***Title of Lecture: finishing ,polishing, insertion.***

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In this lecture we will start with finishing , polishing and then insertion and a quick view on post insertion complains and review appointments .

The Dr. said that she will not concentrate on the clinical steps because we will take it in 4th and 5th year in details .

Finishing and polishing:

-After deflasking we retrieve the denture which we did selective grinding on , dentures were still attached to the master cast , now that we have finished the selective grinding we can do finishing and polishing and go for insertion (fitting) of the denture.

so basically the dentures will be locked in the master cast , they will be very hard to remove , all we need to do is to section (cut off) the master cast away making sure that the denture is not destructed. you can use a special saw to cut the tongue area , for example ; carefully cut the base of the cast and then break off the rest of the cast until you retrieve the whole denture (**the main objective is to retrieve the denture without breaking it**).

-Now we need to do finishing and polishing for the denture , this is very important because its an extra acrylic material so its normal to have excess material on the flanges that you have to cut .

-Finishing: removal of gross excess.

-Polishing : giving the denture the final texture , gloss or glister.

-so you start by removing the excess on the flanges this can be done using stainless steel or tungsten carbide burs ( like the ones we used in the lab ) with different shapes this depends on the area we are working on , so if the area is frenum we use a straight fissure bur /for the rest of the flanges we can use rose head burs "round burs" / for the tongue area you have to be careful, you can use additionally special stones/ you need a very small bur to remove the acrylic in between the teeth and then after getting rid of all the excess material you can do polishing using special polishing equipment and polishing pastes.

And then use special rags for the final polishing in the palatal area , you have to be careful,you can use a brush for the final cleaning this is how you actually sharpen it. and then we do the final polishing and the final glister.

we can also do stipplings small grooves or notches mainly on the labial surface of upper anterior teeth , if everything is esthetically pleasing .and finally polish all the occlusal surfaces plus all the polished surfaces should be polished , borders should be smooth and clean , tongue area should be smooth , we don’t do polishing on the fitting surface .

Stippling is not mandatory its optional ,it gives the denture the orange peal appearance natural look, like a normal gingiva. And then you give the dentures in sealed bags before delivery or fitting of dentures inside the patient’s mouth .

Its not just fitting (you don’t just fit it or insert it ) you have to evaluate it and then insert it. Many aspects of the dentures might be in need for adjustment , this is something that you do in the clinic . (clinical steps will be taken in later years, the Dr. will not concentrate on it. )

You have to evaluate the denture yourself (the dentist) and the patient also should evaluate it , you should take the patient’s evaluation into consideration , also anyone coming with the patient ( friend ,spouse, sibling ,… ) can evaluate the denture. but you have to tell the patient at the time of try in that it is his/her last chance where major modifications of shape and shade of teeth for example can be done.so if there is an objection now is the time, so you have to take the patient consent in the try in about the general esthetics or the things that you cant change after flasking and curing of acrylic. the patient's and friend's evaluation will be mainly about whether an area is causing pain or if it is too long which needs adjustment, but this modification is not a major thing related to the setting of teeth , shape or arrangement.

If the patient is a previous denture wearer, you have to tell him/her to stop wearing their old denture for about 12 to 24 hours to let the tissues relax , usually if there was an ill fitting denture , there might be ulcers , so you will not be able to evaluate your dentures (the new ones ) with the presence of the old dentures.

-so you have to strict the patient to take the denture out for around one day if more that would be better .

there are many sources of errors into complete dentures that you have to take into consideration ;errors made by the dentist,errors in jaw relation record or errors in making the impressions accurately replicating the depth and width of sulcus , so many errors….errors in locating the post dam area inside the patients mouth and replicating it on the denture , there are errors made by the lab which are so many , you could be doing your best but at last if the technician handles the denture and final flasking and processing procedures carelessly then the denture will not be satisfactory , so there are so many problems not just occlusal problems , maybe if they are not careful and did trimming to the retromolar pad area (this is very common )they trim the retromolar pad area of the master cast and then the final denture is under extended , so there are so many things that can go wrong in the lab , mixing of the material may be done in the wrong way , finishing , polishing ….

