

Implant-retained Overdentures

Treatment planning through clinical steps



Andy Stevenson D.D.S.
April 3, 2024



TREATMENT OPTIONS



CONVENTIONAL DENTURE



OVERDENTURE



FIXED, FULL-ARCH
PROSTHESIS (FFP, FPX)



FP3 VERSUS OVERDENTURE



TREATMENT OPTIONS



CONVENTIONAL DENTURE



OVERDENTURE



FIXED, FULL-ARCH
PROSTHESIS (FFP, FPX)





RESEARCH

- “...maxillary dentures retained by two implants provide significant short-term improvement over conventional dentures in oral- and health-related quality of life.”
 - Zembic A, Wismeijer D. Patient-reported outcomes of maxillary implant-supported overdentures compared with conventional dentures. *Clin. Oral Impl. Res.* 25, 2014, 441-450.
- “Among all patients who had similar numbers of implants placed, those who received an implant overdenture were less satisfied and had lower [oral health-related quality of life] than the patients who had a fixed prosthesis.”
 - Brennan et al. Patient satisfaction and Oral Health-Related Quality of Life Outcomes of Implant Overdentures and Fixed Complete Dentures. *Int. Journal of Oral & Maxillofacial Implants.* 24, 2009, 791-793.



RESEARCH

- “The cumulative rates for “prosthesis free of minor complications” at 5- and 10-years were 60.5% and 8.9% respectively.”
- “The cumulative rates for “prosthesis free of major technical complications” at 5- and 10-years were 85.5% and 30.1%, respectively.”
 - Papaspyridakos, et al. Technical Complications and Prosthesis Survival Rates with Implant-Supported Fixed Complete Dental Prostheses: A Retrospective Study with 1- to 12-Year Follow-Up. *Journal of Prosthodontics*. 29, 2020, 3-11.

TREATMENT OPTIONS



CONVENTIONAL DENTURE



OVERDENTURE



FIXED, FULL-ARCH
PROSTHESIS (FFP, FPX)



TREATMENT PLANNING



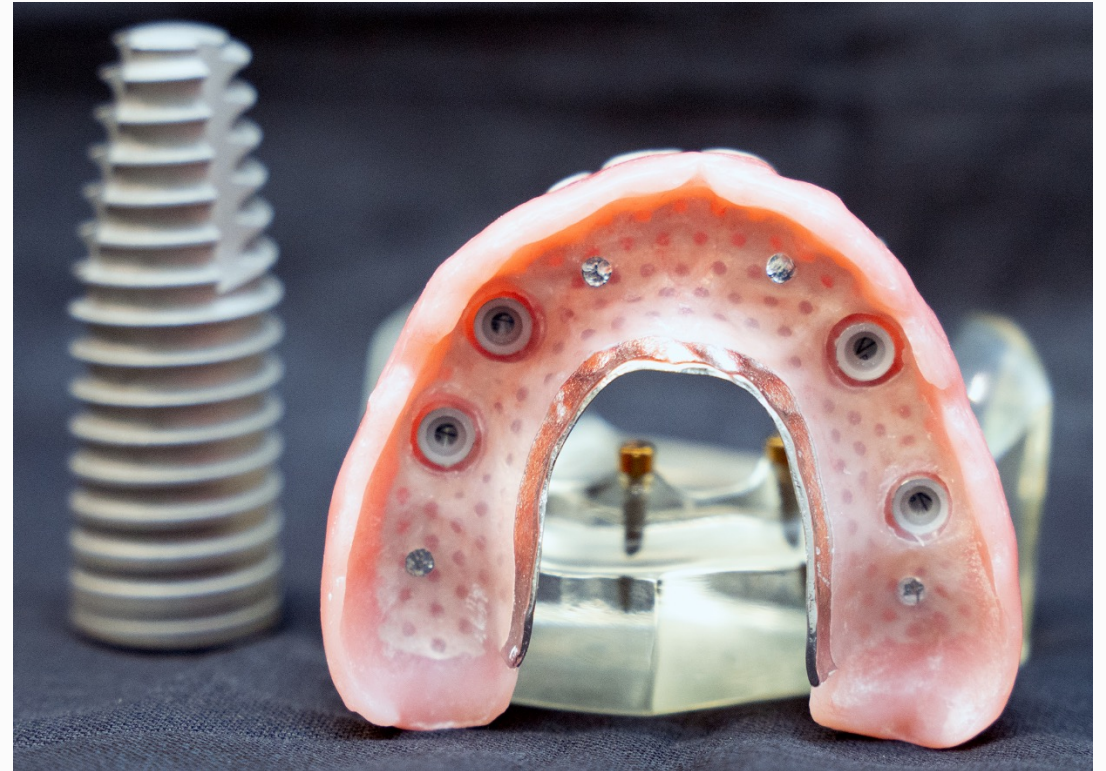
OVERDENTURE PLANNING

- 10-12 mm restorative space.
- 4/4 implants arch⁻¹ is ideal.
 - 0/2 is just fine.
- As much A-P spread as possible.
- If >2 implants arch⁻¹, add metal framework in the denture.
- If >2 implants arch⁻¹, make a new denture, don't convert.



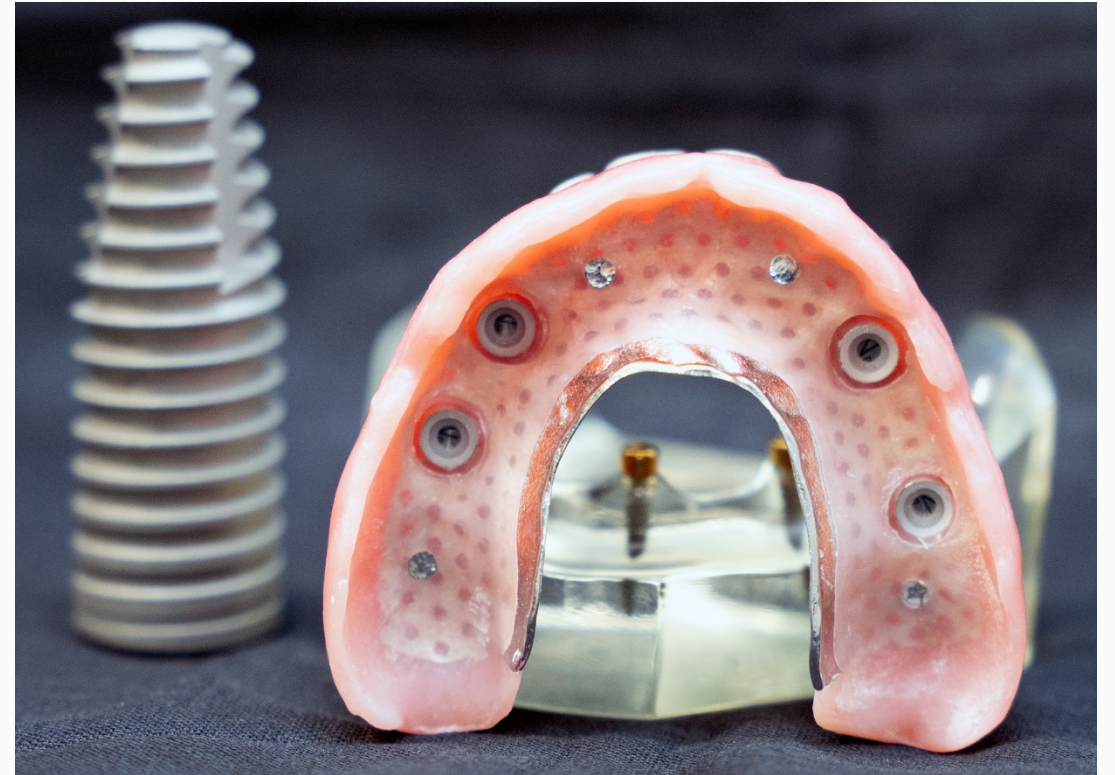
BILLING & CODING

- Implant-retained denture (D6110/D6111)
- Add metal framework (D5876)
- Semi-precision attachment (D6192)
- Semi-precision abutment (D6191)



EARLY RED FLAGS TO ADAPTATION

- Never worn a conventional denture.
- Poor adaption to a conventional denture or RPD.
- Opposing natural dentition.
- Cognitive or neuromuscular limitations.



