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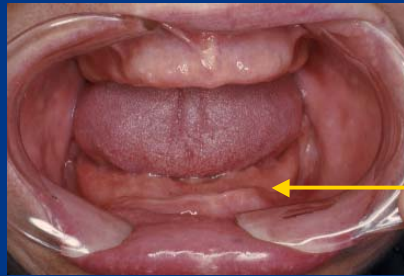
Review for the two implant retained overdenture

Now that you have all had more experience in clinic, you should be able to both retain many of the relevant points better and place them in context better as well.

A Review Complete Denture Two Implant Supported Overdenture Treatment



Source: Jeff Shotwell, University of Michigan, 2008



Getting From Here



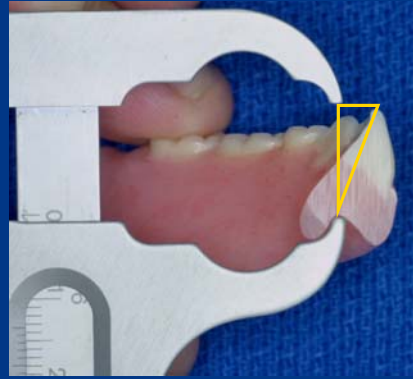
To Here



Source: Jeff Shotwell, University of Michigan, 2008

This is a cut away denture for clarity. Measure the existing denture the patient is wearing. We want to know what the distance is from the crest of the ridge in the anterior area to the height of the occlusal plane.

Having had the patient wear a provisional denture for some time helps us in this area a great deal.



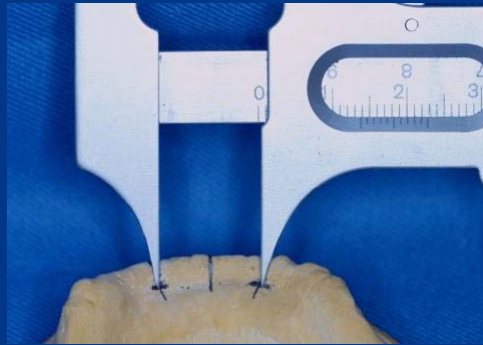
Source: Jeff Shotwell, University of Michigan, 2008

In addition to taking the measurement mentioned in the previous image, we obtain a study model and make a radiographic template with markers in the proposed position of the implants

To Construct The Template, We Position Two Stainless Steel Markers 10mm in Length In A Triad® Record Base

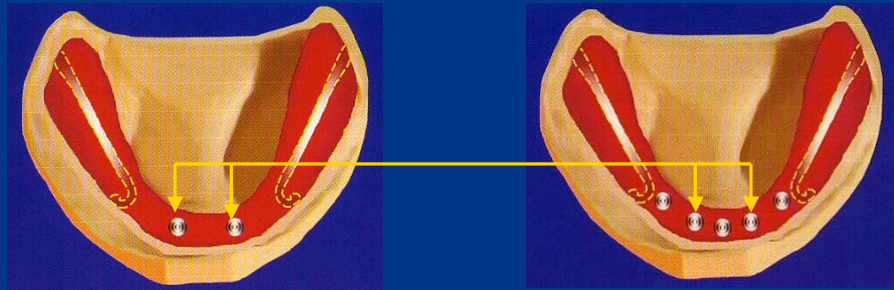


Source: Jeff Shotwell, University of Michigan, 2008

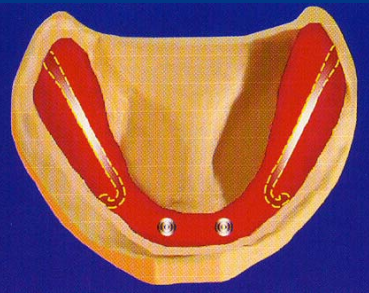


Using our study cast, we mark the midline and then measure laterally 7-8mm each way from the midline for the proposed location of our implants. Why pick this distance and in this location?

