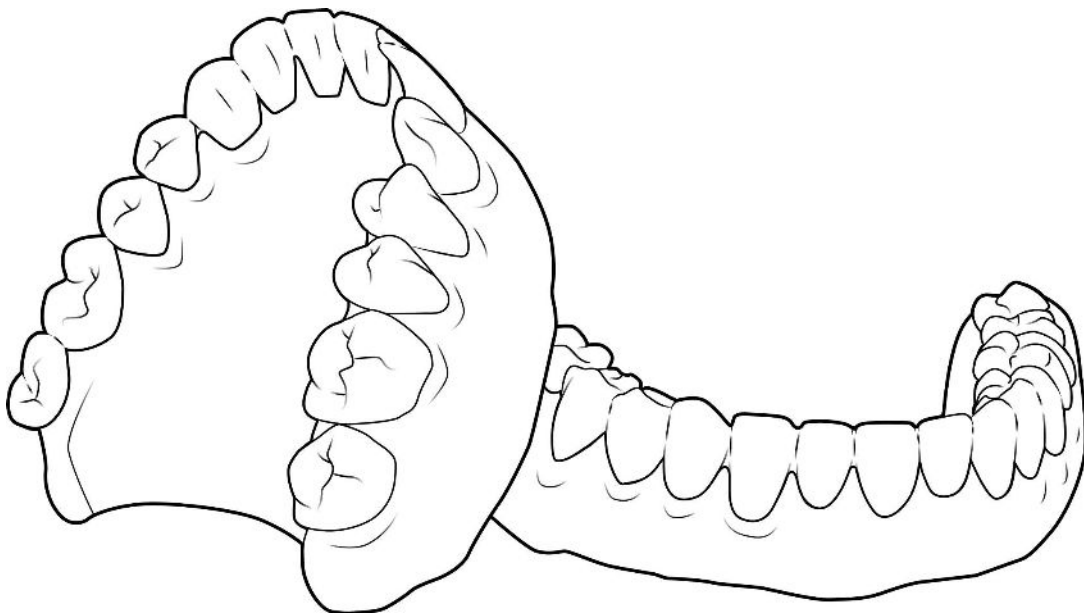


Workflow Guide:

## 3D Printing for Removable Dentures



3D printing provides a new way to fabricate dentures that are strong, aesthetic, and comfortable. With SprintRay in your office, you can deliver dentures in fewer appointments while providing an exceptional patient experience. This guide will walk you through the process of gathering data, fabricating, and placing a removable denture.

# Workflow at a Glance

## 1. Capture Data



Time:

30 mins



Tools:

- Intraoral scanner
- Other tools depending on denture type

## 2. Submit Design Request



Time:

48-72 hrs



Tools:

- Computer with internet
- Patient data

## 3. Create Print Jobs



Time:

5 mins



Tools:

- Computer with internet
- SprintRay account

## 4. 3D Print and Wash Denture Base



Time:

90 mins

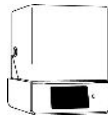


Tools:

- SprintRay Pro S 3D printer
- Denture base resin
- SprintRay Pro Wash



## 5. 3D Print and Wash Denture Teeth



Time:

45 mins

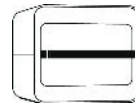


Tools:

- SprintRay Pro S 3D printer
- Denture teeth resin
- SprintRay Pro Wash



## 6. Assemble & Post Cure



Time:

30 mins

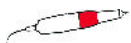


Tools:

- SprintRay ProCure 2
- Applicator
- Denture base resin



## 7. Smoothen and Polish



Time:

5 mins



Tools:

- Lab handpiece
- Fuzzies or burr
- Muslin polishing wheels
- Polishing compounds
- Ivoclar universal polishing paste

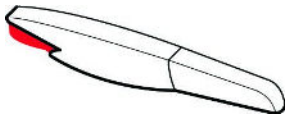


# 1. Capture Data

## Time

10 minutes

## Tools



Intraoral scanner

## 1.1 Determine Denture Type

SprintRay offers a full workflow for 3 main types of removable dentures. Depending on which denture you need, the patient data required and the files you receive will vary.

### **Denture Types:**

#### 1.2 Copy or Reference Denture

Use an existing denture to create an exact replica or slightly adjusted prosthetic with improved retention and aesthetics.