Another source of errors in complete denture is the fact that all the material we use are not ideal , when we explained about requirements of ideal denture base materials we said that acrylics PPMA are the most commonly used materials but they were not ideal , they have disadvantages , so there are some deficiencies in every different material that we use and because of those deficiencies we cant reach an ideal result with those deficient materials .

There are also biological factors / factors related to the patients jaws if there is a highly resorbed ridge you cant expect ideal retention or if the patient has a big tongue the stability of the denture will be compromised , jaw relationships of patient, undercuts in the patients mouth so there are lots of biologically problems related to the patient himself out of your control ,there are so many errors , so many things that can go wrong but at least the problems that you can control as a dentist with extra effort you can overcome the problems of the materials , laboratory if you give proper instructions you can minimize the errors from the lab , then if you choose the most appropriate material and technique you can achieve good results even if there are some biological factors related to the patients himself that are complicating the situation .

Now before the appointment , before you get the patient in , you have to inspect the dentures , you have to have a look at them , if you are satisfied with them , if there are any rough areas or specuoles (voids in the cast or the investment materials then the acrylic will have specuoles (additional glimpse of acrylic)) that you have to trim , you can pass a piece of gauze on the the fitting surface for example and if there is any catch you can smooth it (try to eliminate it ). All periphery should be rounded and smooth , no sharp edges ,post dam area should be properly constructed , if you carved the cast then you can achieve proper post dam in the denture and it should gradually taper anteriorly to the palate .

The adjustments inside the patients mouth should follow certain sequence , you don’t just start doing occulsal adjustment for example .this should be following other steps that you should make sure of .

 First of all you should check and adjust the fit of base ( if there are any pressure areas) using pressure indicating paste , then the peripheries making sure that they are fully inserted you check the peripheries with pressure indicating paste again , section by section each time , and then you check occlusion with articulating paper and clinically mount if needed and finally you check esthetics , phonetics and deal with patients concerns and then give the patients instructions on how to use the dentures, how to face difficulties esp. in the beginning (first week of using the denture ).

You insert each denture one by one , start by the upper ( maxillary ) denture first , unless there are severe undercuts in the patients mouth insertion will be easy , if there are undercuts sometimes you have to eliminate it until the denture is seated .if its seated properly you ask the patient about comfort and you have to identify potential areas for adjustments and if there is resistance upon seating then you will have to trim some of the undercuts not losing retention eventually , check the adaptation of the denture base , things we do checking on **must** have indicating/checking medium , so we will use pressure indicating paste , we use also in our clinics a powder that you mix with vasline and then you get the paste , its goal is not specifically to undergo setting, the important thing is that you place it in a certain way and then you inspect how it goes, you have to take a small amount of the pressure indicating paste and using a brush you apply it on the fitting surface leaving streaks (from the brush) all over the fitting surface a very small thin layer and then you insert it inside the patient’s mouth and seat it properly then take it out and inspect , there must be a touch between fitting surface and the patients tissue and upon this contact(touch) -when it is appropriate- you will lose the streaks it will be distorted but there will still be a bit of material. Notice the correct amount of streaks in slide 11.