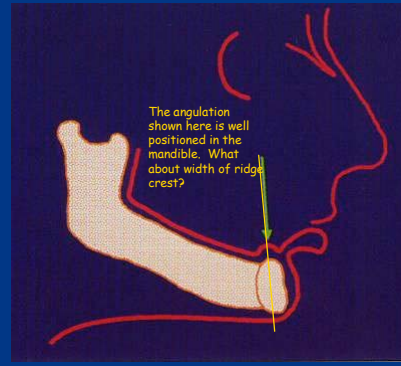
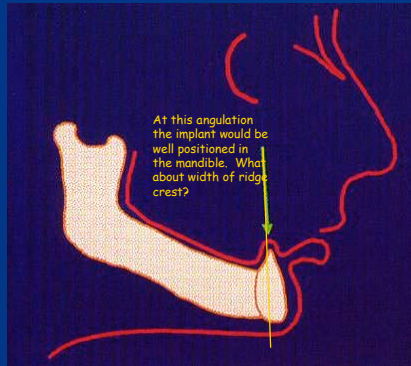
Source: Jeff Shotwell, University of Michigan, 2008



With this configuration, should the patient ever decide to have more implants placed, the position is ideal for 5 lower implants which could support a fixed lower appliance.

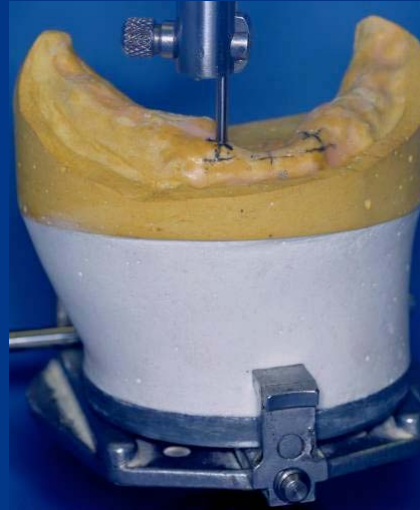


If the location of the implants is in the area previously occupied by the cuspid teeth, we may not have space for three implants between them. We may also not have any room distal to the implants without interference from the location of the mental foramen.



In addition to the mesial-lateral position of the implants, we are also concerned with the angulation of the implants. As shown in the images above, we are also concerned with the width of the alveolar ridge in the proposed implant location.

Lower cast mounted in the table of a dental surveyor. The orientation and location of the proposed implant location has been determined. Here we have a 2.0mm drill blank in the dental surveyor positioned over the proposed implant site. Our next step is the fabrication of a record base to house our radiographic markers.

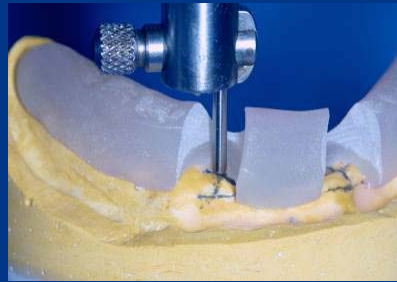


Source: Jeff Shotwell, University of Michigan, 2008



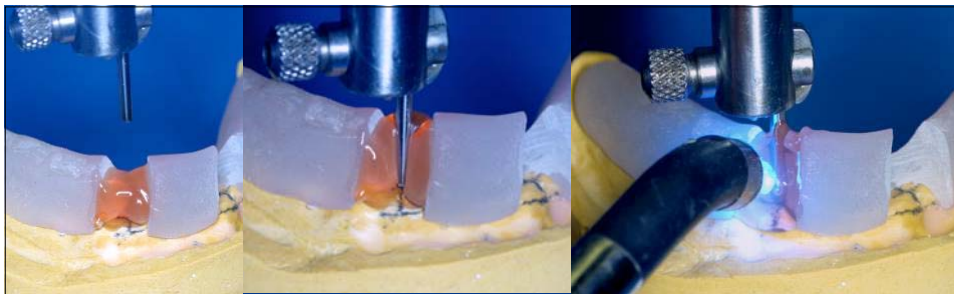
Triad® material is used to make a record base and we then cut out an area in the area of the proposed implant placement. We will use Triad Gel® material to refine this area of our radiographic guide.

Source: Jeff Shotwell, University of Michigan, 2008



The model is repositioned on the surveyor table and the drill blank positioned as it was before in the area of the proposed implant location.

