts

() 8) Check for **F**unctional contacts and adjust as necessary

9) Check the Anterior Guidance for **smo**othness and adjust as necessary

(Bear in mind that excessive steepness of the Anterior Guidance resulting in excessive posterior clearance is unnecessary Excessive steepness may produce detrimental effects on the Temporomandibular Joint and may be uncomfortable for the patient, the anterior part of the appliance being unnecessarily bulky

() 10) Repeat adjusting as necessary

When the exercise is finished remove the four stops on the fitting surface before fitting the appliance to the patient

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Fitting Tanner Appliances

- 1) Metal Instrument Tray
- 2) Front Surface Mouth Mirrors
- 3) Tanner shell
- 4) Flat Plastic
- 5) Carding Wax
- 6) Acrylic Powder (tooth coloured)
- 7) Acrylic Liquid a) Normal set and b) Fast Set
- 8) Cement Mixing Spatula
- 9) Dappen Dishes
- 10) Acrylic Trimming Bur
- 11) Straight Handpiece with the Acrylic Trimming Bur
- 12) Occlude
- 13) Narrow Black Foil (cut)
- 14) Narrow Red Silk (cut)
- 15) Articulating Paper Holders plus Narrow Black Foil x 2
(at least, the more the better)
- 16) Articulating Paper Holders plus Narrow Red Silk X 2 (at least)
- 17) Polishing lathe set up with
 - a) A Black Polishing Brush
 - b) Wet pumice
 - c) A Felt Polishing Wheel
 - d) Polishing Soap
- 18) Dark Protective Glasses for the Patient
- 19) Protective Glasses for the Dentist
- 20) Masks

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Fitting Procedure Stages for Beginners

- 1) Clinical Analysis
- 2) Try-in of the Tanner Appliance Shell
- 3) Reline Fitting Surface in 3 STAGES
- 4) Centric Relation Adjustment
- 5) Functional and Non-functional and Anterior Guidance Adjustment
- 6) Comfort Check and Polishing
- 7) Patient Training, Instructions and Warnings
- 8) Follow up Checks for
 - a) Progress Reports
 - b) Comfort Checks
 - c) Occlusal Adjustments

(With experience)

- a) **The Relining can be done in one stage rather than three**

However there is a risk of the acrylic setting in the mouth when inexperienced

- b) **The Occlusal Adjustment should be performed with Centric Relation, Functional and Non-Functional Contacts and Anterior Guidance in mind**

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Fitting Procedure

Fit dark protective glasses on the patient

1) Clinical Analysis

a) Check for undercuts that might cause the appliance to become stuck while being relined

- 1) Excessive Soft Tissue Lingual Undercuts
- 2) Instanding Teeth
- 3) Missing Teeth
- 4) Pontics

BLOCK OUT ANY UNDERCUTS ON INSTANDING TEETH, MISSING TEETH OR PONTICS WITH CARDING WAX

b) **Occlusal Evaluation** to develop an understanding of :-

- 1) The problems that the Tanner Appliance will need to overcome
- 2) The specific design of the appliance necessary for this particular patient

2) Try-in of the Tanner Appliance Shell

Check for a) Undue rocking and adjust as necessary

b) Overextension Buccally

c) Overextension Lingually

3) Reline Fitting Surface in 3 STAGES

STAGE 1

- 1) Remove the appliance
 - 2) Dry the Appliance especially the fitting surface
 - 3) Mix Acrylic thick enough so that it can just be poured but not too thin that it will flow everywhere (enough to reline 1/3 rd of the fitting surface)
 - 4) Apply acrylic to the fitting surface of the patient's RIGHT Premolar and Molar Region
 - 5) Wait till the surface of the acrylic " dulls "
- 6) Insert the appliance and Seat the **RIGHT side (patient 's right) then the left**

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7) With the appliance in place immediately remove buccal excess with a Flat Plastic

8) Hold in Place by applying light pressure in the premolar regions on both sides

THE APPLIANCE CAN BECOME STUCK AT THIS STAGE UNLESS THE FOLLOWING PRECAUTIONS ARE TAKEN

9) LIFT THE LEFT SIDE (THE PATIENT'S LEFT) EVERY 10 SECONDS until the acrylic is set

(This eventually results in the appliance having a path of withdrawal that is not vertical. This helps retain the appliance in place)