No matter how technically excellent a removable prosthesis is, it will never overcome unrealistic patient expectations.

POST-PLACEMENT DENTURE ADJUSTMENT

- 0-2 weeks after placement.
- Modification of removable prosthesis following implant surgery (D5875).
- Aggressively relieve the area of the healing abutments.



Image from <https://www.zestdent.com/chairside-grind-bur>



Image from <https://www.zestdent.com/chairside-recess-bur>



RETENTION OPTIONS



RETENTION OPTIONS

Zest Locator



Image from <https://www.zestdent.com/locator-implant-attachment-system>

Straumann Novaloc

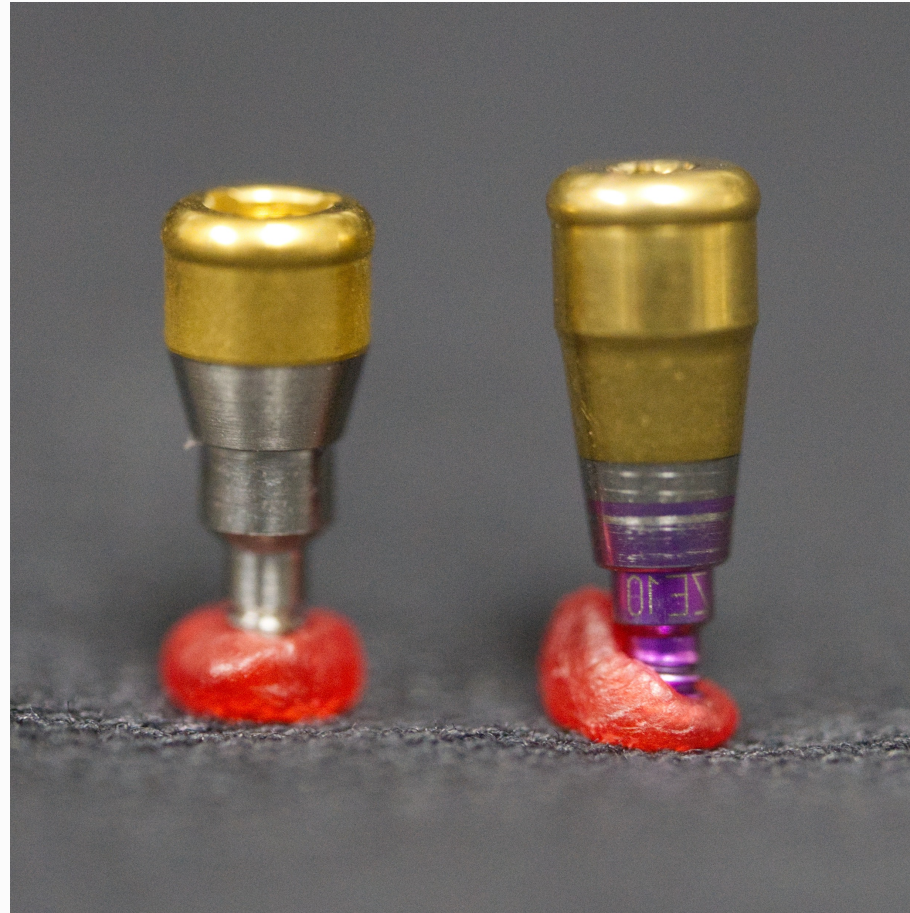
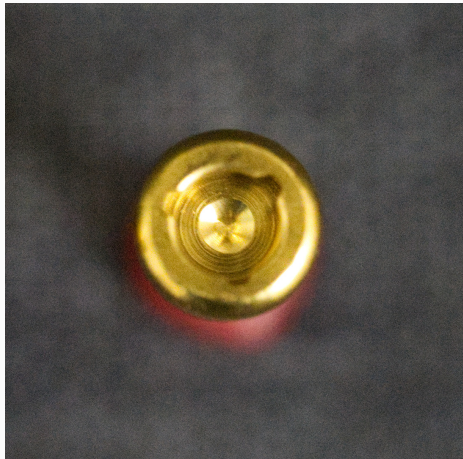


Image from <https://www.straumann.com/en/dental-professionals/products-and-solutions/implant-borne-prosthetics/products/novaloc.html>