Source: Jeff Shotwell, University of Michigan, 2008



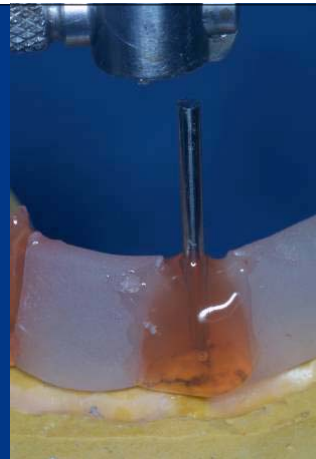
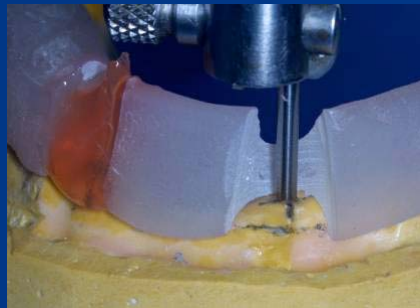
The sequence above shows placement of Triad Gel® material in the cut out spaces in the record base on the left image. The center image shows the placement of the drill blank in the uncured gel and the image on the right shows the curing of the gel around the drill blank. Remember: location, location location

Source: Jeff Shotwell, University of Michigan, 2008



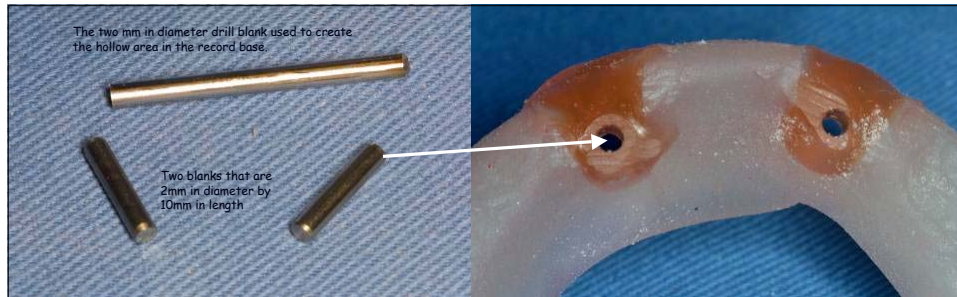
We loosen the knurled nut holding the drill blank in the surveyor, lift the surveyor vertical spindle and then take pliers and remove the drill blank from the cured Triad Gel®

Source: Jeff Shotwell, University of Michigan, 2008



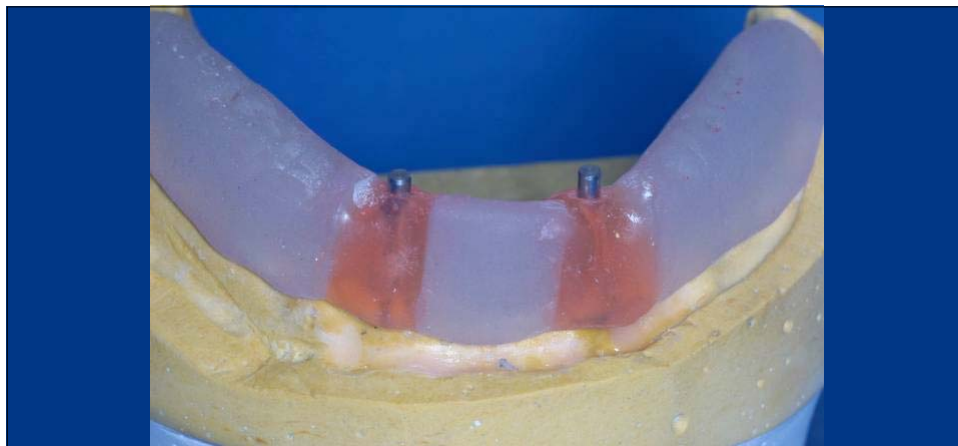
We follow the same procedure for the second implant location.

Source: Jeff Shotwell, University of Michigan, 2008



Having made the two hollow areas in the record base, we will remove the drill blank from the second proposed implant location and insert two dowels that are 2mm in diameter by 10mm long. These will serve as markers for our pre operative radiographic assessment.

