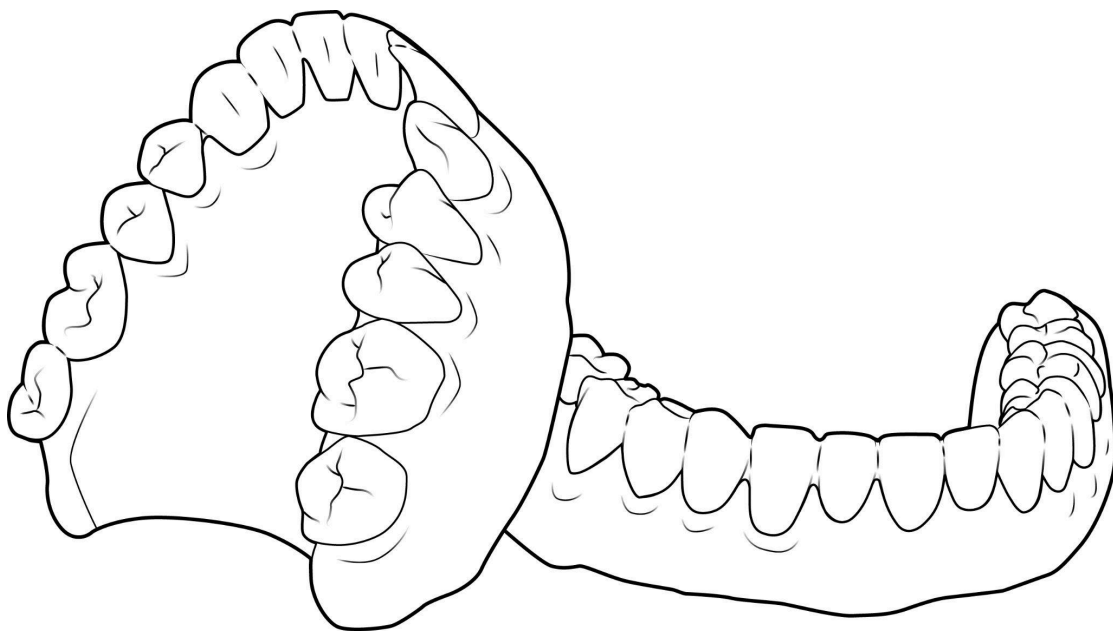


## Workflow Guide:

# 3D Printing for Removable Dentures



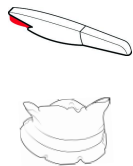
With SprintRay in your office, you can deliver dentures in fewer appointments while providing an exceptional patient experience. This guide will walk you through gathering data, fabricating, and placing a removable denture.

### **Resins compatible with this workflow:**

- SprintRay Apex Teeth and Base
- SprintRay High Impact Teeth and Base

# Workflow at a Glance

## 1. Capture Data



- Tools**
- Intraoral scanner
  - Other Tools depending on denture type

## 2. Submit Design Request



- Tools**
- Computer with internet
  - Patient data

## 3. Create Print Jobs



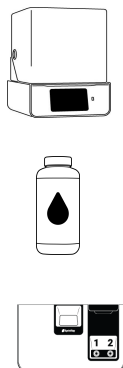
- Tools**
- Computer with internet
  - SprintRay account

## 4. 3D Print and Wash Denture Base



- Tools**
- SprintRay 3D printer
  - SprintRay base resin
  - SprintRay wash device

## 5. 3D Print and Wash Denture Teeth



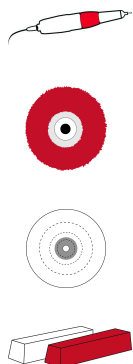
- Tools**
- SprintRay 3D printer
  - SprintRay teeth resin
  - SprintRay wash device

## 6. Assemble & Post Cure



- Tools**
- SprintRay curing device
  - Applicator
  - SprintRay base resin

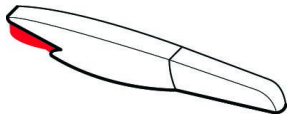
## 7. Smoothen and Polish



- Tools**
- Lab handpiece
  - Abrasive wheels or burr
  - Muslin polishing wheels
  - Polishing compounds
  - Ivoclar universal polishing paste

