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Alginate Impression Taking

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Aim

To give an overview on the constituents, properties and use of alginate as a dental impression material and the technique for making accurate alginate impressions of dentate patients.

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Overview

- Why do we need impressions?
- Properties of alginate
- Clinical techniques
- Practical session - taking alginate impressions

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Learning outcomes

By the end of this session the successful delegate should be able to:

- List the constituents and properties of alginate as an impression material
- Describe those features that must be recorded in a preliminary impression
- Select stock impression trays and modify them to make preliminary impressions in alginate
- Demonstrate clinical skills in taking upper and lower alginate dental impressions

GDC Development Outcomes: A, C

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What is an impression?

A negative replica of the teeth and surrounding tissues of the mandible or maxilla

Models

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From an impression it is possible to produce an exact replica of the dental structures as a cast (or model) produced in dental plaster (or dental stone) for use in dental patient management.

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What needs to be recorded?

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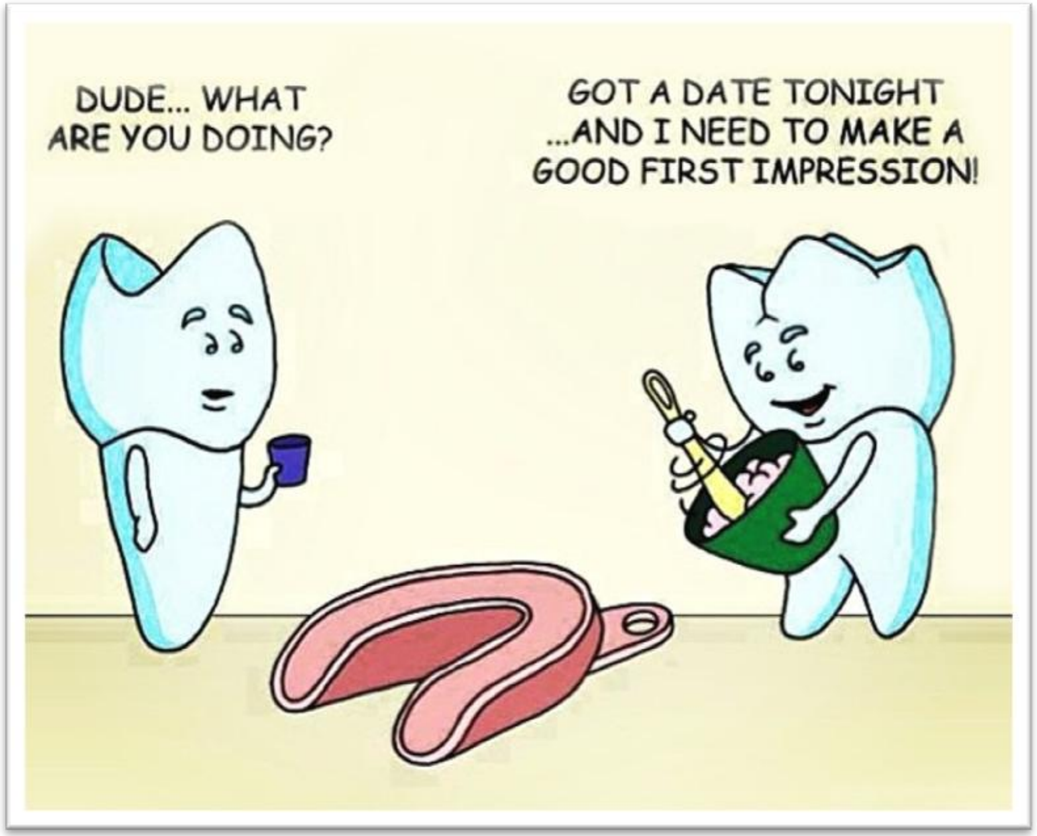

Impressions should be made of the teeth, palate, edentulous areas and labial, buccal and lingual sulcus regions.