#### 1.3 New Denture

For an edentulous patient who does not currently have a denture. A conventional wax rim impression is required for this treatment.

#### 1.4 Immediate Denture

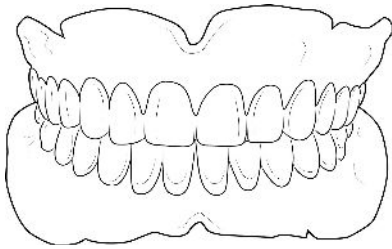
Create a temporary denture to be placed immediately after a patient has had their teeth extracted.



*The fabrication process for all the major denture types is similar; most of the difference between denture types is the data you'll need to submit for design.*

## 1.2 Copy or Reference Denture

### Extra Tools



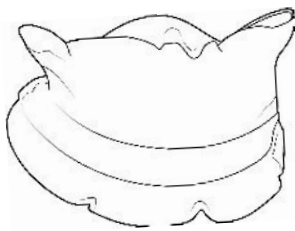
Existing denture

Copy and reference dentures use the patient's existing prosthetic as the basis for designing a replacement.

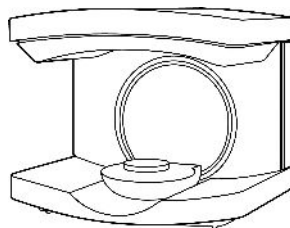
Use an intraoral scanner to directly scan the occlusal, palatal, and intaglio surfaces of the denture. If possible, include all surfaces of the denture in the same scan. If retention is poor, use the existing denture as a custom impression tray to take a functional impression.

## 1.3 New Denture

### Extra Tools



Wax rim impression



Benchtop scanner (optional)

New dentures are for patients who are already edentulous and don't already have a denture.

Take a conventional wax rim impression, then use an intraoral scanner or benchtop scanner to digitize. If using an intraoral scanner, directly scan the occlusal, palatal, and intaglio surfaces of the impression. If possible, include all surfaces of the impression in the same scan.

## 1.4 Immediate Denture

Immediate denture is for a patient who currently still has teeth and requires a temporary prosthetic for use after extraction.

Perform a pre-op scan of the patient's current anatomy. Scan as much of the gingiva as possible. Scan the depth of the sulcus if possible.



*This is a temporary appliance; the patient should return when fully healed for a reference or copy denture.*

---

## 2. Submit Design Request

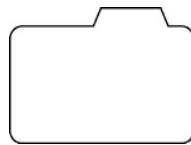
### Time

48-72 hours

### Tools



Computer with internet  
access



Patient data



SprintRay account

### 2.1 Submit Treatment Request

Visit [dashboard.sprinray.com](https://dashboard.sprinray.com) and sign in or sign up for a SprintRay account. Select or add your patient, then choose the 'Removable Dentures' treatment type and select the subtype you chose in step 1. Upload all relevant data.

### 2.2 Review and Approve Design

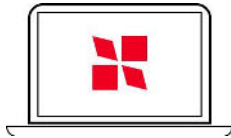
Once your designer has created the denture treatment, they will send you files and any notes to review the case. You can communicate with the designer via our integrated chat system if you have any questions or revision requests.

## 3. Create Print Jobs

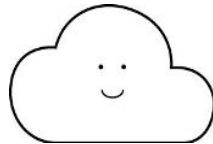
Time

5 minutes

Tools



Computer with internet  
access



SprintRay account

### 3.1 Import into RayWare

Navigate to [RayWare Cloud](#), then start a new print job. Since a denture consists of teeth and a base printed separately, you'll need to set up two print jobs.

Recommended Print Settings:

	Denture Base	Denture Teeth
<b>Type</b>	Prosthetics → Base	Prosthetics → Teeth
<b>Material</b>	High Impact Denture Base	High Impact Denture Teeth
<b>Thickness</b>	100 microns	100 microns
<b>Orientation</b>	Intaglio surface facing towards the build platform, anterior at a 60° angle	Occlusal surface facing toward and parallel to the build platform

### 3.2 Queue to Printer

Once you're happy with the setup of your print, select the 'Send to Queue' button, then choose the printer you'd like to use for this print job.