Source: Jeff Shotwell, University of Michigan, 2008



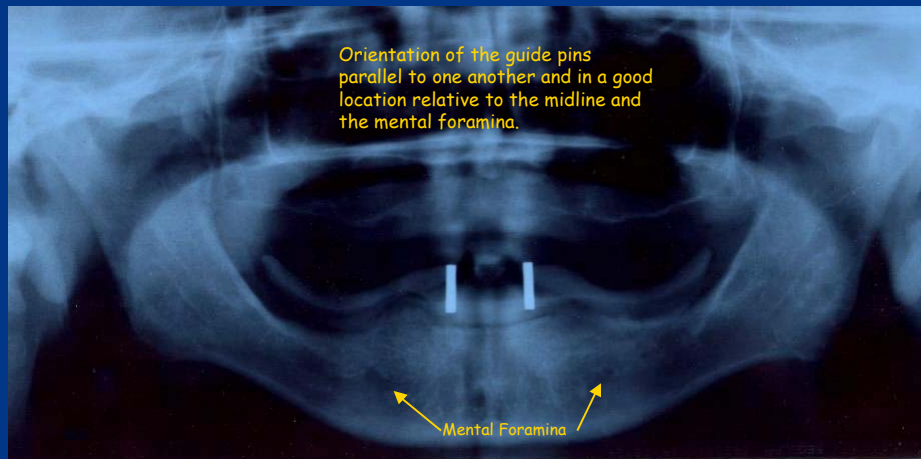
This radiographic guide now has two markers of a known length in the position **and the orientation** of our proposed implant location. Let's take a radiographic and see how it all lines up prior to making surgical guides.

Source: Jeff Shotwell, University of Michigan, 2008



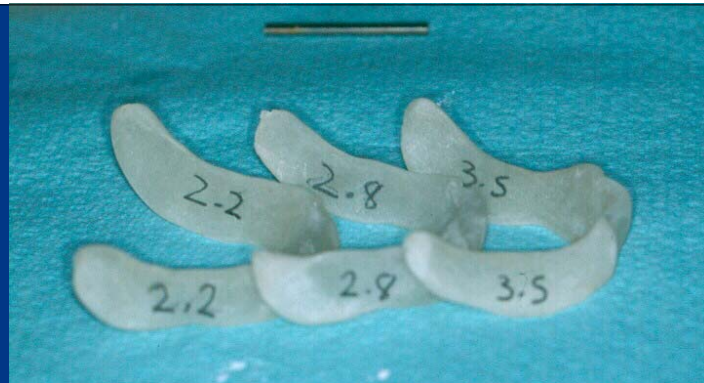
In this case we were working with mounted models and could create a template that the patient could bite on to stabilize. Movement of the template during the taking of the radiograph is a problem.

Source: Jeff Shotwell, University of Michigan, 2008



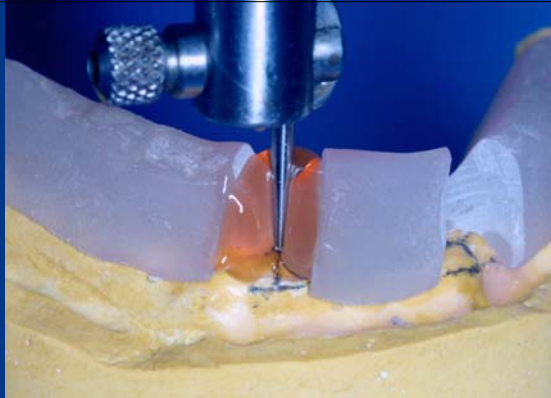


For the lower overdentures, we take a lateral cephalogram as well as a panorex film to verify the location and orientation of the proposed implant placement. Once this has been verified to line up well, we can proceed with the fabrication of the surgical guides.



Surgical guides are made in the same manner that the radiographic guide was made. The 2.2mm diameter drill blank and the 2.8mm diameter drill blank fit in the surveyor just like any tool you would use in the surveyor.

Source: Jeff Shotwell, University of Michigan, 2008



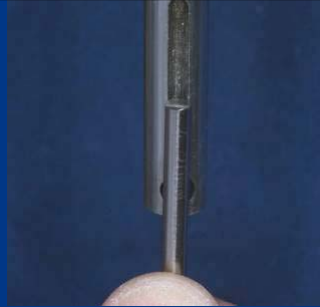
In the case of the drill guides, we do not cover the labial aspect of the drill blank. We cure the material and use an acrylic bur to open the guide to the buccal for access during the surgical procedure.