# 1. Capture Data

## Tools



Intraoral scanner

## 1.1 Determine Denture Type

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

### **Denture Types:**

#### 1.2 Copy or Reference Denture

Use an existing denture to create a 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

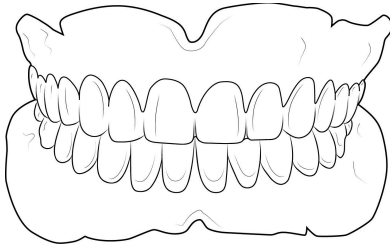
Create a temporary denture to be placed immediately after a patient has had their teeth extracted.



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

## 1.2 Copy or Reference Denture

### Tools



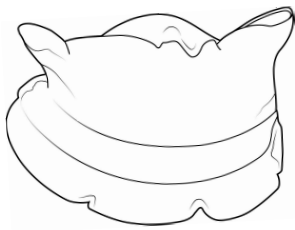
Existing denture

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

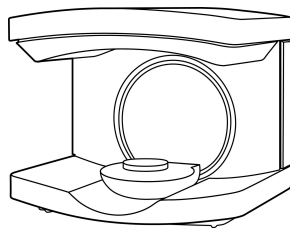
Use an intraoral scanner to directly scan the occlusal, palatal, and intaglio surfaces of the denture. If possible, include all surfaces of the denture in the same scan. If retention is poor, use the existing denture as a custom impression tray to take a functional impression.

## 1.3 New Denture

### 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 still has teeth and will need a temporary prosthetic 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.

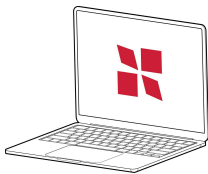


*This is a temporary appliance; the patient should return for a reference or copy denture when fully healed.*

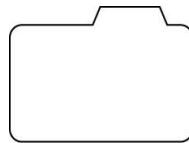
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## 2. Submit Design Request

### Tools



Computer with internet  
access



Patient data



SprintRay account

### 2.1 Submit Treatment Request

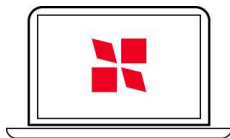
Visit [dashboard.sprintray.com](https://dashboard.sprintray.com) and sign in or sign up for a SprintRay account. Select or add your patient, then choose the 'Removable Dentures' treatment type and the subtype you chose in step one. Upload all relevant data.

### 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

#### 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 must set up two print jobs.

#### RayWare Setup Details

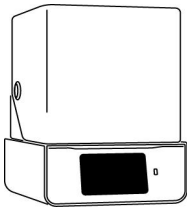
	Denture Base	Denture Teeth
Type	Prosthetics → Base	Prosthetics → Teeth
Material	SprintRay base resin	SprintRay teeth resin
Thickness	100 microns	100 microns
Orientation	Intaglio surface facing towards the build platform, anterior at a 60° angle	Occlusal surface facing toward and parallel to the build 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.