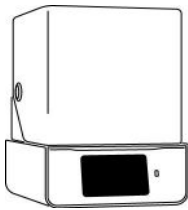
*You can also use the 'Print Now' button, but be sure to thoroughly inspect your printer before you start printing.*

## 4. 3D Print and Wash Denture Base

Time

90 mins

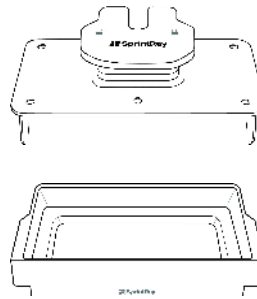
Tools



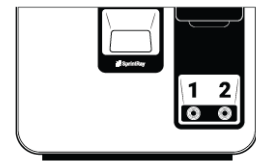
SprintRay Pro S



Denture base resin

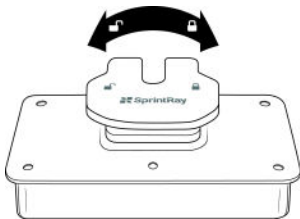


Build platform & resin tank

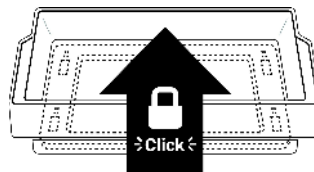


ProWash

### 4.1 Prepare and Start the Print Job



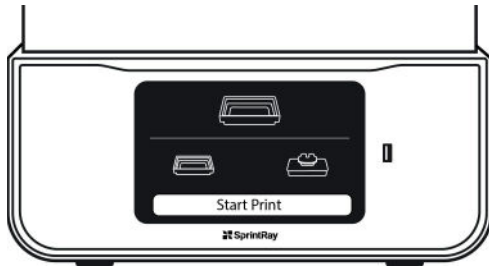
Check that the platform is clean, locked, and ready



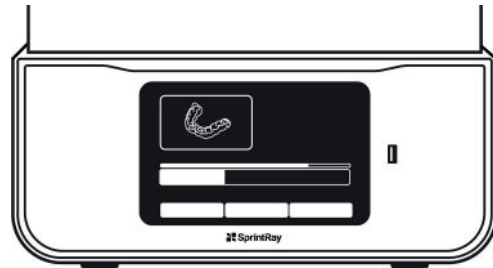
Check that the resin tank is seated in its cradle



Fill the tank to the max line with Denture Base resin and mix to incorporate

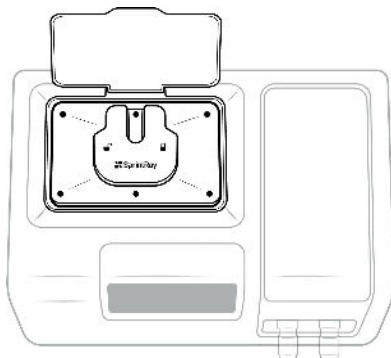


Go to the queue and press 'Start Print'

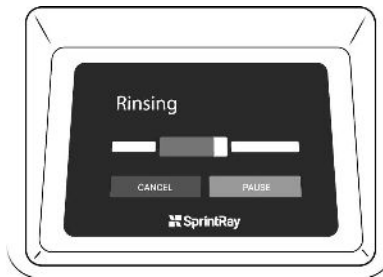


Monitor progress on the touchscreen or on SprintRay Cloud. This print job should take around 60 minutes

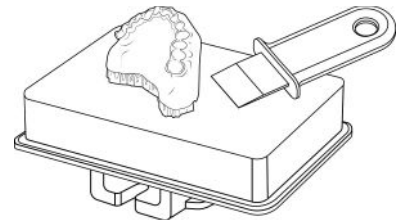
## 4.2 Wash the Denture Base



Transfer the build platform to ProWash



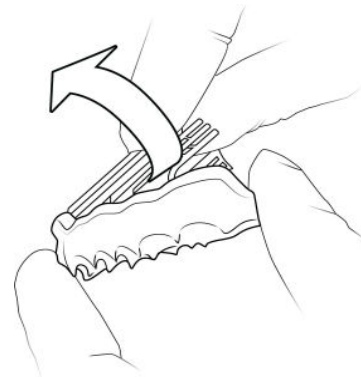
Run a standard cleaning cycle



Remove the denture base from the build platform

## 4.3 Remove Supports

Twist the supports away from the denture. Use the support sniper if they don't come away easily.