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Reasons for taking impressions

- Study casts – plan and monitor treatment (complex restorative, ortho, tooth wear)
- Permanent record of the dental arches
- Monitoring tool e.g tooth wear
- Construct appliances – ortho / protective / bleaching
- Construct prostheses – fixed / removable
- Opposing arch model to record occlusal relation

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Alginate

Used for:

- Study casts, opposing occlusal models
- Preliminary impressions for partially dentate patients
- Appliances – protective bite guards, occlusal splints, orthodontic appliances, bleaching trays

Properties of an ideal impression material

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How many can you name?

- Biocompatible – safe for patient and dental team
- Easy to use
- Elastic on removal from mouth
- Accurate (ability to record fine detail and dimensionally stable)
- Fluid on insertion
- Adherent to tray
- Tear resistant
- Compatible with model and die materials
- Suitable shelf life, working time, setting time
- Able to sterilise

Classification of impression materials

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ELASTIC

1. Synthetic elastomers

Silicones (addition cured)
Polyethers
Polysulphides

2. Hydrocolloids

Reversible (agar)
Irreversible

NON-ELASTIC (RIGID)

1. Impression plaster
2. Impression compound
3. Zinc-oxide / eugenol
4. Impression waxes

Fortunately we are using alginate

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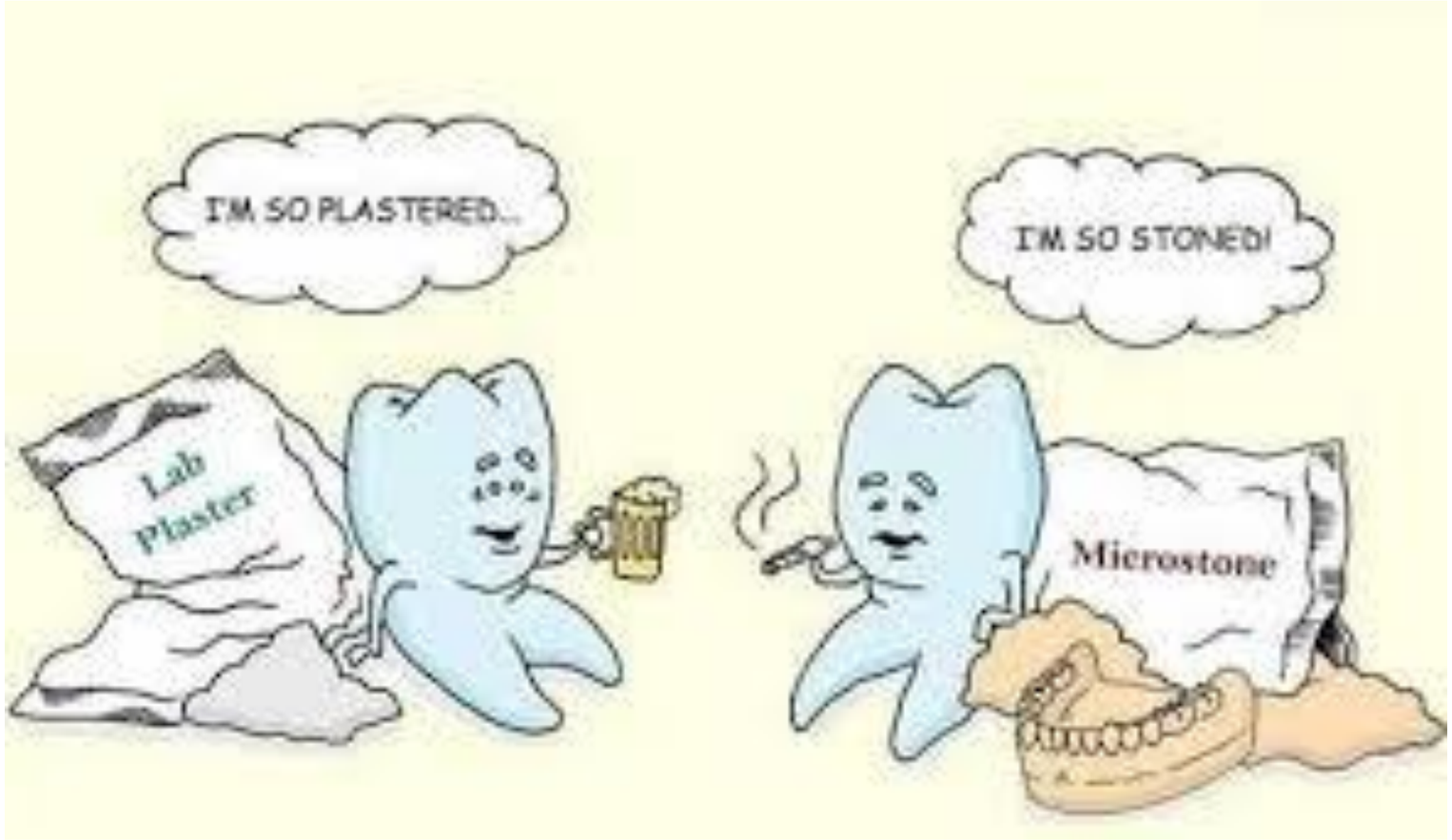