## 4. 3D Print and Wash Denture Base

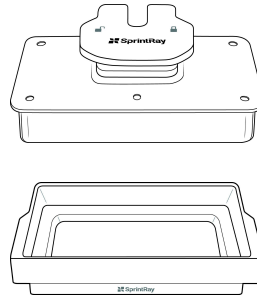
### Tools



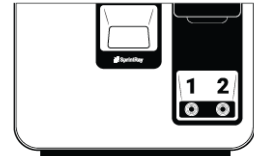
SprintRay 3D printer



SprintRay base resin

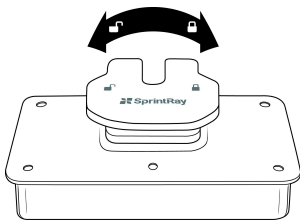


Build platform & resin tank

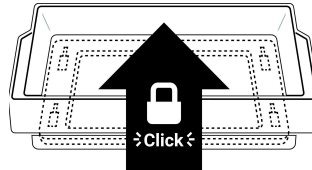


SprintRay wash device

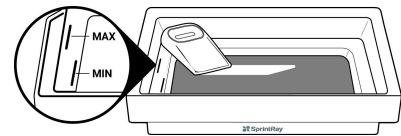
### 4.1 Prepare and Start the Print Job



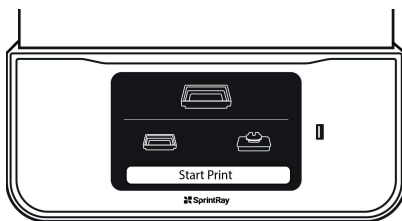
A) Check that the platform is clean, locked, and ready



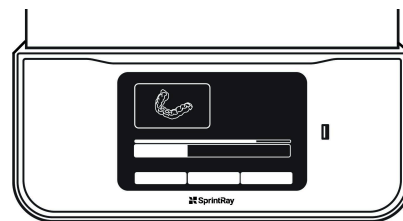
B) Check that the resin tank is seated in its cradle



C) Fill the tank to the max line with SprintRay base resin and mix to incorporate

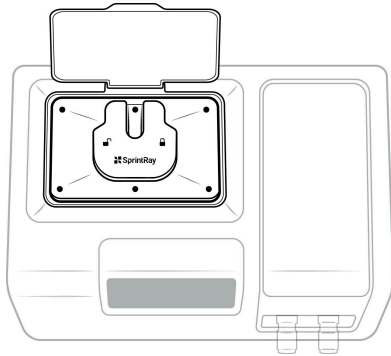


D) Go to the queue and press 'Start Print'

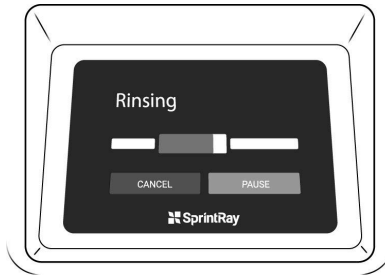


E) Monitor progress on the touchscreen or SprintRay Cloud.