DO NOT REMOVE THE APPLIANCE COMPLETELY UNTIL THE ACRYLIC IS SET, UNLESS ABSOLUTELY NECESSARY

This may result in difficulty in reinserting it later when the acrylic has completely set

10) Remove the appliance

11) Trim off obvious excess buccally and interdental (bear in mind that interdental acrylic helps retain the appliance

12) Try in the appliance to check that it can be re-seated

STAGE 2

1) Remove the appliance

2) Dry the Appliance especially the fitting surface

3) Mix Acrylic thick enough so that it can just be poured but not too thin that it will flow everywhere (enough to reline 1/3 rd of the fitting surface)

4) Apply acrylic to the fitting surface of the patient's Anterior Region

5) Wait till the surface of the acrylic " dulls "

6) Insert the appliance and Seat the **RIGHT SIDE** first, then the left

7) Remove buccal excess with a Flat Plastic

8) Hold in Place by applying light pressure in the premolar regions on both sides

THE APPLIANCE CAN BECOME STUCK AT THIS STAGE UNLESS THE

FOLLOWING PRECAUTIONS ARE TAKEN

9) **LIFT THE LEFT SIDE** (THE PATIENT'S LEFT) EVERY 10 SECONDS until the acrylic is set **ALWAYS LIFT THE SAME SIDE**

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DO NOT REMOVE THE APPLIANCE COMPLETELY

UNTIL THE ACRYLIC IS SET, UNLESS ABSOLUTELY NECESSARY

10) Remove the appliance

11) Trim off obvious excess buccally and interdental (bear in mind that interdental acrylic helps retain the appliance

12) Try in the appliance to check that it can be re-seated

STAGE 3

1) Remove the appliance

2) Dry the Appliance especially the fitting surface

3) Mix Acrylic thick enough so that it can just be poured but not too thin that it will flow everywhere (enough to reline 1/3 rd of the fitting surface)

4) Apply acrylic to the fitting surface of the patient's in the **LEFT premolar and molar region**

5) **Wait till the surface of the acrylic " dulls "**

6) Insert the appliance and Seat in place the RIGHT SIDE first, then the left side

7) Remove buccal excess with a Flat Plastic

8) Hold in Place by applying light pressure in the premolar regions on both sides

THE APPLIANCE CAN BECOME STUCK AT THIS STAGE UNLESS THE FOLLOWING PRECAUTIONS ARE TAKEN

9) LIFT THE LEFT SIDE (THE PATIENT'S LEFT) EVERY 10 SECONDS until the acrylic is set

DO NOT REMOVE THE APPLIANCE COMPLETELY

UNTIL THE ACRYLIC IS SET, UNLESS ABSOLUTELY NECESSARY

10) Remove the appliance

11) Trim off obvious excess buccally and interdental (bear in mind that interdental acrylic helps retain the appliance

12) Try in the appliance to check that it can be re-seated

4) Centric Relation Adjustment

1) Dry the Occlusal Surface of the Appliance

2) Insert the appliance

3) Keep the occlusal surface dry

4) The Assistant Inserts 2 Articulating Paper with **RED** Silk on either side

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- 5) Tap the patient into **Centric Relation**
 - 6) Remove the Appliance
 - 7) Adjust
 - 8) Repeat until there are sufficient Centric Stops each side
- 9) Now Refine Centric Stops with **BlackFoil**

5) Functional and Non-functional and Anterior Guidance Adjustment

a) Adding to the Appliance to alter the Anterior Guidance

- 1) **Insert the Appliance**
- 2) Have patient move in Left lateral and Right Lateral Excursions
- 3) Observe the Anterior Guidance and the Posterior Clearance

The Anterior Guidance needs to be sufficient to allow a small amount of clearance posteriorly and must allow smooth movements of the mandible in all excursive movements.

- 4) Decide on the necessity of adding Acrylic to improve the Anterior Guidance
- 5) Add as appropriate

b) Adjusting the Anterior Guidance

- 1) Dry the Occlusal Surface
 - 2) Insert **RED** silk
 - 3) Have the patient move their lower to extreme Left and then extreme Right
- 4) Insert **BlackFoil**
 - 5) **Have the patient tap into Centric Relation Occlusion**
 - 6) Remove the Appliance
 - 7) Remove the Non-functional Contacts
 - 8) Check for **Functional** contacts and adjust as necessary
 - 9) Check the Anterior Guidance for **smoothness** and adjust as necessary