Alginate: properties

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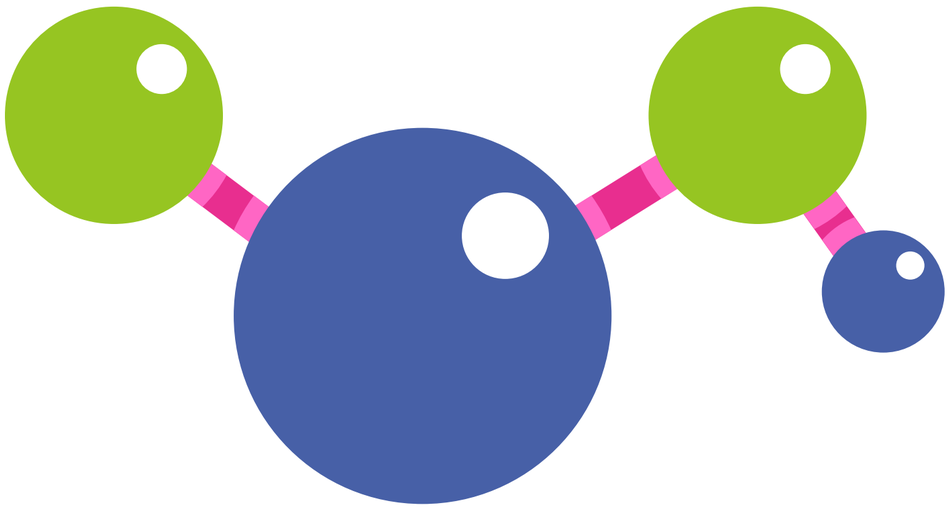
- **Irreversible hydrocolloid**

- **Composition:**

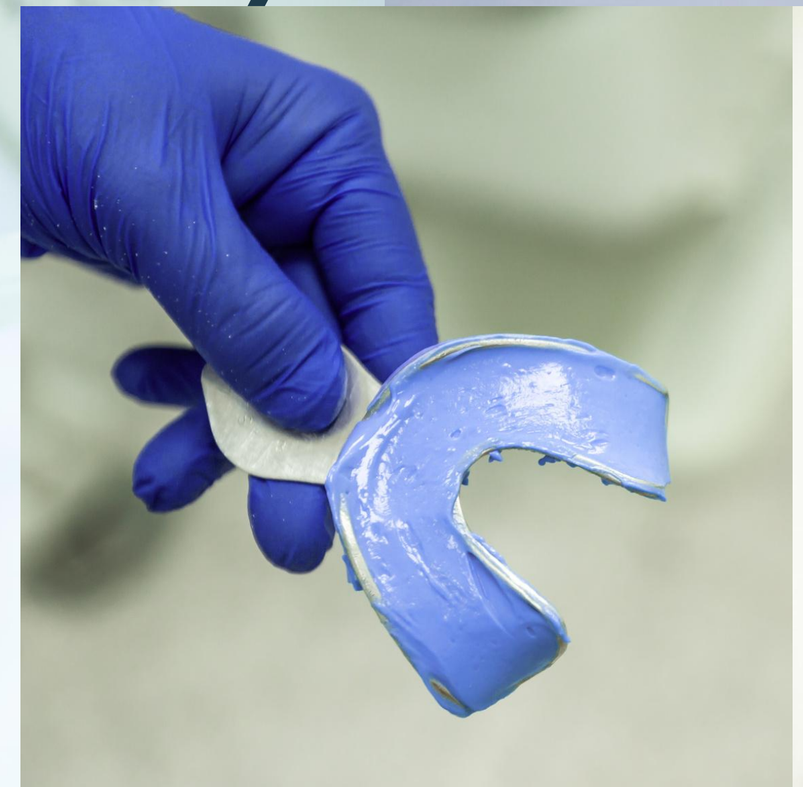
Sodium alginate + calcium sulphate + inert filler + water + added pH indicators
(give a visual aid to setting process)