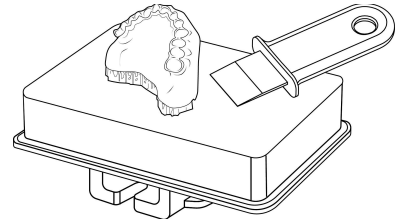
## 4.2 Wash the Denture Base



A) Transfer the build platform to SprintRay wash device



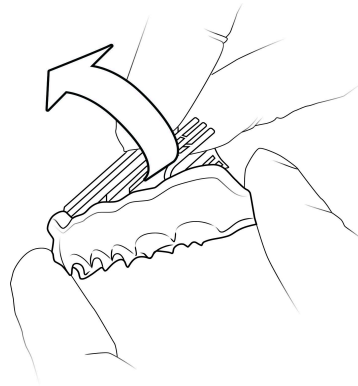
B) Run a standard cleaning cycle



C) Remove the denture base from the build platform

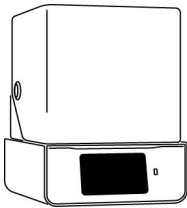
## 4.3 Remove Supports

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



## 5. 3D Print and Wash Denture Teeth

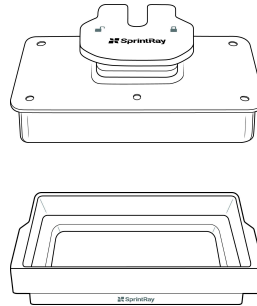
### Tools



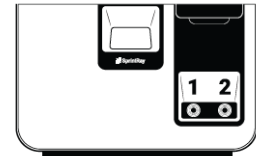
SprintRay 3D printer



SprintRay teeth resin

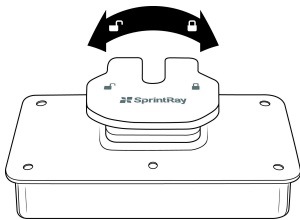


Build platform & resin  
tank

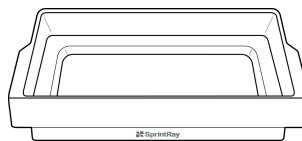


SprintRay wash  
device

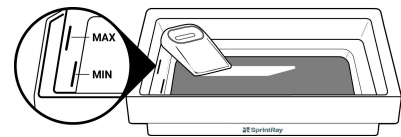
### 5.1 Prepare and Start the Print Job



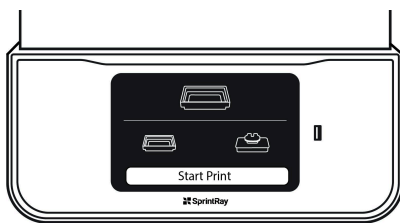
A) Check that the platform is  
clean, locked, and ready



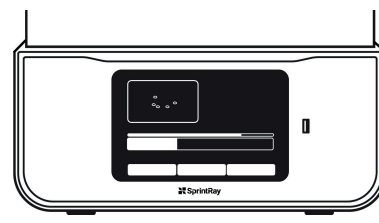
B) Swap resin tanks; you'll  
use a different resin for this  
print



C) Fill the tank to the max line  
with SprintRay teeth resin and  
mix to incorporate

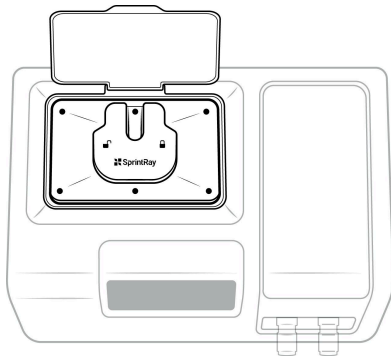


D) Go to queue and press 'Start Print'

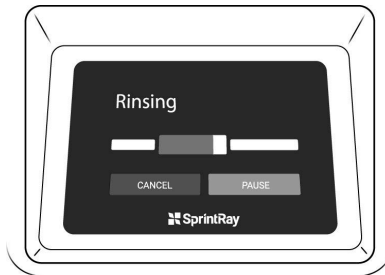


E) Monitor progress on the touchscreen or  
SprintRay Cloud.