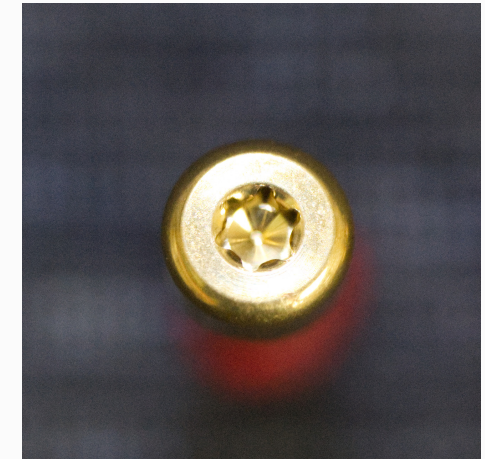


RETENTION OPTIONS ABUTMENTS

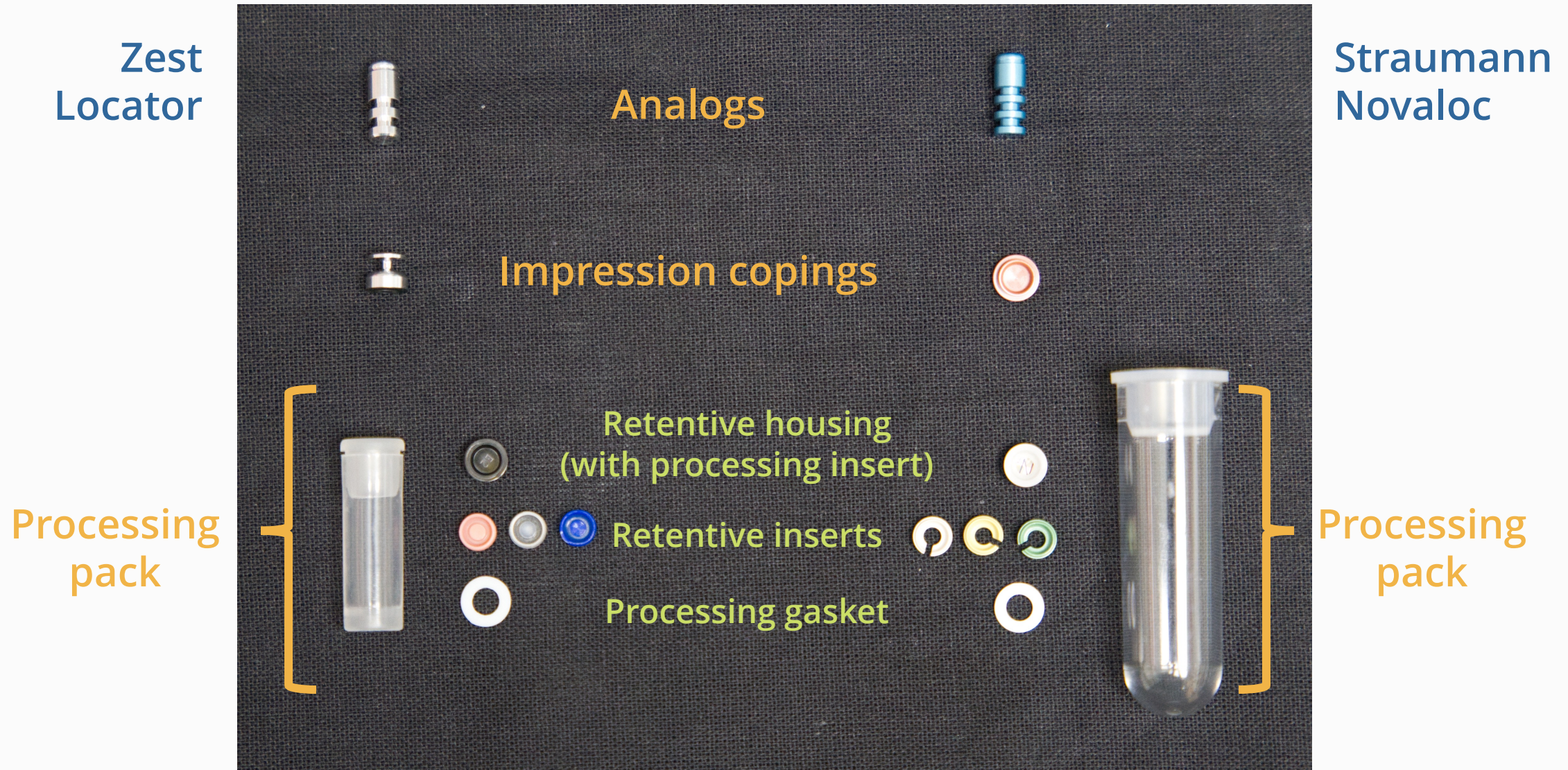
Zest
Locator



Straumann
Novaloc



RETENTION OPTIONS COMPONENTS



RETENTION OPTIONS BY THE NUMBERS

| | Implant compatibility | General insert angulation tolerance | Abutment angulation | Abutment heights | Number of retention strengths | Insert material |
|--------------------------|-----------------------|-------------------------------------|---------------------|--------------------|-------------------------------|-----------------|
| Straumann Novaloc | Straumann only* | 20° | 0°, 15° | 6 (5 on angled) | 6 | PEEK |
| Zest Locator SR | >280 | 20° | 0° | 6 | 3 | Nylon |
| Zest Locator ER | >280 | 40° | 0° | 6 | 4 | Nylon |
| Zest R-Tx | >50 | 60° | 0° | 6 | 4 | Nylon |

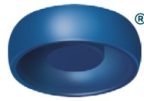


RETENTION OPTIONS INSERT STRENGTHS



Zest Locator

Standard Range



Blue Low Retention

680 g

1.5 lbs



Pink Medium Retention

1361 g

3 lbs



Clear High Retention

2268 g

5 lbs

Extended Range



Gray Zero Retention

0



Red Low Retention

680 g

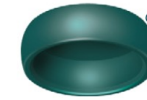
1.5 lbs



Orange Medium Retention

907 g

2 lbs

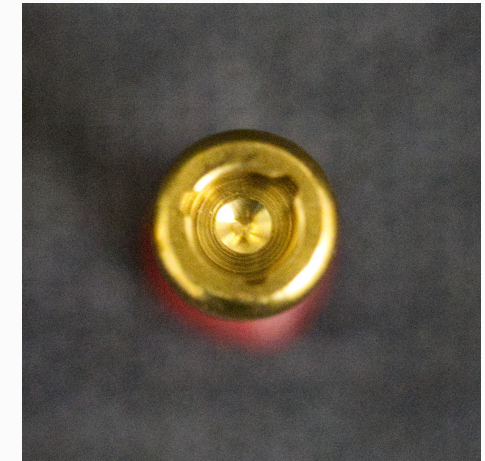


Green High Retention

1814 g

4 lbs

Image from Zest Dental: LOCATOR Brochure



Straumann Novaloc



extra light

300 g



light

750 g



medium

1200 g



strong

1650 g



extra strong

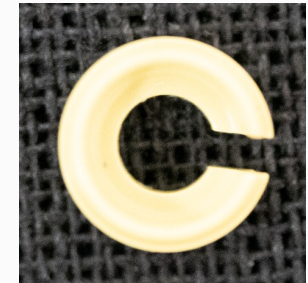
2100 g



ultra strong

2550 g

Image from Straumann: Technical information for the Novaloc Retentive System for Hybrid Dentures



RETENTION OPTIONS RETENTIVE PHYSICS

Zest Locator



Image from Zest Dental. LOCATOR Brochure



Straumann Novaloc

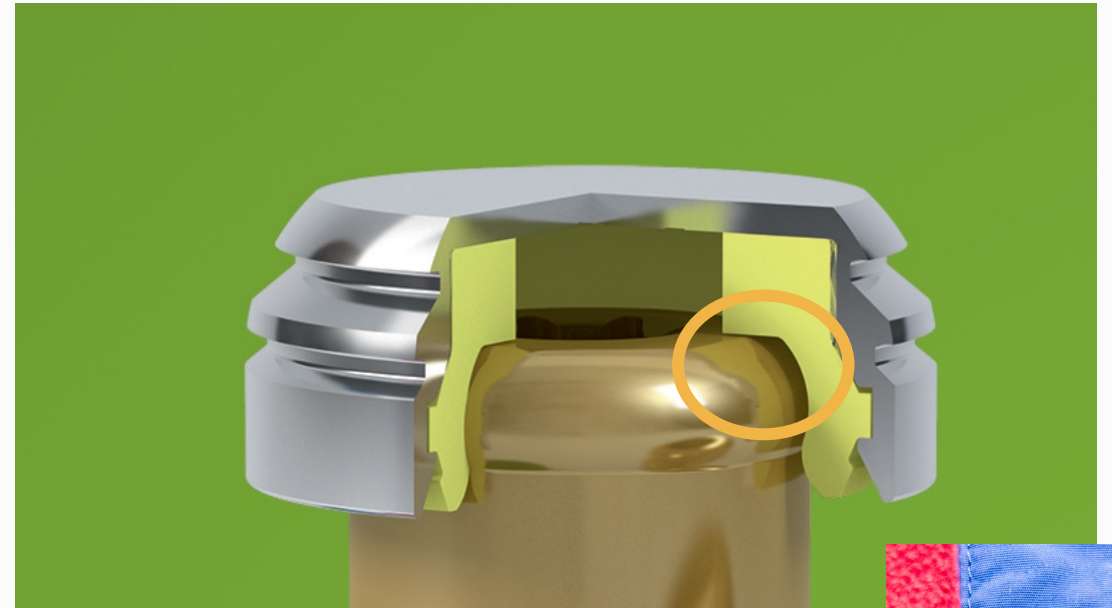
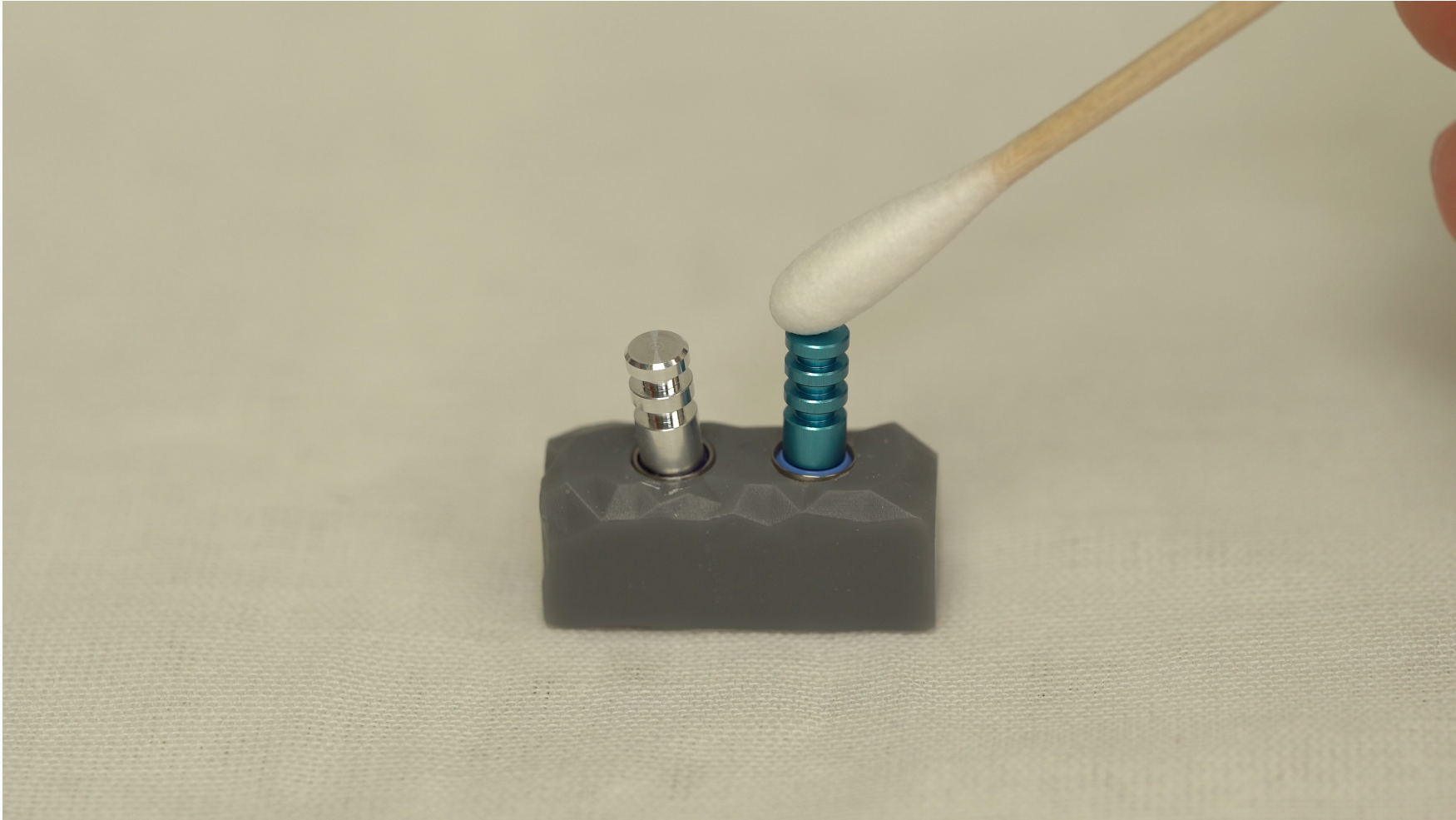