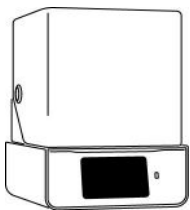


## 5. 3D Print and Wash Denture Teeth

Time

30 mins

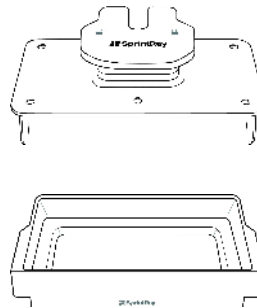
Tools



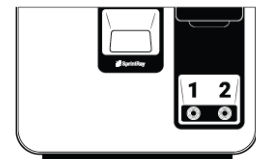
SprintRay Pro S



Denture teeth resin

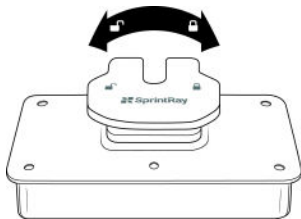


Build platform & resin tank

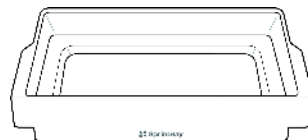


ProWash

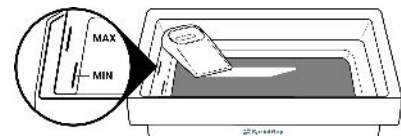
### 5.1 Prepare and Start the Print Job



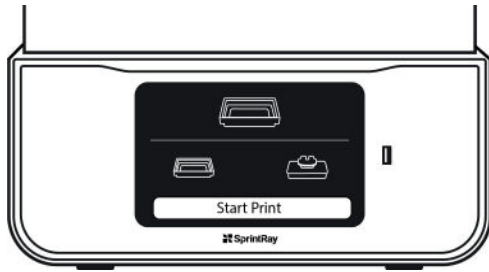
Check that the platform is clean, locked, and ready



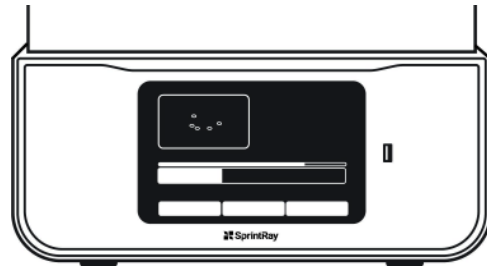
Swap resin tanks; you'll use a different resin for this print



Fill the tank to the max line with Denture Base resin and mix to incorporate

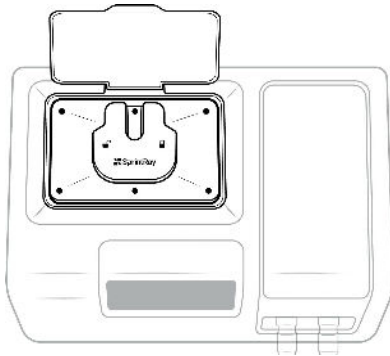


Go to queue and press 'Start Print'

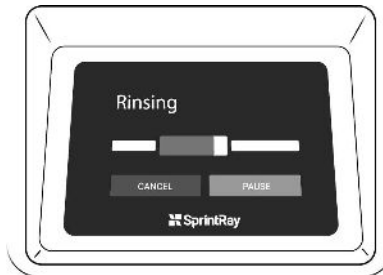


Monitor progress on the touchscreen or on SprintRay Cloud. This print job should take around 30 minutes

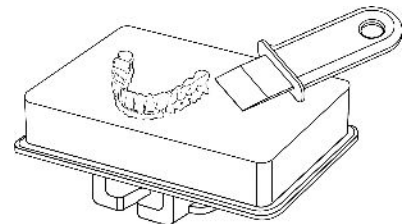
## 5.2 Wash the Denture Teeth



Transfer the build platform to ProWash



Run a standard cleaning cycle



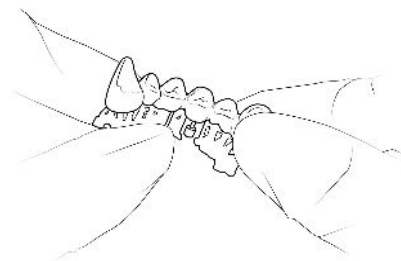
Remove the denture teeth and remove them from the build platform



*If you are printing denture teeth with a high-ceramic material such as Ceramic Crown or OnX, consult the IFU for washing instructions*

## 5.3 Remove Supports

Carefully twist the supports away from the denture teeth. Use the support snipper if they don't come away easily.