After seating it and applying pressure on the ridge take it out and read the pressure indicating paste "slide no.14", there will be areas where the pressure indicating area where the streaks are distorted and this would indicate proper contact , but if they go away completely and we don’t have any kind of material then this area has excessive pressure on the tissues and it **Might** need to be relieved . the areas that still have streaks are areas that did not touch the tissues (why didn’t they touch the tissues?! Because there are other areas doing excessive touch on the tissues preventing those areas from touching the tissues. )

those areas that had” burned through” you might need to eliminate **carefully** because the pressure technique is a selective impression pressure technique ( in some areas we apply pressure , in others we relieve the pressure) for example: using a close fitting tray I will not trim and relieve pressure on post dam area if the pressure indicating paste was removed from it , because I need pressure on it especially on this area because it gives us good seat for the denture.

the Dr. prefer postponing this technique to the time of post insertion , so the dr doesn’t use pressure indicating paste on the fitting surface at the time of insertion .she waits until the post insertion or review appointment and if this area is causing excessive pressure for the patient she does that area in particular , its much easier to locate it when the patient complains about the area rather than doing haphazard removal of pressure areas which we already did in impression.

but if you want to use it ( some instructors like you to use it ) you have to use it properly , so you have to use a small brush and observe if the streaks are gone and cause too much pressure. Not all the burn through areas you have to relieve. you Have to Pay special attention to undercuts , for example the undercuts just above maxillary tuberosities on both sides you shouldn't remove them unless they cause pain upon insertion and removal of denture ,because they provide retention, once they lock above the tuberosity the denture cant fall down. So not all burn through areas you have to relieve at this stage, you have to be careful with that.

Burn through areas mainly result from applying extra pressure on some areas during taking impression.

make sure you don’t relieve the area in hamular notch and tuberosity unless they are causing problems, using a bur carefully eliminate the excessive pressure areas "slide 15" .

the same with lower denture you place the pressure indicating paste inserted, applying pressure on the ridge then observe , only in areas with severe burn through you relieve them but make sure this is not a useful undercut that you use for extra retention.

After checking the fitting surface of the denture , check the peripheries , the most important thing is that there is no over extended borders , assuming that your impression is correct , extensions correct , its not supposed to be under extended. The problem here : is it overextended or properly extended.

To check over extension or under extension , apply pressure indicating paste section by section on the denture periphery . for example starting at the labial area left side , you apply it on the border insert it , do the functional molding movement , then take it out and observe , **any areas had pressure indicating paste and was wiped off during the functional movement then this area is overextended** , carefully you have to relieve this area to correct the overextension , for beginners have to be extra careful because they might end up under extending the denture , then reapply the material , do the functional movement , to make sure its not overextended ,eventually it should stay on border and not go

The frenum (labial frenum, lingual freni , buccal freni) a very common area , if they were not properly opened , they should be relieved using the right bur which is : fissure bur , not the bur we used for the borders or the pressure areas ; you will end up compromising the whole seal of the denture .

So you open the frenum carefully , it has to be U shape notch not V .

-the buccal freni are more open they are more V shaped than U .

-the labial frenum is U shaped and thin.

You can also use pressure indicating paste on the polished surface .

You have to differentiate between root eminences and overextended flanges (overly extended or overly countered ) in pictures.

-If overextend you have to relieve it , if the palatal area is too thick the pressure indicating paste was wiped from it , then thin down little bit of the palate . after correcting the extensions, check retention , retention by definition is the resistance to vertical movement away from the teeth and tissues .

-You should check each thing SEPARATELY (upper alone , lower alone ).

And don’t forget the lingual flanges of the lower denture you have to check its extension section by section , place the denture , ask patient to move the tongue then read the pressure indicating paste until you have no wiping of the pressure indicating paste , then check retention , there is anterior retention and posterior retention.(anterior seal and posterior seal ).

For anterior seal try to pull the teeth (vertically ) away from the tissues . for the upper teeth you pull the denture down and for the lower(mandibular) teeth you pull the denture upwards from the incisors .

For the posterior retention you place your fingers behind the anterior teeth and you try to flip the denture breaking the seal posteriorly. apply pressure behind the teeth so you have to check the resistance to posterior dislodgment of the denture , there has to be some kind of resistance .if there was no resistance then the denture will drop down upon function , you have to get the experience with time to diagnose the problem (find out the reason ) why the denture is not retentive .