Source: Jeff Shotwell, University of Michigan, 2008

Once our drill blanks go above 3.0mm in diameter, they will no longer fit in the dental surveyor. We need to use an alternate means of stabilizing and holding the drill blank.



Source: Jeff Shotwell, University of Michigan, 2008



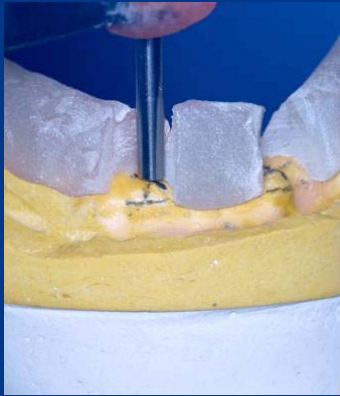
By removing the knurled nut and holding device, we may position larger drill blanks along the slot in the vertical spindle of the dental surveyor. Now we need to hold and stabilize the drill blank in this position.

Source: Jeff Shotwell, University of Michigan, 2008

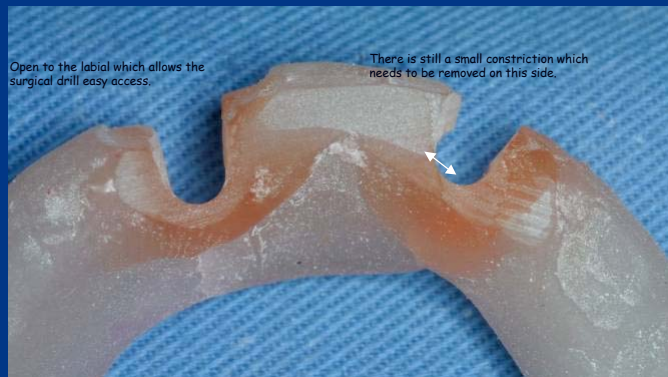
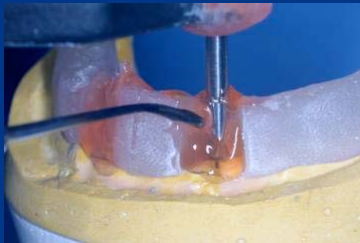


The desk has modified spring clamps to hold the drill blanks larger than 3mm in diameter firmly against the slot in the surveyor spindle.

Source: Jeff Shotwell, University of Michigan, 2008



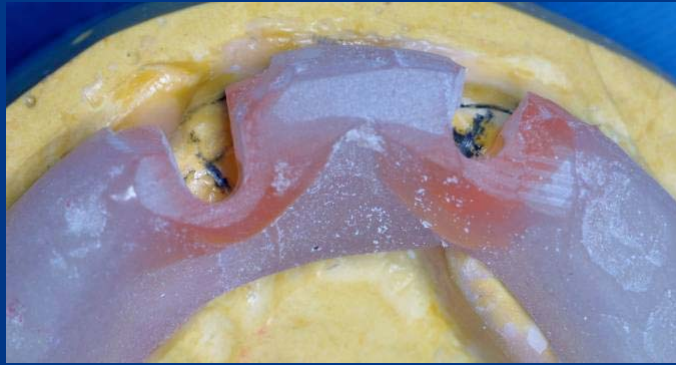
Source: Jeff Shotwell, University of Michigan, 2008



Open to the labial which allows the surgical drill easy access.

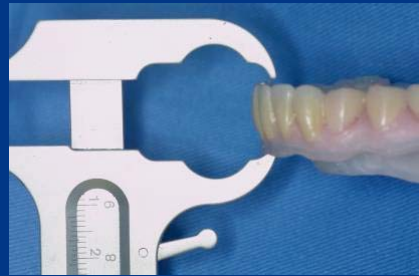
There is still a small constriction which needs to be removed on this side.

Source: Jeff Shotwell, University of Michigan, 2008

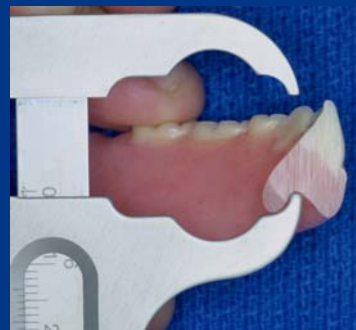


When the guides are completed, they are placed on the model to confirm that the position of the guide is centered on the proposed implant site.