- **Retention:**

Perforated tray
Adhesive - solutions of resins in alcohol, either bottle with brush or aerosol spray



Alginate: irreversible hydrocolloid



Making impressions

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- consent - explanation
- care of patient
- selecting trays
- impression techniques
- assessing impressions
- infection control
- administration

Making a good impression

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Operator:

- Understands what is required
- Chooses correct material
- ***Selects correct tray***
- Uses correct techniques
- Good patient management

Impression trays

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Carry impression material

Must not flex

Stock trays - plastic plain, perforated

Custom trays - acrylic, made in lab

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Box trays - when teeth are present

Preparation

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- Rubber mixing bowl
- Mixing spatula
- Alginate powder - shake!
- Water - room temperature 21°C
- Water measure
- Impression trays + handles
- Adhesive
- Disinfectant
- Gauze
- Laboratory docket
- Sealable plastic bag

Technique - 1

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- Patient in upright position
- Head supported and at your elbow height
- Select tray and try in, lower from front, upper from side/behind
- Tray should cover all teeth and be 3-4 mm wider than arch
- Modify tray for dead space / extension
- Apply adhesive to whole surface tray (thin layer) – wait 5 mins

Operator positioning

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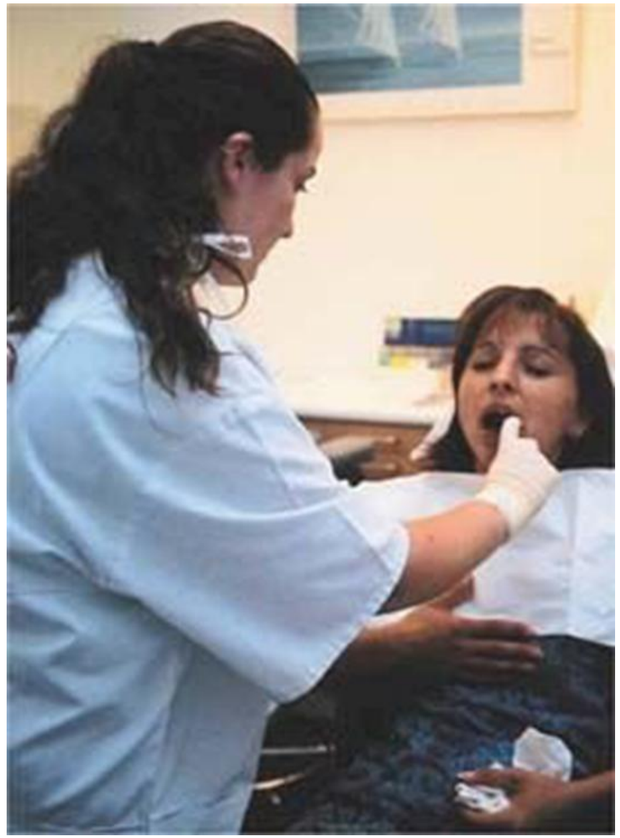
Upper arch