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(Bear in mind that excessive steepness of the Anterior Guidance resulting in excessive posterior clearance is unnecessary. Excessive steepness may produce detrimental effects on the Temporomandibular Joint and may be uncomfortable for the patient, the anterior part of the appliance being unnecessarily bulky)

10) Repeat adjusting as necessary

6) **Comfort Check**

Check the appliance for

- a) **Overextension**
- b) **Unnecessary bulk**
- c) **Roughness**

Run a finger round the Buccal Periphery of the Appliance to check for roughness

Check for Patient Comfort

- a) Internal fit
- 1) Soft Tissue Comfort
- 2) Tooth Comfort Pressure may be felt on some of the teeth
 - a) Note the area where the discomfort is being felt
 - b) Remove the Appliance
 - c) Dry the area
 - d) Spray on Occlude
 - e) Allow to dry
 - f) Dry the affected teeth
 - g) Insert the appliance and Press into place
 - h) Remove the appliance immediately before it gets wet
(otherwise the occlude washes out)
 - i) Adjust as necessary
 - j) Repeat till comfortable

7) **Patient Training, Instructions and Warnings**

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Training

- 1) Show the patient how to put it in and take it out
- 2) Have them do it several times

Warnings

- 1) Warn the patient that they may develop sores and that the appliance can be adjusted to make it more comfortable
- 2) Their symptoms may get worse at first
- 3) They may develop headaches at first
- 4) The appliance may break in which case it can be repaired
- 5) It can be lost unless care is taken to keep it in a safe place when not in use

Instructions

Eating whether to wear the appliance during eating, generally only if that is when the major problem occurs in which case it is necessary to cut grooves in the occluding surfaces to aid eating ensuring that the centric stops are protected

8) Follow up Checks for

- a) Comfort
- b) Occlusal Adjustments

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COURSE EXERCISE "1"

Tanner Appliance Adjustment on STUDY MODELS

Place the appliance on the lower model

Check for Stability

Add 4 Acrylic Stops in the first premolar and second molar regions if

necessary **FAST SET ACRYLIC LIQUID**

COURSE EXERCISE "2"

Tanner Appliance Relining CLINICALLY

Remove the Acrylic Stops from the internal surface if necessary

Tanner Appliance Adjustment CLINICALLY

Add Acrylic to the occlusal surface of the appliance using

FAST SET ACRYLIC LIQUID

Insert into the patient's Mouth

Close the Patient into Centric Relation.

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Anterior Repositioning Appliances

1. Construct Tanner Appliance shell
2. Reline Tanner shell in the mouth
3. Ask the patient to:-
 - a) open until the first click
 - b) protrude the jaw, closing forwards
 - c) retrude to just before the second click
4. Practice the above.
5. Place a small amount of warm compound on the appliance in the 2nd premolar / 1st molar region on both sides. Insert the appliance and have the patient to:-
 - a) open until the first click
 - b) protrude the jaw
 - c) then close into the compound just before the second click

Allow the compound to cool.

Check that the click has disappeared when the patient

opens and closes.

If the click on closing is still present, replace the compound and have the patient close a little further forward.

7. Reline the occlusal surface of the appliance with acrylic anterior and posterior to the compound.
8. Insert the appliance and guide the patient into the compound registration. Allow to set.
9. Remove compound and add more acrylic.
10. Shade the guiding planes with pencil.
11. Trim off the buccal flash and any excess but leaving the guiding surfaces of acrylic.
12. Fit the appliance and check that the click has disappeared.

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Occlusal Examination of Study Models

Name _____

Dynamic Analysis

Set the Condylar Angles to 20 degrees and Bennet Shift to 15 degrees unless otherwise indicated

1) **EARLY CONTACTS** in Centric Relation

- a) Lock the articulator in Centric
 - b) Raise the Incisal Pin
 - c) Close the articulator and look for any obvious interferences
 - d) Open the articulator and place a square of **GREEN** silk over the lower teeth
 - e) Close the articulator and tap the models together
 - f) Check for early contacts
 - g) Record the findings
- / -----
----- / -----

2) **PRESENCE of a SLIDE** from Centric Relation to Maximum Intercuspitation

- a) Unlock the centric locking device. Check that the Articulator moves freely
 - b) Hold the upper Member of the Articulator in the one hand and the Lower Member in the other hand
 - c) Holding the Articulator in Centric Relation close the Articulator
 - d) After the first contact is reached close the articulator carefully into Maximum Intercuspitation
 - e) Observe the direction of any slide from centric relation to Maximum Intercuspitation
 - f) Record the findings e.g. short or long slide to the left or right
-