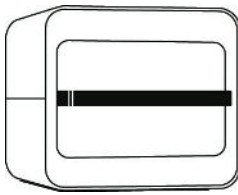


## 6. Assemble & Post Cure

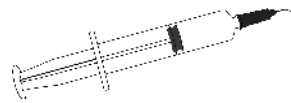
### Time

30 minutes

### Tools



Pro Cure 2



Syringe or applicator

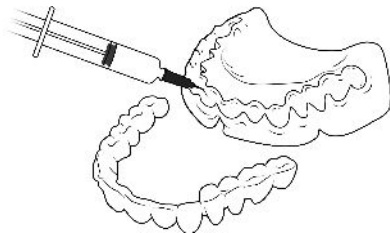


Denture base resin

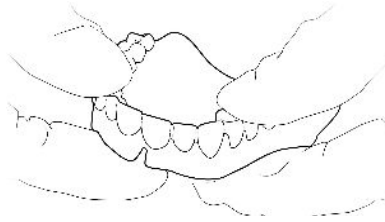


Gooseneck clamp-on curing light or handheld curing light

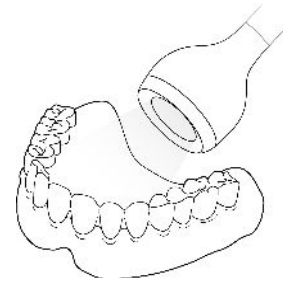
### 6.1 Assemble the Teeth and Base



Use a syringe to cover each socket with denture base resin



Press the teeth and base firmly together, applying level pressure

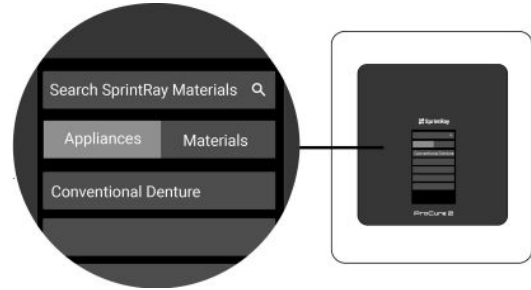
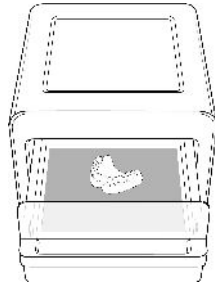


Continue applying pressure while tack curing the teeth and base together



*If you are creating the denture base and teeth from two different resin lines, first select 'Conventional Denture' on ProCure 2 and follow the onscreen instructions for assembly and curing*

## 6.2 Cure in ProCure 2



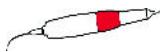
Place the assembled denture in ProCure 2

Select 'Conventional Denture' on the touchscreen; follow the onscreen instructions for curing

## 7. Smoothen & Polish

Time

15 minutes



Lab handpiece



Red Scotch-Brite Fuzzies



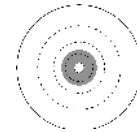
Resilience polish



Dental lathe



Steamer



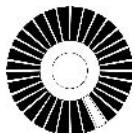
Cotton buff wheel



Mineral oil



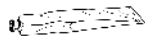
Bristle wheel B27/B29



Robinson #11 wheel



Tripoli Rouge



Ivoclar universal polishing paste



Blue Shop Towel

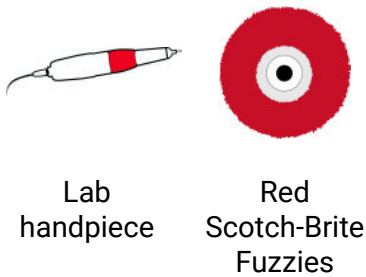


Compressed air

## 7.1 Smoothen and Polish

### Smoothen with Handpiece

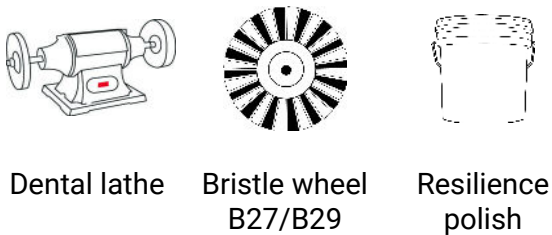
Use low RPM with a Red Fuzzies and/or a carbide burr to remove any stumps left over from supports. Make sure to do a full pass along occlusion.