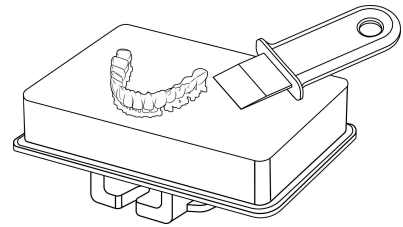
## 5.2 Wash the Denture Teeth



A) Transfer the build platform to SprintRay wash device



B) Run a standard cleaning cycle



C) 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*

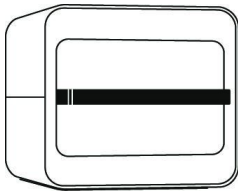
## 5.3 Remove Supports

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

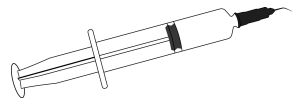


## 6. Assemble & Post Cure

### Tools



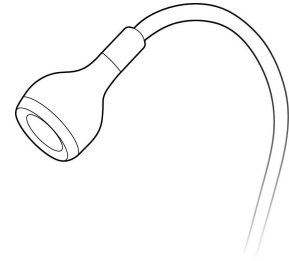
SprintRay curing device



Syringe or applicator

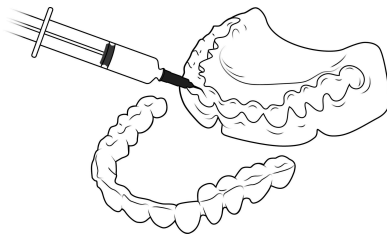


SprintRay teeth resin



Gooseneck clamp-on curing light or handheld curing light

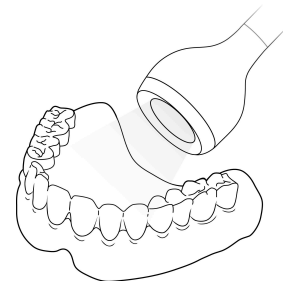
### 6.1 Assemble the Teeth and Base



A) Use a syringe to cover each socket with denture base resin



B) Press the teeth and base firmly together, applying level pressure

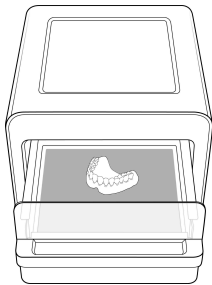


C) Continue applying pressure while tack curing the teeth and base together

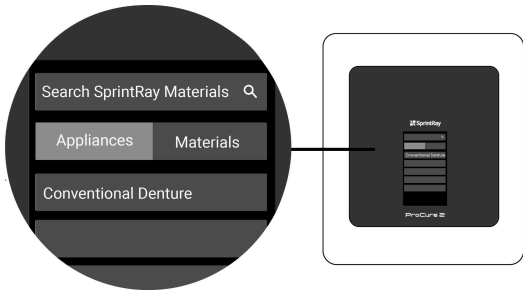


*If you are creating the denture base and teeth from two different resin lines, first select 'Conventional Denture' on your SprintRay curing device and follow the onscreen instructions for assembly and curing*

6.2 Post Cure



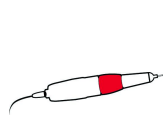




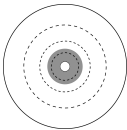
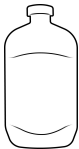
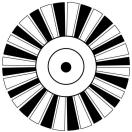
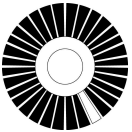




A) Place the assembled denture in your SprintRay curing device



B) Select 'Conventional Denture' on the touchscreen; follow the onscreen instructions

7. Smoothen & Polish

Tools

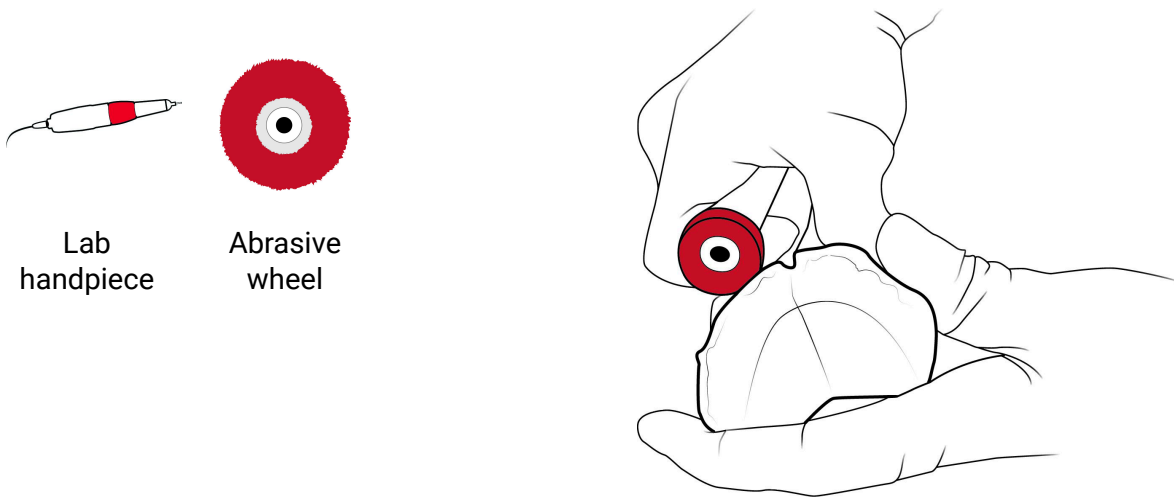
						
Lab handpiece	Scotchbrite wheels	Resilience polish	Dental lathe	Steamer	Cotton buff wheel	Mineral oil
						
Bristle wheel B27/B29	Robinson #11 wheel	Tripoli Rouge	Ivoclar universal polishing paste	Blue Shop Towel	Compressed air	



## 7.1 Smoothen and Polish

### Smoothen with Handpiece

Use low RPM with an abrasive wheel or a carbide burr to remove any stumps left over from supports. Make sure to do a full pass along the occlusion.