If its not retentive anteriorly it might be overextended , underextended , overly contoured ,thickness …. These are all reasons for lack of retention.

Lack of posterior retention could be due to improperly carved post dam , improperly located post dam , over extension in the posterior flanges there can be so many reasons .

(Over extension in post dam) If the denture is extended beyond the post dam it will not be retentive because the area behind the post dam is actually mobile ,so whenever there is movement the denture will drop or its under extended there will be no posterior seal and post dam is not included , this is another reason for lack of posterior retention .

So there are so many reasons , you have to be able to identify , if you suspect it’s the post dam , there is an **indelible** pencil we use it to draw a line in the palate and check the extension , if the denture is not retentive you have to check for another reason for the lack of retention .

Repeat the whole thing for the mandibular denture , finally check the old flanges and retention , if you want to check the posterior retention for the denture press your fingers behind the anterior teeth and try to flip the denture anteriorly there should be resistance from the posterior section (less resistance than the upper maxillary denture because the upper has post dam area , palate "more retentive structures" while in lower denture the seal is broken with the presence of the tongue) but if you extend the denture properly and have done the border molding properly and the impressions were correct then you can achieve some kind of retention .

Finally after checking the fitting surface and the peripheries ,check the occlusion (so you check the occlusion at last ,you don’t put the denture and do selective grinding at first ) because the denture might not be properly seated so you check the occlusion at the end .

Insert both dentures and ask the patient to bite bilaterally on cotton rolls , the patient should bite forcefully around 1 minute , do compression on dentures in place and then use articulating paper , and check the contact .

Ideally after doing the laboratory round , if everything goes well ,the relationship was correct , then there should be minimal occlusal inaccuracy that you have to adjust intra orally , but sometimes you might be surprised even if you did lab remount the dentures can end up having severe occlusal inaccuracy , as a routine procedure you should do clinical remount , first of all ,because intra orally its very hard to adjust occlusion if the patient have occlusal inaccuracy , you cant ask the patient to do proper lateral movement , or proper protrusive movement ,there are so many obstucles : the denture bases might be shifting , tissues might be distorted , the patient might bite in different ways every time you try to use articulating paper , the presence of saliva ,lack of visibility is also another problem ,its very time consuming to do selective grinding intra orally ,there is also psychological factors : if the patient feels the you're struggling with adjusting the occlusion inside his mouth at the time of denture insertion , he/she might feel the denture is not constructed properly. but if you do the clinical remount and the adjustment infront of the patient while he/she is seated ,clinical remount does not take that long time , the patient would feel that this is a routine procedure , its normal , you're just doing steps that you usually do .

Not all dentures require occlusal (clinical ) remount but clinically you have to know how to do it .

Remember that the problem is that we no longer have casts to locate the dentures on the articulator and we don’t need casts we only need to mount the dentures of the articulator , master casts were destroyed at the time of denture retrieval .

To do the clinical remount , in the last step after clinical grinding in lab mount we took the maxillary denture and there was a plaster on the occlusal table , we took an imprint then this imprint is going to help us to locate the maxillary denture at the articulator in the right inclination , place a wet gauze or cotton rolls in the undercuts in the fitting surface ,again we don’t need a cast , we just need something to hold the dentures on the articulator .then you do the upper mounting for the upper denture on the articulator , then register the occlusal relationship between the maxillary and the mandibular dentures intra orally , what happens is that if the resin Occlusal discrepancy, mainly while we do clinical remount, when there is discrepancy between the centric relation and the centric occlusion (meaning that a completely edentulous patient has lost the horizontal and vertical relationship and you by constructing the dentures have recreated the relationship inside the patients mouth ) so we did the centric occlusion or the maximum intercuspation on the most retruded contact position (or centric relation position) because it’s the only reproducible position .if you ask the patient to close their teeth together they bite on few teeth or cusps and then they slide to maximum intercuspation (or centric occlusion) this means there shift between the centric relation and centric occlusion . your mission is to remove the premature contacts (that contact at first )so that the patient would have even contact on all cusps in the centric relation ,so that centric occlusion coincide with centric relation .the problem with making the clinical remount is that you have to ask the patient to bite lightly so that you mount the dentures on the articulator on that position which is the centric relation (currently the centric occlusion does not coincide with it ) then adjust the occlusal prematuraties until all the teeth do contact on that position .so we don’t tell the patient to bite forcefully until they occlude their teeth together you have to be able to instruct the patient to occlude slowly and only until few teeth touch each other and then the patient stops , then mount the dentures on the articulator in that position and do selective grinding until all teeth occlude at that position (centric relation) . you can use different types of bite registration materials , you can use silicon, aluminum reinforced wax called Alowax if its available …. Different types of materials whatever it is you have to apply it on the occulsal surface , then ask the patient to move the tongue backwards until it touches the palate trying to manipulate the mandible to go to centric relation position (most retruded position ) then ask the patient to stop once they feel their teeth approach each other or the first contact between the teeth .