Lower arch

Customisation of stock trays

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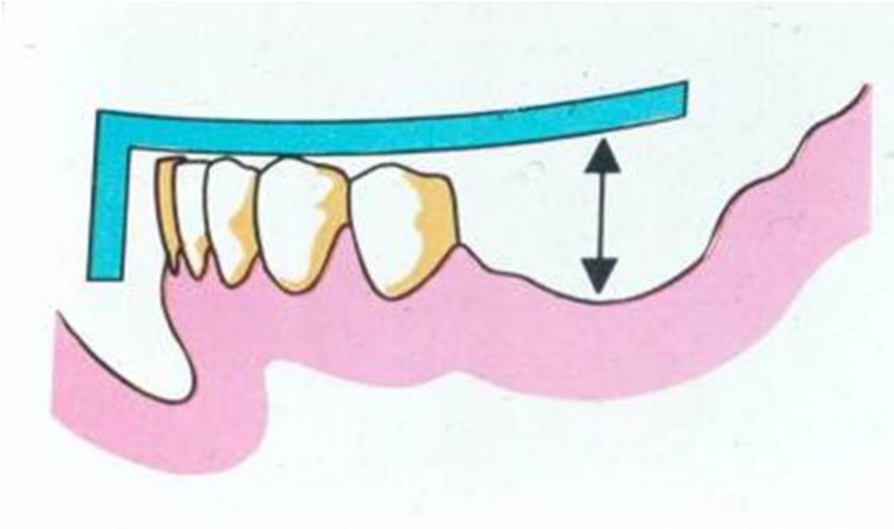
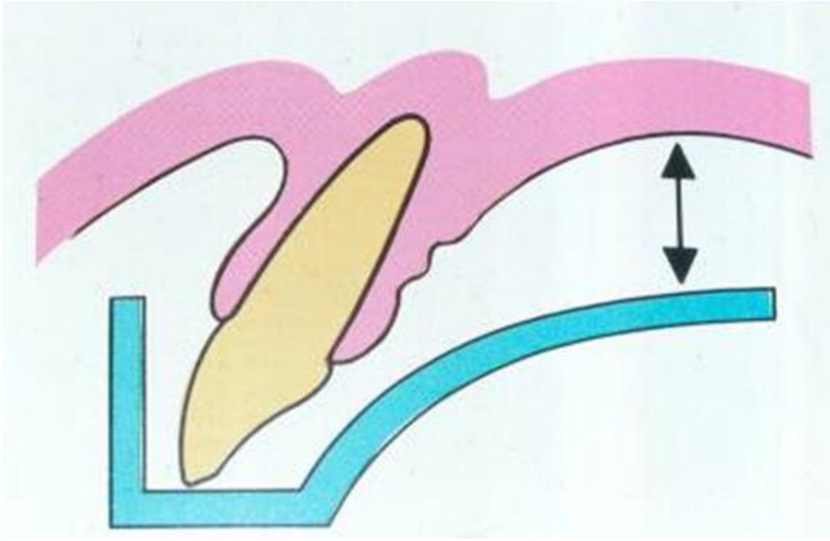


'dead space'