### Smoothen with Resilience

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

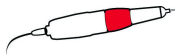
**⚠** *Polish at low speed and do not let the wheel dry out*



### Apply Tripoli Rouge

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

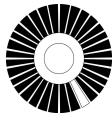
**⚠** *Do not let the wheel dry out*



Lab  
handpiece



Tripoli  
Rouge



Robinson  
#11 Wheel



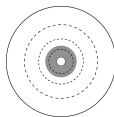
### Apply Paste and Polish

Apply Ivocalr 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*



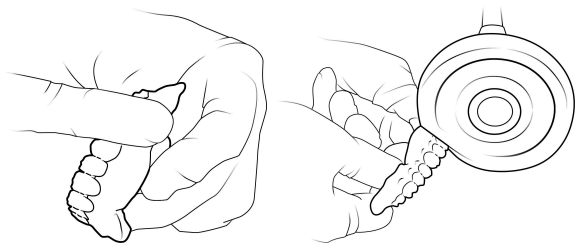
Dental lathe



Cotton buff  
wheel

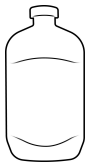


Ivocalr  
universal  
polishing  
paste



### Apply Mineral Oil

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



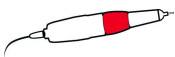
Mineral oil



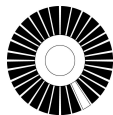
### Remove Polishing Paste

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.

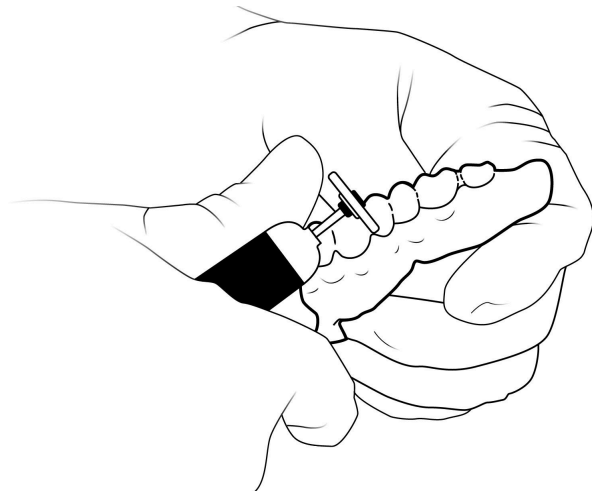
**⚠** *Do not let the wheel dry out*



Lab  
handpiece



Robinson  
#11 wheel



## Clean

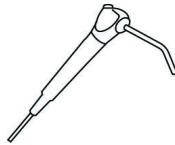
Remove residual mineral oil and brush denture by hand, use a steamer, or rinse with water. Dry with compressed air and/or a blue shop towel.



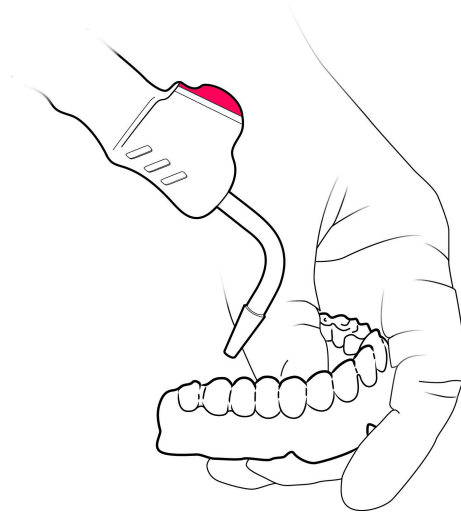
Steamer



Blue Shop  
Towel



Compressed  
air



Disinfect and then place the denture.