Image from Straumann: Technical information for the Novaloc Retentive System for Hybrid Dentures



RETENTION OPTIONS RETENTIVE PHYSICS



WHICH SHOULD YOU USE?

Zest Locator

- Concerns about divergence.
- Presence of a marked extension.
- Single arch, opposing natural dentition.

Straumann Novaloc

- Standard for most cases.
- Good A-P spread.



CLINICAL STEPS



VISIT 1

Initial impressions & cuff height measurements



VISIT 1: INITIAL IMPRESSIONS & CUFF HEIGHTS

- Alginate impressions
- Remove healing abutments
- Measure cuff heights
- Replace healing abutments
- Fabricate custom trays
- Order implant components custom to the patient



WHAT IS GINGIVAL CUFF HEIGHT

- How much gingiva must we traverse to raise our attachment the ideal 1.5mm above the gingiva?

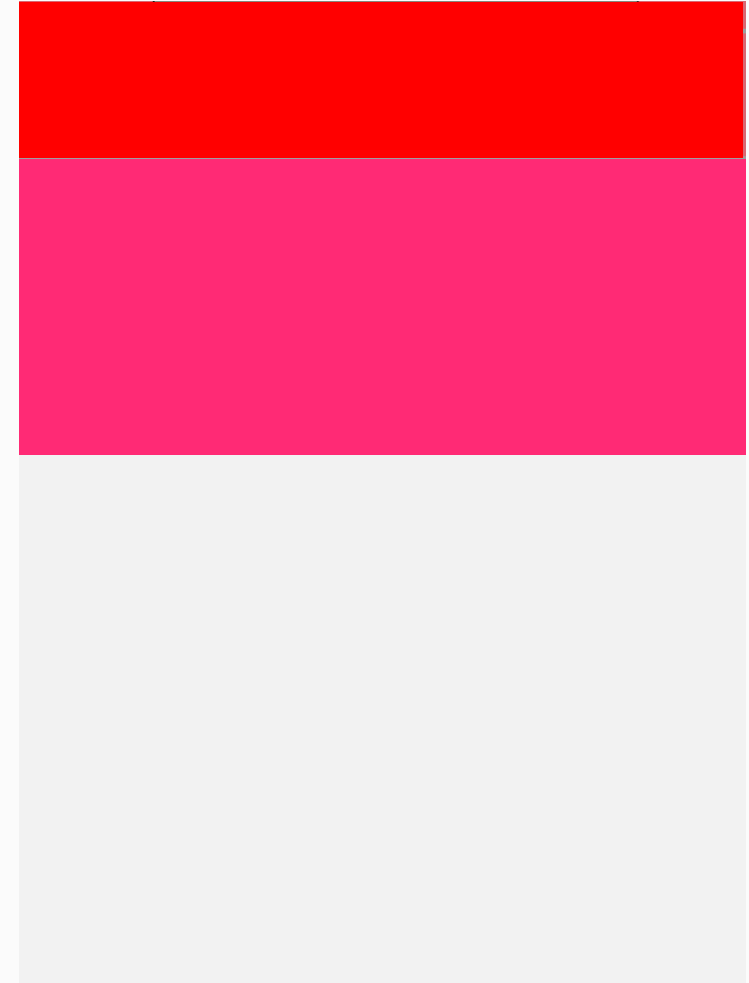


Image edited from Straumann: Technical information for the Novaloc Retentive System for Hybrid Dentures



CUFF HEIGHT MEASUREMENT TOOLS

Cuff Height Measuring Tool Kit

008MBG-IQ

\$ 99.00 ~~\$ 112.00~~

Cuff Height Measuring Tool determines exactly the height of the transmucosal route for any implant system with any connection, internal or external.

Simple to use, counting on the colors that determine and correspond to the different heights, this instrument measures the height of the tissue precisely from 0.5 to 7 mm. The kit contains a height indicator with rotating plate, a fixed rod height indicator with disposable silicone ring and a dispenser with 20 spare rings.

Instruction of Use:

- Keep the rotating plate completely unscrewed on the opposite side of the pivot.
- Insert the pivot into the system, make sure that it rests well on the base of the system.
- Hold the pivot firmly in place and turn the rotating plate clockwise until it touches the crest.
- Remove the measurer, look at corresponding color-ring to the position of the plate to determine the height.
- The height is measured in millimeters
- When a colored ring is completely covered, it is preferable to consider the color and the height immediately above.