Customisation of stock trays

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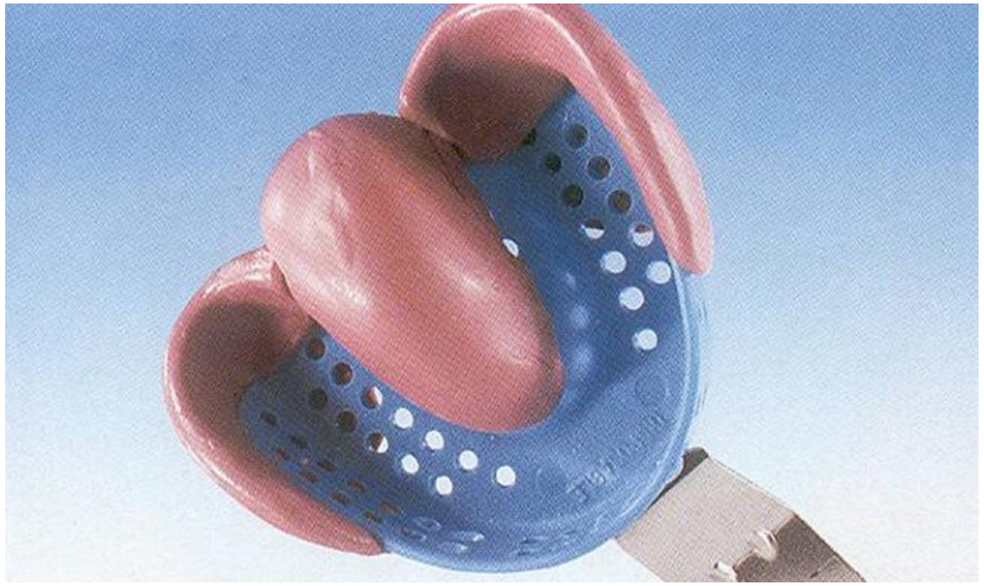
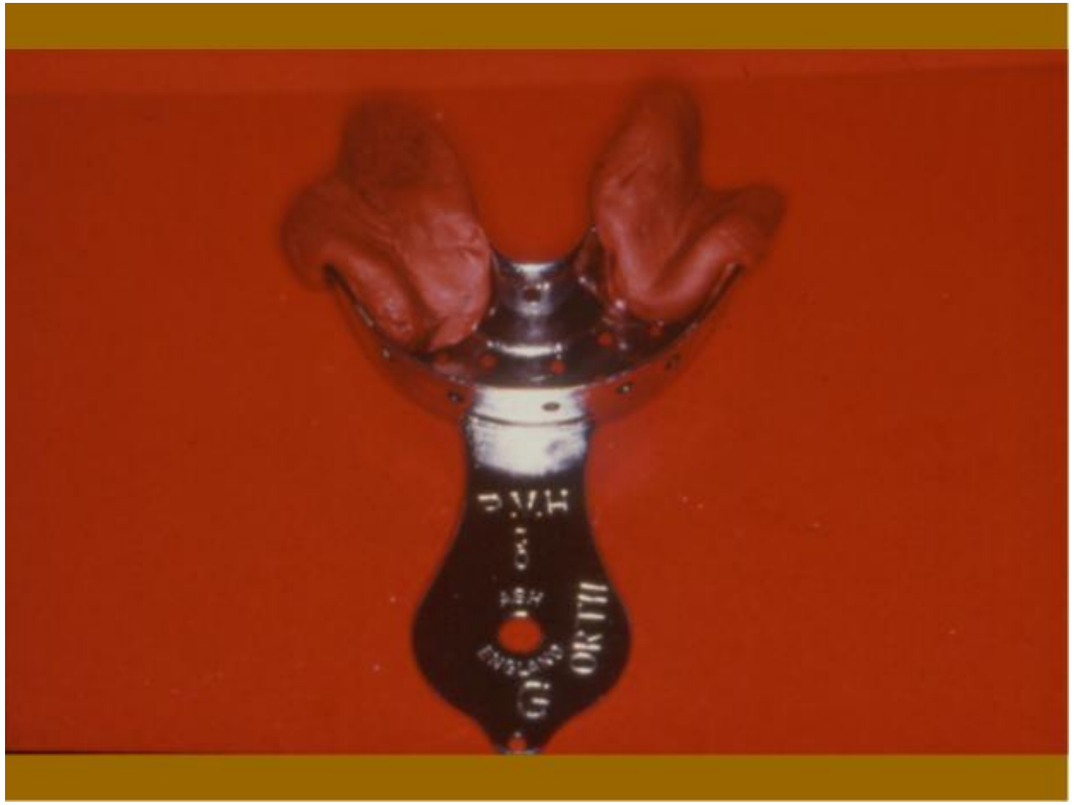


Adapt (customise) tray extension



Extension into ‘dead space’ obtained using impression compound for partially dentate patients

Technique - 2

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- Dry teeth prior to impression
- Smear impression material onto occlusal/incisal surfaces of teeth to reduce risk of air blows
- Rotate tray gently into mouth
- Line up centre of tray with incisors
- Seat tray posteriorly and rotate to engage anterior teeth
- Mould tissues
- Maintain even pressure until set (can keep a small amount of material to test)

Don’t forget this!