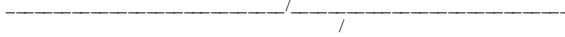
3) **INTERFERENCES**

IN LEFT LATERAL MOVEMENT

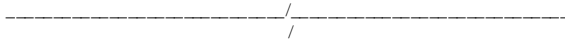
- a) With the centric locking device unlocked close the articulator into centric relation
- b) Move the lower model to the patients left
- c) Observe whether the front teeth separate indicating a contact posteriorly
- d) Place a square of **RED** silk between the models and repeat the movement
- e) Describe the Interferences e.g. short or long slight or gross

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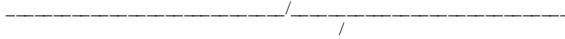
Non-functional (contacts on the right side)



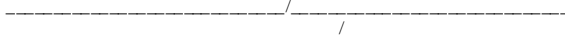
Cross-over (after the left canines have crossed over each other



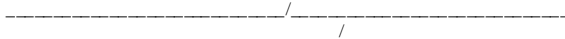
Functional (on the left side)



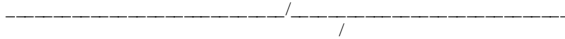
IN RIGHT LATERAL
Non-functional (on the left side)



Cross-over (after the canines on the right side have crossed over each other



Functional (on the right side



4) **ANTERIOR GUIDANCE**

a) **EDGE TO EDGE CONTACTS**

Protrusive _____ / /

Left Lateral _____ / /

Right Lateral _____ / /

Left Lateral Protrusive _____ / /

Right Lateral Protrusive _____ / /

b) **LEFT LATERAL EXCURSION**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

c) **RIGHT LATERAL**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

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Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

d) **PROTRUSIVE**

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

e) **LEFT LATERAL PROTRUSIVE** (half way between left lateral and protrusive)

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Right _____ Left _____

f) **RIGHT LATERAL PROTRUSION** half way between left lateral and protrusive

Smoothness of Guidance _____

Steepness of Anterior Guidance _____

Posterior Clearance or presence of Posterior Interferences

Left _____ Right _____

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OCCLUSAL PLANNING

Orthodontic Treatment _____

Removal of Teeth _____

Appliance Therapy _____

Posterior Cusp Tip Shortening and Reshaping / Additions to Fossae

Other Occlusal Equilibration Planning _____

Occlusal Correction by Restorative Treatment

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RECOMMENDED READING

Communication and Psychology

Games People Play by Eric Berne published by:-
Happiness and Fulfilment in Dentistry

**Penguin
Quintessence Publishing Co Ltd**

I'm O.K. You're O.K. by Harris
Staying O.K. by Harris

Occlusion

Diagnosis and Treatment Planning of Occlusal Problems
by Peter Dawson published by Mosby from:-

**The L.D.Pankey Institute
(Bookstore)**

(order using VISA or MASTERCARD. If you order by Fax,
give complete card number & expiry date.) FAX 010-1-305-361-6534 or Phone 010-1-305-361-5433
(Florida is 6 hours behind us)

Occlusion and Function by Peter Neff from:-

Stuart Orton-Jones

Restorative Dentistry

Fundamentals of Fixed Prosthodontics
by Shillingbug Hobo and Whitsell from:-
The Kurer Anchor System by Peter Kurer from:-
Restoration of Endodontically Treated Teeth
by Shillingbug and Kessler from:-

**Quintessence
Quintessence
Quintessence**

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Critique Form

Stuart Orton-Jones Institute

Course _____

Date _____ Name _____

Course Evaluation

The presenter of this course would be grateful if you would complete this questionnaire.
This form is continued overleaf.

Course Content _____

Lecture Sessions _____

Audio Visual Aids _____

Practical Sessions _____

Course Presenter _____

Course Assistants _____

Course Facilities _____

Course Food _____

Hotel Facilities _____

General Comments and Suggestions

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Do you think that the course was sufficiently advertised ? _____

How did you hear about the course ? _____

If a journal which one ? _____

Future Courses

What subjects would you be interested in ? _____

If you were to attend another course would you prefer the presentation to be more or less intensive ? More / Less

Thank you for completing this questionnaire.

If you would like to visit my practice to watch me work, please fill out the following page.

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