The material used shouldn’t have any perforations .we shouldn’t see the occlusal tips of all teeth doing contact only the first contact (or the premature contact ) that is happening at the centric relation position we call it precentric (the relation).because it’s a centric relation but without FULL occlusal contact . to make sure that you have recorded the precentric relationship there should be a thickness of the material on **most** of the teeth , there shouldn’t be any perforations of the material.

So you ask the patient to stop once they feel that the teeth are touching, we already did mounting on the upper , you have to do the same thing place a wet gauze(cotton rolls) on the fitting surface and then mount the lower denture on the articulator . **the reason of putting a wet gauze** is to not let the plaster enter the undercuts of the denture which would be hard to separate later on and basically we don’t need an accurate reproduction for the fitting surface , it doesn’t matter if there is a wet gauze on the fitting surface as long as the dentures don’t move , after mounting remove the occlusal(bite) registration material in between the teeth , the pin does not mean anything at this stage .then do selective grinding , (the same principles of the lab remount) first do the centric relationship , centric occlusion, then lateral movements, protrusive movement.(you can take a protrusive record to make sure that your relationship is accurate ).

Do selective grinding using thickness of articulating paper with gradual transition from thicker ones to thinner ones .do selective grinding for centric relation , occlusion, at the beginning, until you achieve even contacts on posterior teeth and no contact on anterior teeth , positive overbite and overjet , then do the lateral movement , working side contacts …..(explained earlier in lecture #12).

There should be also smooth excursive Movement from centric occlusion to lateral movement (there should be an easy slide between the movements protrusive , and lateral ).

After you finish , take the dentures out of the articulator , you can use a very quick set plaster of paris other than the one we usually use ,to facilitate the setting, to be able to complete the whole procedure within a short time( we finished occlusion) .then evaluate phonetics (ask patient to say certain letters ) at this stage if the patient is not really convenient or comfortable with the esthetics or the way they pronounce the letters its not a problem , esp. if they are first time denture wearers its very hard to adjust the phonetics with the new dentures , you should leave phonetic adjustment to post insertion .

Give the patient some time to get used to the new dentures , then at the time of review appointment if the patient still pronounce certain letters incorrect ,for example the letters F and V are all about the length of upper incisors ,the letter S also refers to certain factors ,every letter has specific references(factors) ,could be bilabial , dentolabial , tongue with palate ………(in fourth year we will take a lecture of phonetics about each letter ).

Then check esthetics , patient should be satisfied give him/her the chance to object on the major esthetic problems for example some patients like to have dentures with the teeth a bit wear , or with some notches ( a more natural appearance ).