Cat No: 008MBG-IQ

IQ IMPLANTS®
CUFF MEASURING KIT

IMPLANTS

Chat

RC PLAN NOVALOC® ABUTMENT - H 1-6MM, POM

Categories: Prosthetic Instruments, Plan Abutments

1 Add Add to saved cart

10 pieces available

Specifications Instructions for use & Details

Specifications

| | |
|-----------------|------------------------|
| Reference | 025.4646-04 |
| Sterile | No |
| Connection Type | RC (Regular CrossFit®) |
| Abutment Height | 1-6 mm |
| Angulation | Straight |
| Material | Plastic |
| Implant Line | Bone Level Implants |

Show less

All product variations

Refine 11 Products found

Sort by Ref. No. ↑

| Ref. No. ↑ | Angulation (°) | Connection Type | Abutment Height | Stock |
|--|----------------|------------------------|-----------------|-------|
| RC Novaloc® Plan Abutment - angled 15°, H 2-6mm, Type A, POM 025.0045V4 | 15° | RC (Regular CrossFit®) | 2-6 mm | 1 |



CUFF HEIGHTS MEASUREMENT CAVEATS

- There is no such thing as perfect.
- All abutments come in 1 mm height increments.
- Most platforms come in the .0 mm incremental, others .5 mm.
- Because of the bevel, Straumann tissue level implants with a 1mm gingival height are effectively equigingival.



ANGLED NOVALOC ABUTMENTS

- Cuff height measurements become more complicated.
- Engaging abutment
 - Timing of the implants becomes a factor.

| | | BL/BLT RC | | | |
|-------|------|-----------|-----------------------|-----------------------------|--------|
| Angle | 0° | 15° | | S | L |
| GH | 1 mm | 022.0052 | – | | |
| | 2 mm | 022.0053 | 022.0067/ 022.0077 | 1.2 mm | 2.1 mm |
| | 3 mm | 022.0054 | 022.0068/ 022.0078 | 2.2 mm | 3.1 mm |
| | 4 mm | 022.0055 | 022.0069/ 022.0079 | 3.2 mm | 4.1 mm |
| | 5 mm | 022.0056 | 022.0070/ 022.0080 | 4.1 mm | 5.1 mm |
| | 6 mm | 022.0057 | 022.0071/ 022.0081 | 5.1 mm </td <td>6.1 mm</td> | 6.1 mm |

Image from Straumann: Technical information for the Novaloc Retentive System for Hybrid Dentures

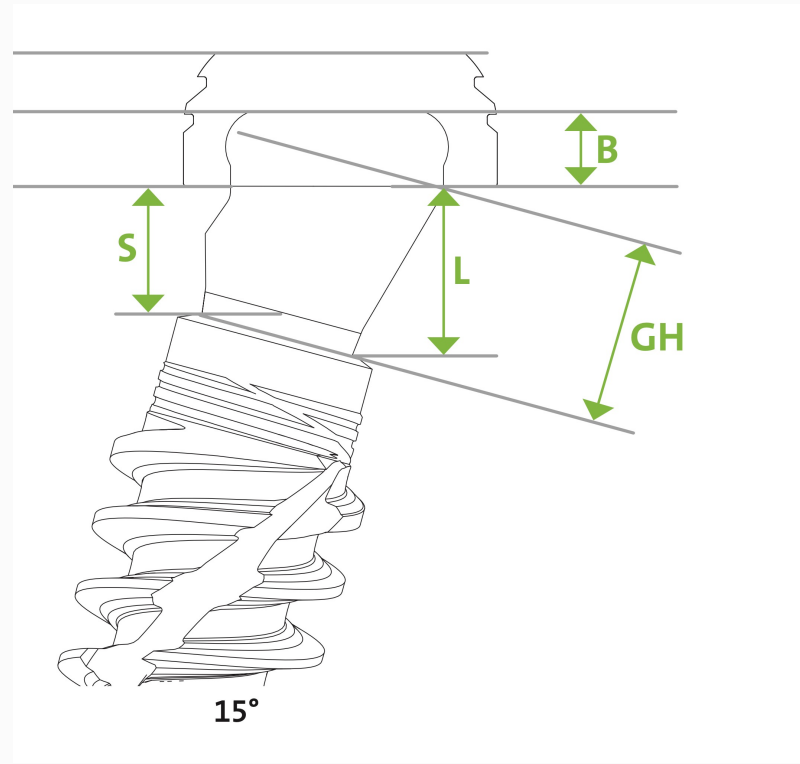
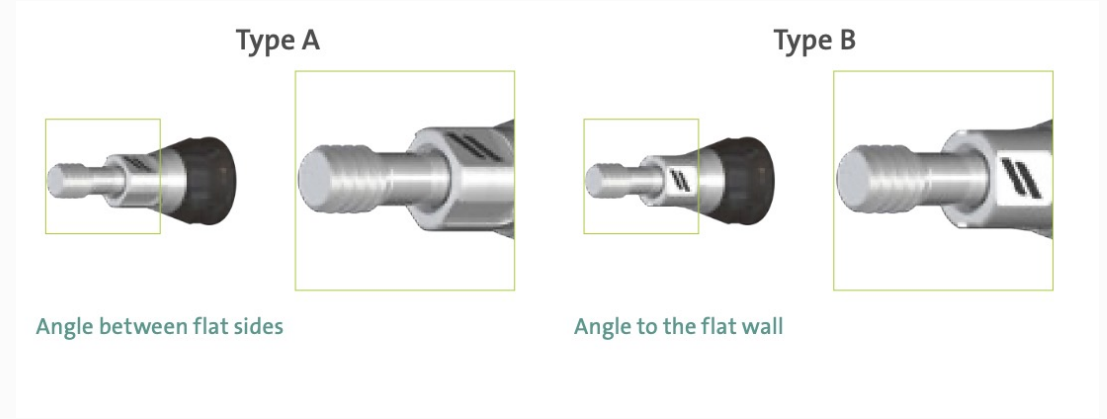


Image from Straumann: Technical information for the Novaloc Retentive System for Hybrid Dentures



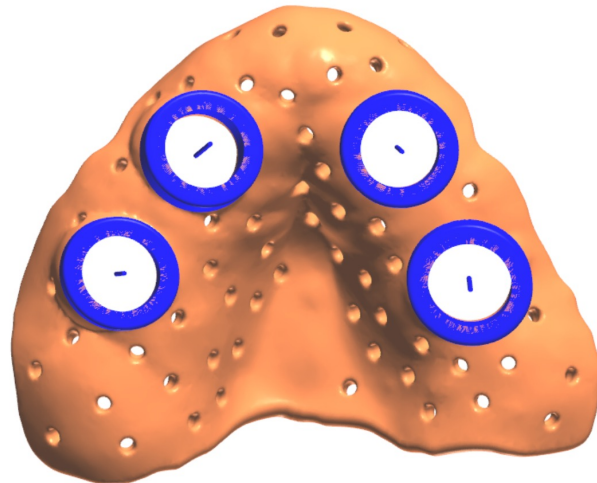
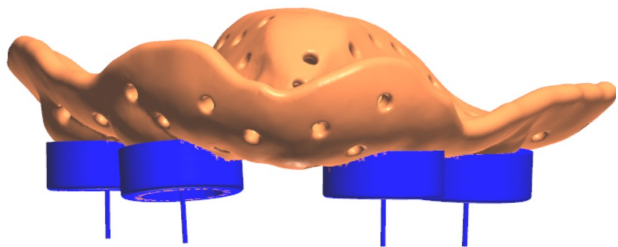
ANGLED NOVALOC ABUTMENTS

- TorcFit connections have 6 seating positions (60°).
- SynOcta connections have 8 seating positions (45°).
- Crossfit connections have 4 seating positions.
 - There are two subtypes to achieve 8 angulations (45°).