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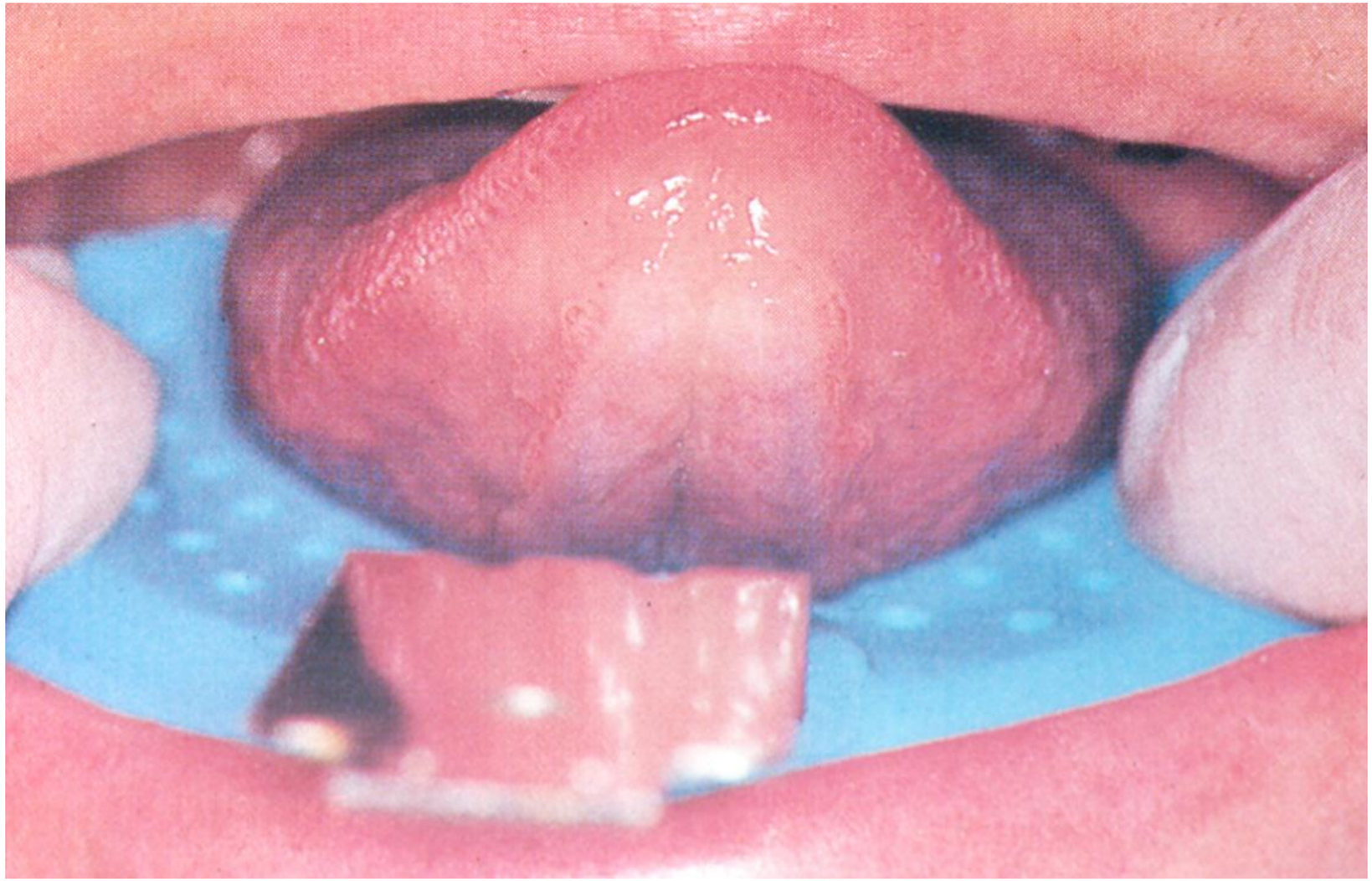