### Smoothen with Resilience

Use a black bristle wheel B27/B29 and Resilience polish. Resilience should be wet but not runny. Apply medium pressure.

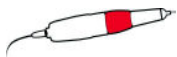
**⚠** *Polish at low speed and do not let the wheel dry out*



### Apply Tripoli Rouge

Apply Tripoli to a Robinson #11 wheel on a lab handpiece in hard-to-reach places and interproximal surface.

**⚠** Do not let the wheel dry out



Lab  
handpiece



Tripoli  
Rouge



Robinson  
#11 Wheel



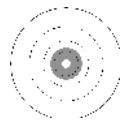
### Apply Pase and Polish

Apply Ivoclar Vivadent Universal Polishing Paste to the denture. Use a fresh wheel to polish all surfaces of the denture using full pressure.

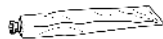
**⚠** Polish at low speed and do not let the wheel dry out



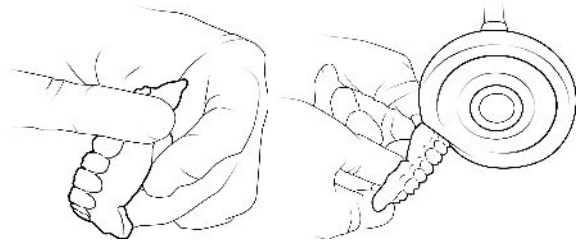
Dental lathe



Cotton buff  
wheel

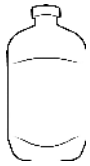


Ivoclar  
universal  
polishing  
paste



### Apply Mineral Oil

Dip a gloved finger in mineral oil and smear across the denture surface.



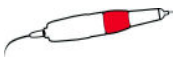
Mineral oil



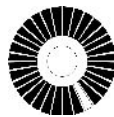
### Remove Polishing Paste

Use medium/heavy pressure on a new Robinson #11 wheel to reach all the interproximal areas, removing mineral oil and polishing paste so the denture is shiny.

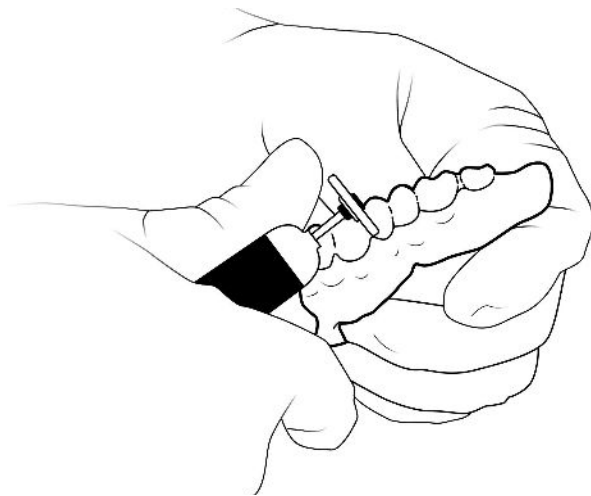
**⚠** *Do not let the wheel dry out*



Lab  
handpiece



Robinson  
#11 wheel



## Clean

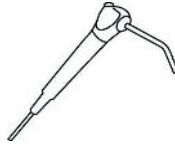
Remove residual mineral oil and brush denture by hand, use a steamer, or rinse with water. Dry with compressed air and/or a blue shop towel.



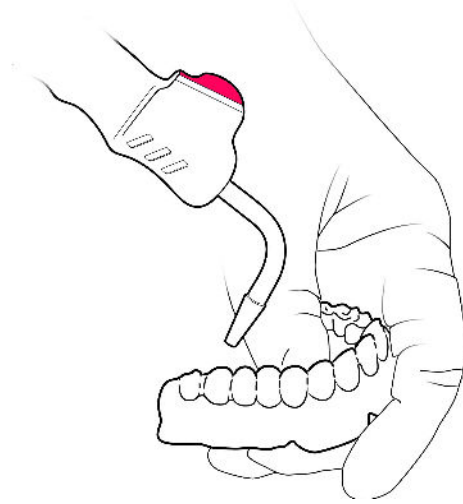
Steamer



Blue Shop  
Towel



Compressed  
air



Disinfect and then place the denture.