VISIT 1: CUSTOM TRAY FABRICATION

- Pour up initial impressions.
- Scan them & send them to production.
- Design & print custom trays.
 - Make sure to leave adequate space for impression components



Straumann Novaloc Zest Locator

2.5 mm height | \varnothing 5.9 mm

5.5 mm height | \varnothing 4.5 mm



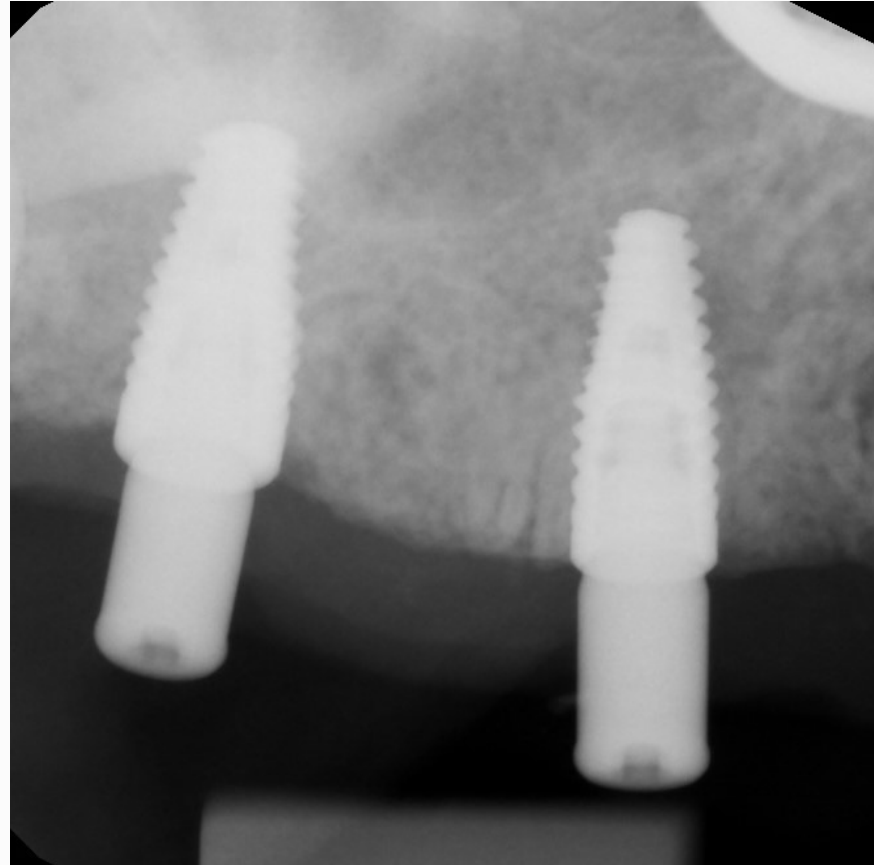
VISIT 2

Abutment delivery & final impression



VISIT 2, ACT 1: ABUTMENT DELIVERY

- Deliver abutments.
- Torque to spec.
- Double check torque.
- Confirm full seating radiographically.
- Record the abutments in the patient's record.



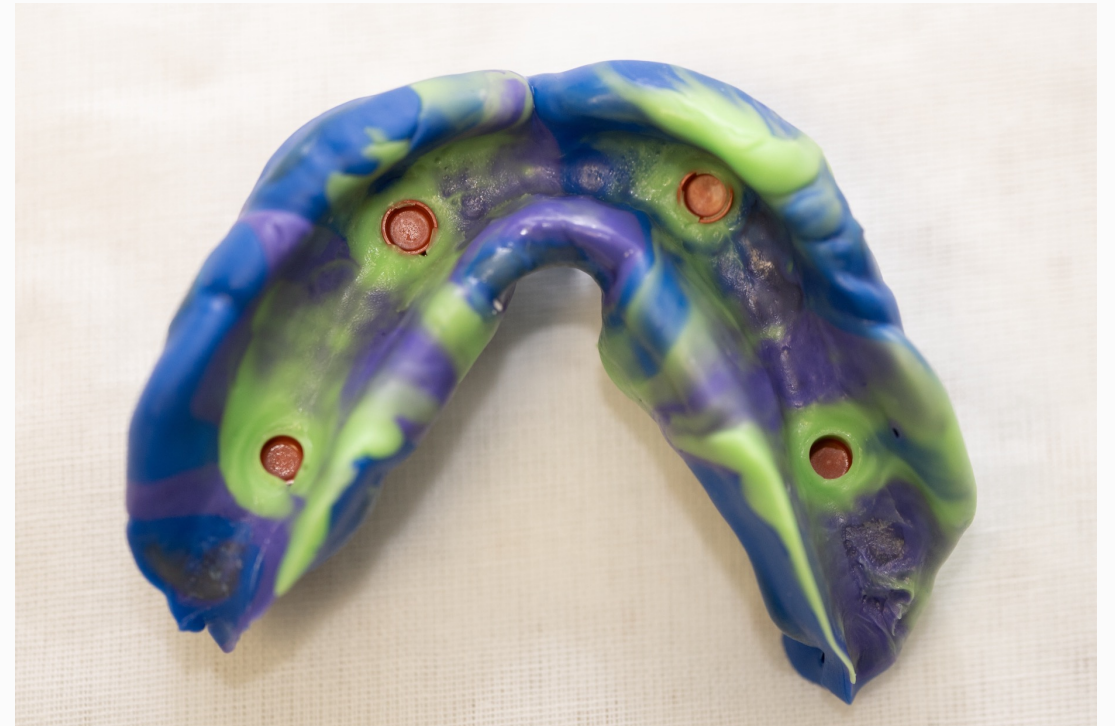
VISIT 1, ACT 2: FINAL IMPRESSION

- Firmly seat the impression components on the abutments.
- Try-in custom tray and ensure passive seating with no contact with the impression components.
- Apply adhesive to custom tray.



VISIT 1, ACT 2: FINAL IMPRESSION

- Firmly seat the impression components on the abutments.
- One step, wash impression with border molding
 - Light, medium, & heavy body





Overdenture Laboratory Authorization

Lab:

| | | |
|-----------------|--|--|
| Patient name: | | <input type="checkbox"/> Chad Stevenson D.D.S. |
| Patient age: | | <input type="checkbox"/> Andrew Stevenson D.D.S. |
| Date sent: | | Doctor: <input type="checkbox"/> Jordan May D.D.S. |
| Date requested: | | Case type: |

| | <input checked="" type="checkbox"/> Jaw relations | <input type="checkbox"/> Set-up | <input type="checkbox"/> Process for delivery |
|-------------------------------------|---|--|---|
| Traditional complete denture | Please box & pour final impressions and <input checked="" type="checkbox"/> fabricate maxillary horseshoe, cast chromium cobalt metal framework with a processed base including the enclosed retentive components. | Please mount & set teeth as directed below and return for wax try-in. Please set teeth over the height of the alveolar crests. Shade: _____ Tooth type: High-end Economical line Maxillary anterior tooth shape: Square Square-tapering Square-Ovoid Tapering Tapering-Ovoid Ovoid Square-Tapering-Ovoid Maxillary teeth angulation: 0° 10° 20/22° 33° Mandibular teeth angulation: 0° 10° 20/22° 33° Occlusal scheme: <input type="checkbox"/> Anatomic / Bilateral balance <input type="checkbox"/> Non-anatomical / Monoplane <input type="checkbox"/> Lingualized | Please take to completion and return ready for delivery. Please ensure that processing housing and gaskets are used during processing. |

Enclosures

- Maxillary final impression
- Mandibular final impression
- Maxillary cast
- Mandibular cast
- Articulator: _____
- Interoclusal record
- Facebow transfer
- Implant components: **#8**

Additional notes

Thank you, please call with any questions or concerns,

Grand Dental
515-223-1940
1005 Grand Avenue, Suite 200
West Des Moines, Iowa 50265



VISIT 3

Framework try-in & implant retained jaw relations



VISIT 3: BACK FROM THE LAB



VISIT 3: BEFORE THE PATIENT ARRIVES

Novaloc

- Removing processing inserts (and keep them for later)
- Place the insert that you plan to use.

Locator

- Remove the processing inserts.
- Place a lighter insert than you plan to use.