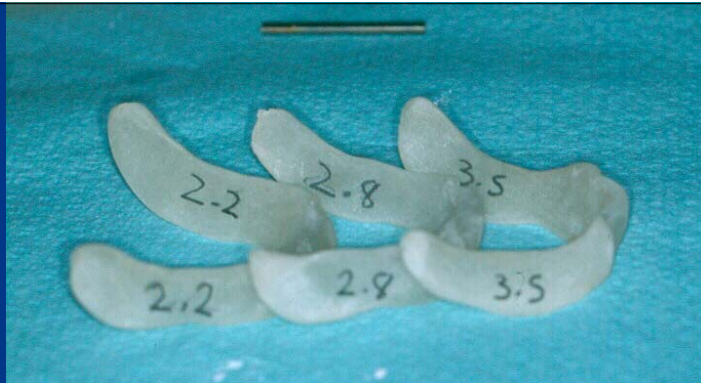
Source: Jeff Shotwell, University of Michigan, 2008



Don't forget that a significant part of the process is knowing where the plane of occlusion will be in your lower denture. Don't lose sight of the need for this information.



Source: Jeff Shotwell, University of Michigan, 2008



The two surgical guides on the left were made by inserting the drill blanks in the surveyor as any surveyor tool would be placed. The guide on the right used the clamp to hold the 3.5mm drill blank.

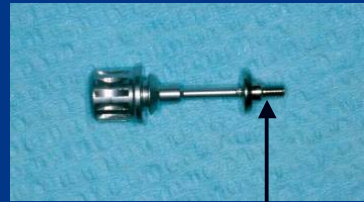
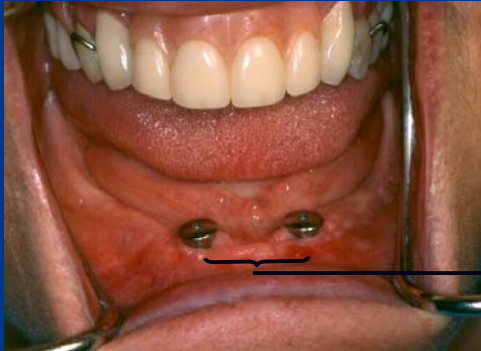
The guides are delivered to the surgeon who places the implants. Three months later having followed the patient and placed soft liner in the lower denture over and around the implant healing caps we are ready for the next phase of our treatment with the patient

Source: Jeff Shotwell, University of Michigan, 2008



Using the surgical guides gives us two implants placed in the area of the lateral incisors. The implants are properly spaced and oriented parallel with one another.

Source: Jeff Shotwell, University of Michigan, 2008



The cover screws placed at the time of surgery are removed with a screwdriver designed specifically for the purpose. This procedure is performed three months following the placement of the implants.

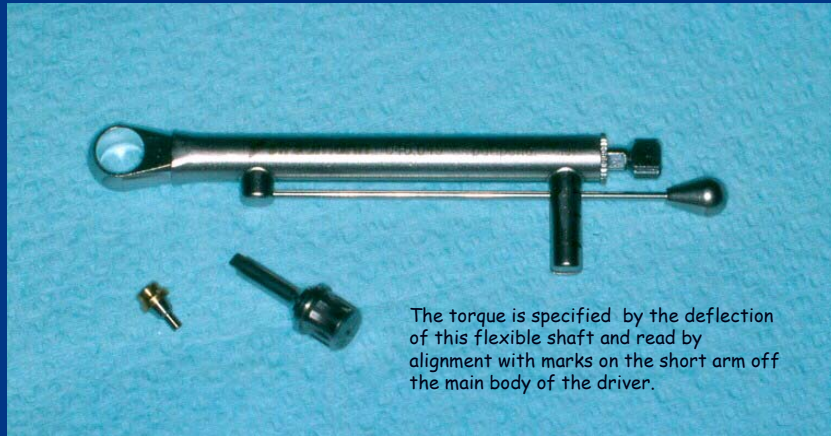
Source: Jeff Shotwell, University of Michigan, 2008



The driver for the retentive anchor is triangular at the end. This driver fits into the top of the retentive anchor circled in the image at the left.