Technique - 3

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- Impression material near lips will set quicker
- Release air posteriorly to release tray
- Remove with a ‘quick’ movement to minimise distortion
- Rotate and slide out of mouth fully
- Check surface of material for any obvious defects
- Ensure material is still attached to supporting tray
- Trim back unsupported material especially distally

Technique - 4

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- Rinse and inspect for quality
- Disinfect, wrap in damp gauze and place in sealed, labelled bag
- Prepare to be transported to lab - ideally poured within 30 minutes!
- Fill in lab card

‘Read’ the impression

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Has it adequately recorded what was desired?

Impressions should be discussed under the following headings:

1. Extension
2. Anatomical landmarks
3. Rolled borders
4. Surface detail

Disinfection of impressions

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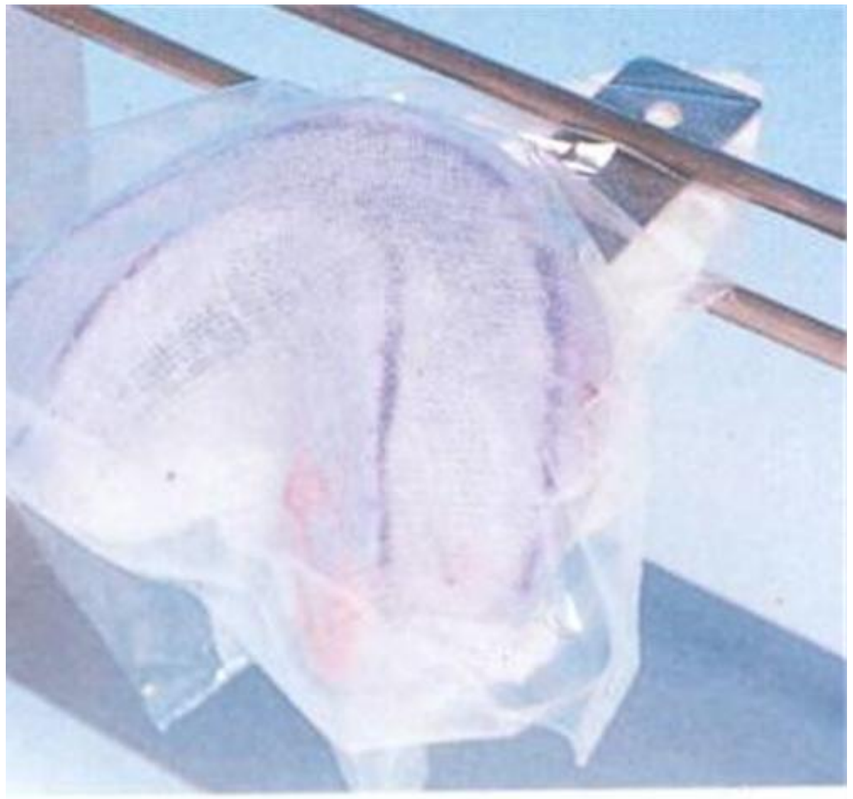
- Rinse in cold water
- Immerse in disinfectant
- Rinse in water, remove excess
- Wrap in damp gauze
- Place in plastic bag
- Label as disinfected
- Complete lab prescription card



Errors

- **Poor manipulation of material**

•Not enough / too much material

•Already set

•Not mixed correctly

- **Poor technique**

•Wrong tray size

•Tray in wrong place -(often) too close to front teeth

•Not fully seated

•Moved during setting

•Removed too early

- **Adhesive failure**
- **Air / contaminant defects**

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Not seated properly

Gagging: Causes

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Somatogenic (physiological)
– tactile irritation, varies patient to patient, drug therapy, alcoholism

Psychogenic
– apprehension, anxiety, fear, others

Gagging: Management

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- Minimise presence of physical stimulus – load tray carefully, tip head forward
- Divert patient's attention - breathing advice, count down time
- Reassurance
- Calm, confident approach
- Rinse with Difflam

ANY QUESTIONS?

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