VISIT 3: BACK FROM THE LAB



REMOVAL TOOL SEATING TOOL ABUTMENT DRIVER & SLEEVE

— + +



VISIT 3, ACT 1: FRAMEWORK TRY-IN

- Seat the overdenture.
- Initial check for sore-spots.
- Assess for complete, passive seating.

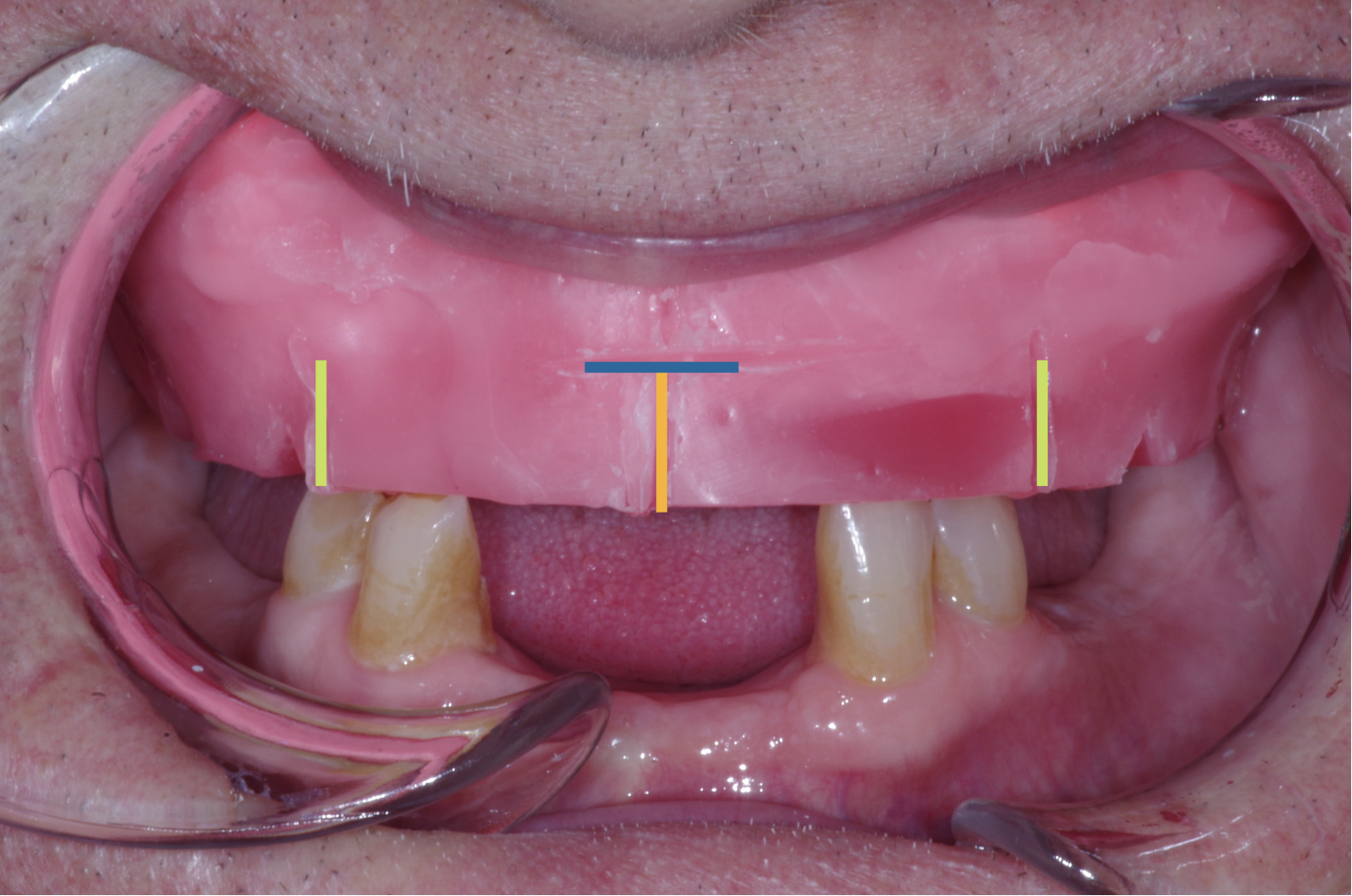


VISIT 3, ACT 2: JAW RELATIONS RECORDS

- Adjust facial plane contour.
- Adjust plane of orientation.
- Adjust mandibular wax rim to match plane and be ~1mm inside maxillary rim.
- Adjust vertical dimension.
- Confirm phonetics.
- Confirm freeway space.
- Mark midline, canine indicator, high smile line.
- Make facebow record.
- Make centric relation record.
- Select tooth shape & shade.



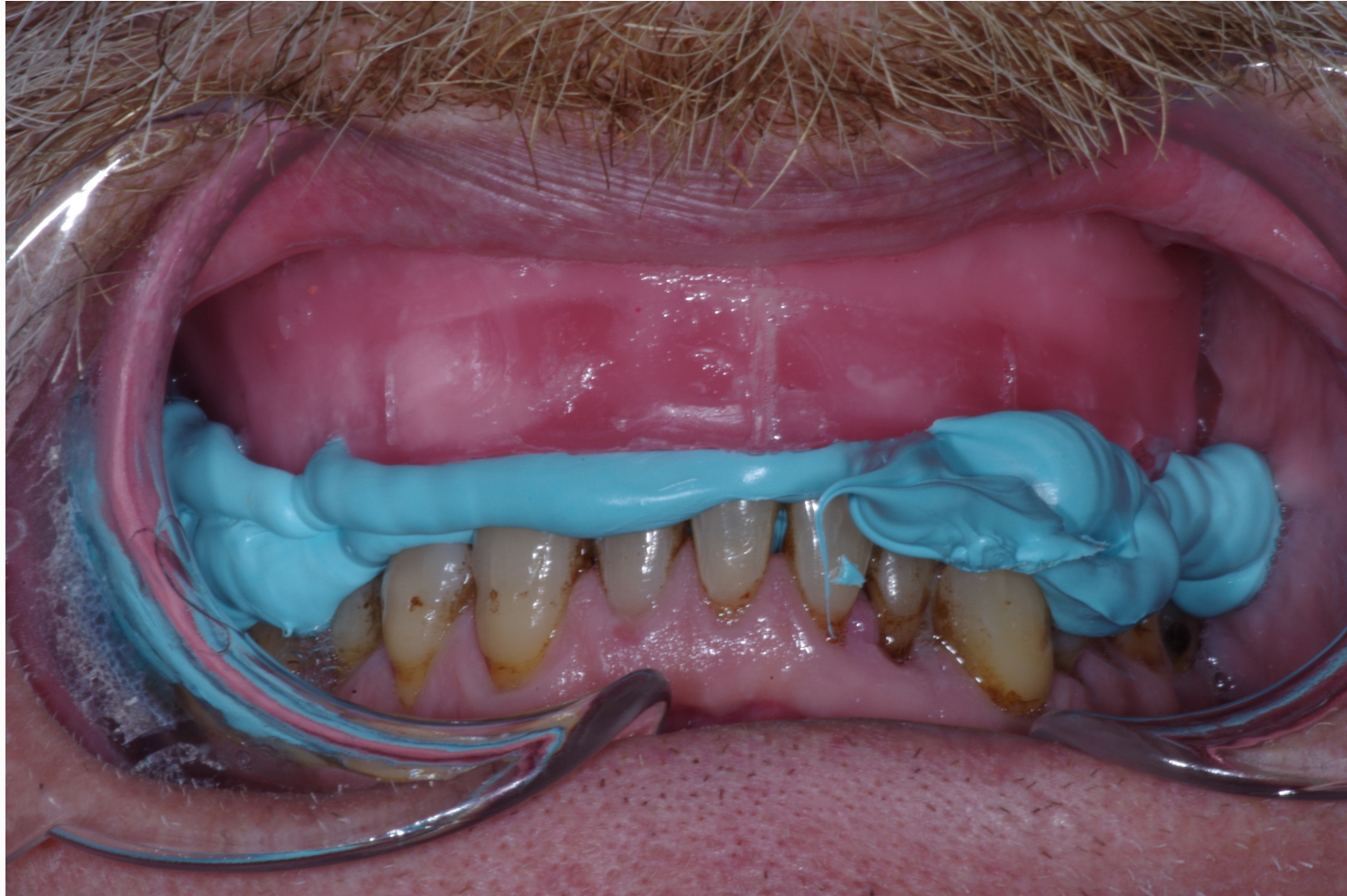
VISIT 3, ACT 2: JRR: REFERENCE MARKS



VISIT 3, ACT 2: JRR: FACEBOW RECORD*



VISIT 3, ACT 2: JRR: INTEROCCLUSAL RECORD





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Lab:

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| Patient age: | | <input type="checkbox"/> Andrew Stevenson D.D.S. |
| Date sent: | | Doctor: <input type="checkbox"/> Jordan May D.D.S. |
| Date requested: | | Case type: |

| | <input type="checkbox"/> Jaw relations | <input checked="" type="checkbox"/> Set-up | <input type="checkbox"/> Process for delivery |
|-------------------------------------|--|---|---|
| Traditional complete denture | Please box & pour final impressions and <input type="checkbox"/> fabricate maxillary horseshoe, cast chromium cobalt metal framework with a processed base including the enclosed retentive components. <input type="checkbox"/> fabricate mandibular, cast metal framework within a processed base including the enclosed retentive components. | Please mount & set teeth as directed below and return for wax try-in. Please set teeth over the height of the alveolar crests. Shade: A2/P2 Tooth type: <input checked="" type="checkbox"/> High-end <input type="checkbox"/> Economical line Maxillary anterior tooth shape: <input checked="" type="checkbox"/> Square <input type="checkbox"/> Square-tapering <input type="checkbox"/> Square-Ovoid <input type="checkbox"/> Tapering <input type="checkbox"/> Tapering-Ovoid <input type="checkbox"/> Ovoid <input type="checkbox"/> Square-Tapering Maxillary teeth angulation: 0° 10° 20/22° 3° Mandibular teeth angulation: 0° 10° 20/22° 3° Occlusal scheme: <input checked="" type="checkbox"/> Anatomic / Bilateral balance <input type="checkbox"/> Non-anatomical / Monoplane <input type="checkbox"/> Lingualized | Please take to completion and return ready for delivery. Please ensure that processing housing and gaskets are used during processing. |

Enclosures

- Maxillary final impression
- Mandibular final impression
- Maxillary cast
- Mandibular cast
- Articulator: P
- Interoclusal record
- Facebow transfer
- Implant components:

Additional notes

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BALANCED OCCLUSAL SCHEMES

Anatomic / Bilateral balance

- Choice of cuspal angulation.
- 0-2 mm of overbite.

Lingualized

- Choice of cuspal angulation.
- 0-2 mm of overbite.

Non-anatomic / Monoplane

- 0° teeth.
- 0 overbite.
- Compensating curve.

- Teeth set over the crests of the residual ridges.
- 1-2mm of overjet in the posterior.



OCCLUSAL CONCEPTS: RELEVANCE?

- “There is strong support that the average denture patient, with good residual ridges and no neuromuscular problems, will function adequately with a properly fabricated complete denture regardless of the occlusal scheme.”
 - Goldstein, et al. Complete Denture Occlusion: Best Evidence Consensus Statement. *Journal of Prosthodontics*. 30, 2021, 72-77.



VISIT 4

Implant-retained wax try-in

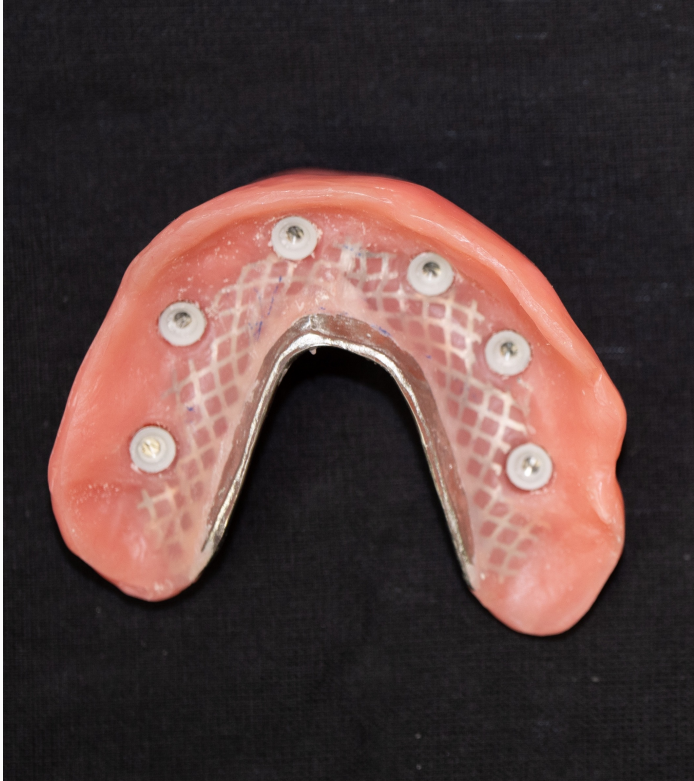
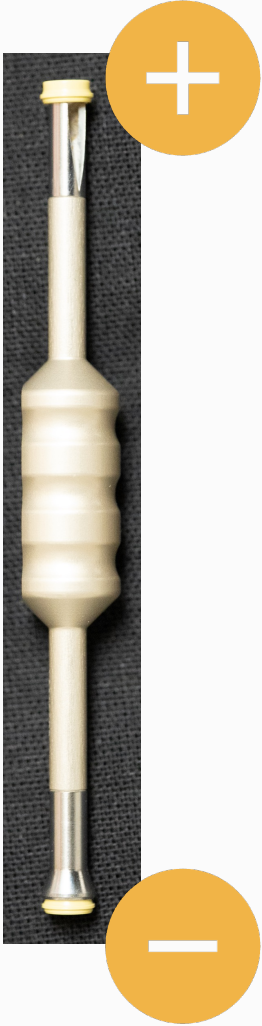


VISIT 4: IMPLANT-RETAINED WAX TRY-IN

- Another chance to assess for sore spots.
- Check occlusion.
- Check incisal edge position.
- Check freeway space.
- Get patient acceptance of tooth shape, shade, & positioning.



VISIT 4: BACK TO THE LAB





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Lab:

| | | |
|-----------------|--|--|
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| Patient age: | | <input type="checkbox"/> Andrew Stevenson D.D.S. |
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Enclosures

- Maxillary final impression
- Mandibular final impression
- Maxillary cast
- Mandibular cast
- Articulator: P
- Interoclusal record
- Facebow transfer
- Implant components:

Additional notes

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 West Des Moines, Iowa 50265



VISIT 5

Delivery



VISIT 5: BACK FROM THE LAB



| REMOVAL TOOL | SEATING TOOL | ABUTMENT DRIVER & SLEEVE |
|--------------|--------------|--------------------------|
| | | |
| - | + | |



VISIT 5: DELIVERY

- Final chance to assess for sore spots.
- Finalize occlusion.
- Give patient specific instructions and set expectations one more time.
- Schedule post-op(s).



OVERDENTURE SPECIFIC PATIENT INSTRUCTIONS

- Do not overnight soak overdentures.
- Not cleaning the abutments & attachments is a primary cause of early insert wear.
- Food packing in Locator abutments is a primary cause for non-seating.
- Do not bite the dentures into place.



Questions?

grand.dental/ospc-lecture
andy@grand.dental



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April 3, 2024