Source: Jeff Shotwell, University of Michigan, 2008



The torque is specified by the deflection of this flexible shaft and read by alignment with marks on the short arm of the driver.

The driver is placed in a torque wrench to place the retentive anchor in the implant at a specified torque setting specified by the manufacturer. The specified torque is such that the anchor will not come loose in function.

Source: Jeff Shotwell, University of Michigan, 2008

A composite image showing the torque driver components on the left and a clinical application on the right. The clinical application shows a person's mouth with a dental implant being tightened using the torque driver. The text indicates the torque setting is 35Ncm.

Torque driver components

Abutment being tightened to 35Ncm

Source: Jeff Shotwell, University of Michigan, 2008



The deflection of the flexible shaft is seen close up. We must "flex" the torque indicator to the third mark indicating 35Ncm of torque applied to the abutment.

Source: Jeff Shotwell, University of Michigan, 2008

The retentive anchors once placed will be used to retain the denture. The lower image is an occlusal view showing the alignment of the retentive anchors and the implants.



Source: Jeff Shotwell, University of Michigan, 2008



The silver colored cap is the retainer housing for polymer inserts which provide retention for the denture. The stainless steel cap is secured in the denture using self cure acrylic.

Source: Jeff Shotwell, University of Michigan, 2008



The inner aspect of the lower denture is relieved to allow a passive fit over the retentive anchors. The denture is tried in the patient's mouth to ensure a passive fit. The retentive caps will then be "picked up" in the mouth using self cure acrylic.

Source: Jeff Shotwell, University of Michigan, 2008



When the self cure acrylic is placed in the recesses in the denture, allow it to get a little "stiff" (it loses its gloss) and then place it in the mouth and have the patient close in MIP holding for approximately 5 minutes.

Source: Jeff Shotwell, University of Michigan, 2008



The black colored insert is used to position the stainless steel cap on the retentive anchors for the purpose of "pick up" in the denture. The image at the right shows the retentive anchors in place in the denture. The other inserts shown at the left provide differing amounts of retention. The white neoprene gasket shown at the left protects from having the self cure acrylic "lock on" the implant / abutment in the mouth.

Source: Jeff Shotwell, University of Michigan, 2008

The patient with
the retentive
anchors placed in
the denture.



Source: Jeff Shotwell, University of Michigan, 2008

Patient #2

Upper Partial Denture

Lower Arch Down To Last Tooth
Which Needs To Be Extracted

Choices?

Conventional Denture

Implant Retained Overdenture

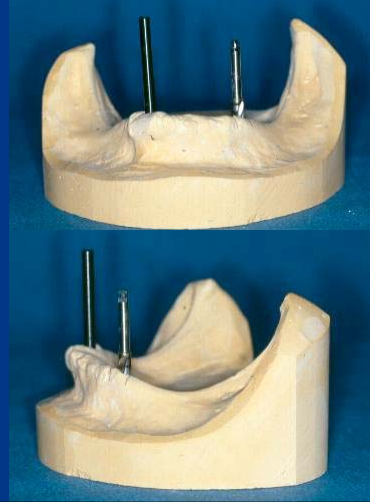


Source: Jeff Shotwell, University of Michigan, 2008

The images at the right show the clinical appearance of the ridge with the last remaining tooth.

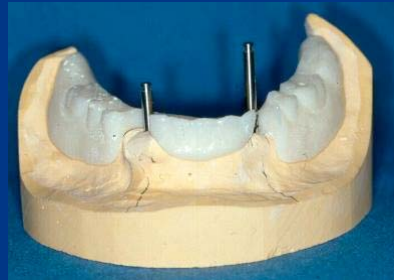


The next two images show a cast of the lower arch with the tooth removed and drill guides placed in the proposed placement sites of the two implants. Note that the guides are parallel to one another and perpendicular to the plane of occlusion.



Source: Jeff Shotwell, University of Michigan, 2008

A surgical guide is fabricated from self curing acrylic or Triad® material. The drill guide surrounds the lingual half of the drill. This allows the surgeon easy access during surgery for visibility as well as irrigation. The images shown here do not yet have the material adapted to the lingual half of the drill guides.