If you have done so many modifications on the polished surface or borders, repolish the borders ,initially start with stones then with acrylic burs then use stones with different shapes , the final polish you can do it with felt cloth wheel , its disposable in the lab, then give the patient verbal and written instructions for using the dentures also oral and denture hygiene instructions , not to wear the denture at night ,take it out and clean it after each and every meal with brush and soap , not to use tooth paste because its abrasive to the denture , not to use hot water because it might change the color of the denture , always clean it and remove the stains so that if it falls it doesn’t break , tell the patient that chewing and speaking the first week will be hard , ask the patient to bite small lumps bilaterally on both sides until they master eating on posterior teeth then they can incise on the anterior teeth ,tell him /her there will be excessive salivation first week , phonetics and eating will be difficult but they have to give the denture some time , to get adapted to it .

A part of the retention of the denture is dependent of the physiological adaptation of the tissues surrounding the dentures .patients might feel dentures are not retentive first week unless there is an obvious reason(the borders,……) that you have to eliminate but it could be physiological adaptation of the denture with the tissues.

-Those instructions should be given to the patient on a written paper because they usually forget .

You also have warn the patient that there will be some areas that will cause ulceration or excessive pressure that you cant locate at the time of insertion , they will only be evident after using , eating , speaking with the denture , tell them that they must come for a review appointment , if you just send them home with/without the instructions they will think that you have done a mistake if you **didn’t** tell them that its abnormal not to have problems ,because all the problems will be evident **after** using the denture as said before .

The Review appointment is to locate certain areas that cause discomfort or problems , if the denture is very painful for the patient in certain areas or causing ulceration which the patient cant tolerate anymore they can take it out and not use it for a whole week and wear it the day before they come to your clinic for the review appointment so you could locate the areas of discomfort and trim or relieve them whatever the reason is.

The review appointment is mandatory for the patient , 99% of complete denture patients come back for review appointment not only once , but maybe several times .

This is a review of the things you do at the time of insertion .

At review appointment you do differential diagnosis for the post insertion problems, you have to see or have the patient tell you where the problem is exactly , use pressure indicating paste for the borders or the pressure areas ,indelible markers ,articulating paper for occlusion (don’t do it haphazardly), listen to the patients complains (when,where,how long, does it get worse during the day ) put in mind there are limited number of problems **{can be:** denture base, pressure area, undercut that has done irritation , occlusion interferences esp. protrusion because it’s the most difficult to achieve balanced occlusion with , it can be retention there are certain reasons for lack of retention , vertical dimensions , allergies and infections (very few),tooth position is too late to do any adjustments for ( you can do but you have to trim off all the teeth and retake the occlusal relationship and reflask…..its along story, so its too late ) , if there is an overextended or pressure area they don’t place the pressure indicating paste on all of the fitting surface they only place it on the ulcerated area (for example) you place it expecting the pressure indicating paste to be wiped off you trim it if the patient feels relieved from the pain then that’s it .

There are certain areas that cause discomfort for the patient (labial frenum , undercuts next to hamular notches) .

 certain reasons of lack of retention that you have to identify.

 occlusal vertical dimension if the vertical dimension is excessive the patient would tell you that they feel pain that is aggravated (or becomes worse ) during the day because they feel there no free way space , while if there is insufficient vertical dimensional of occlusion the patient might complain of difficulty in chewing as if they have no power they have to move long distances so that they can chew ).

Allergy: is rare , in this case there will be a generalized inflammation which can be a hygienic problem most probably .

Tooth position: the patient will tell you that the denture is rocking if the posterior teeth are placed too far buccaly or lingually

Cheek and lip biting might be one of the problems , the patient might complain of cheek biting mainly due to lack of overjet between the upper and lower teeth.

**The Dr. said that she will not be asking about post insertion problems but you have to know that there are certain areas that are commonly present in the maxillary denture that are common to cause irritation next to hamular notches , labial frenum ,philtrum ,midline raphe , zygomatic implant , in the lower denture patient** **complains of redness or whitish ulcer next to labial frenum, lingual frenum, retromylohyoid ,overextensions cause soreness and denture dislodgment or buccal shelf overextension** .