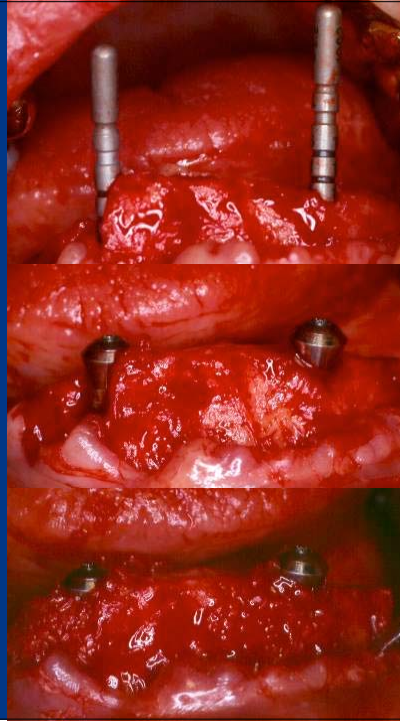
Source: Jeff Shotwell, University of Michigan, 2008

The surgical images seen at the right show the implant sites first with the depth guides in place at the top image.

The center image shows the implants in place with their healing screws in place.

The bottom image shows the surgical site just prior to closure with bone graft material in place around the defect at the labial of the implant in the area of #27.

Source: Jeff Shotwell, University of Michigan, 2008



The ridge after closure and after a week to 10 days of healing. The lower temporary denture was relined with tru-soft temporary liner at that time.

Source: Jeff Shotwell, University of Michigan, 2008





The image above shows the patient after two weeks of healing. The images at the right show the patient's ridge after three months of healing. The retentive anchors will now be placed in the implants.



Source: Jeff Shotwell, University of Michigan, 2008



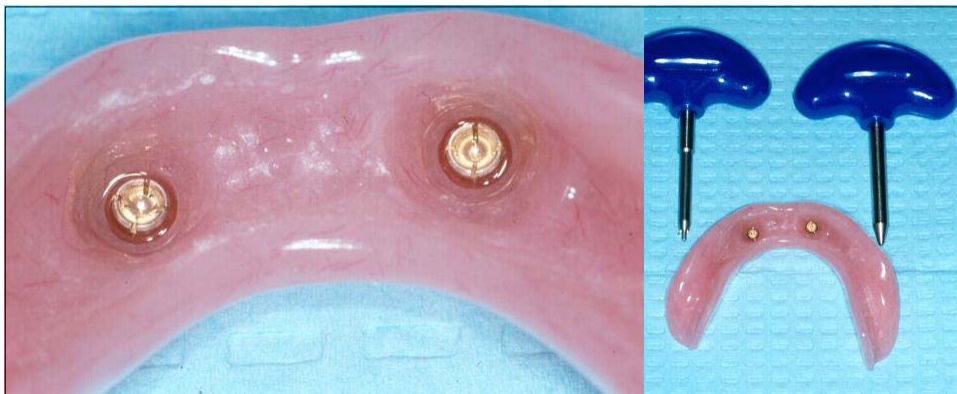
The image at the right shows a temporary denture relined with fresh tru-soft around the implant retentive anchors. The denture at the right isn't from the same patient as the image at the left, but the treatment was the same.

Source: Jeff Shotwell, University of Michigan, 2008



The completed denture along with the temporary denture are shown in the left image. The new denture in place shows the posterior teeth set in cross-bite.

Source: Jeff Shotwell, University of Michigan, 2008



Close up image of the retentive caps in the completed denture. Note the polymer rings in place around the gold retentive cylinders. The image at the right shows adjusting tools for the retentive clips.

Source: Jeff Shotwell, University of Michigan, 2008

You can see that we have little acrylic over the retentive anchor caps especially on the patient's right side.

The initial height of the implants created a situation in which there was minimal acrylic covering the retentive caps in the finished denture.

At the time of implant placement, if more of the residual ridge had been reduced we would not have the situation seen above. This minimal acrylic coverage of the retentive anchors causes maintenance issues.

Source: Jeff Shotwell, University of Michigan, 2008

A brief review of the steps taken to treat the patient.

Source: Jeff Shotwell, University of Michigan, 2008