

## Chapter 1

# Preventive techniques

### REASON FOR PROCEDURE

Preventive techniques are aimed at preventing the onset of dental caries in teeth, to maintain the dental health of a patient.

The two procedures discussed are:

- Application of fissure sealants
- Application of topical fluorides – full mouth or specific teeth

### BACKGROUND INFORMATION OF PROCEDURE – FISSURE SEALANTS

Any surface area of a tooth that cannot be cleaned easily by the patient can allow food debris, and ultimately plaque, to accumulate there and allow caries to develop by acting as a stagnation area. Patients usually clean their teeth by tooth brushing, flossing, the use of other interdental cleaning aids, mouthwashing, or any combination of these techniques.

The usual sites that can act as stagnation areas are the occlusal pits and fissures of posterior teeth (Figure 1.1), and especially the first permanent molars which erupt at around 6 years of age.

These teeth are particularly prone to caries because:

- They are the least accessible teeth for cleaning, being at the back of the young patient's mouth
- They erupt at an age when a good oral hygiene regime is unlikely to have been developed, so may be cleaned poorly by the patient
- Younger patients often have a diet containing more sugars than an adult, as the concept of dietary control will not be appreciated



**Figure 1.1** Molar tooth model showing occlusal fissure system

### DETAILS OF PROCEDURE – FISSURE SEALANTS

The occlusal pit or fissure needs to be eliminated to prevent it acting as a stagnation area, and this is achieved by closing the inaccessible depth with a sealant material.

The materials used are either unfilled resins, composites, or glass ionomer cements, or a combination of these two materials (known as a compomer).

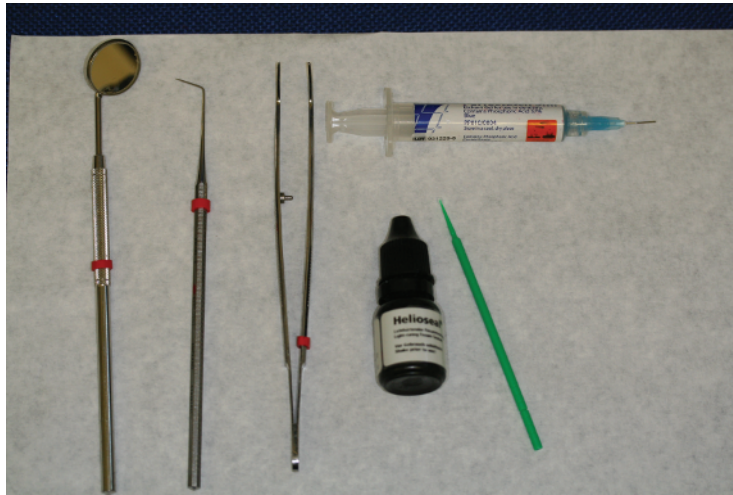
The usual instruments and materials that may be laid out for a fissure sealant procedure are shown in Figure 1.2.

#### TECHNIQUE:

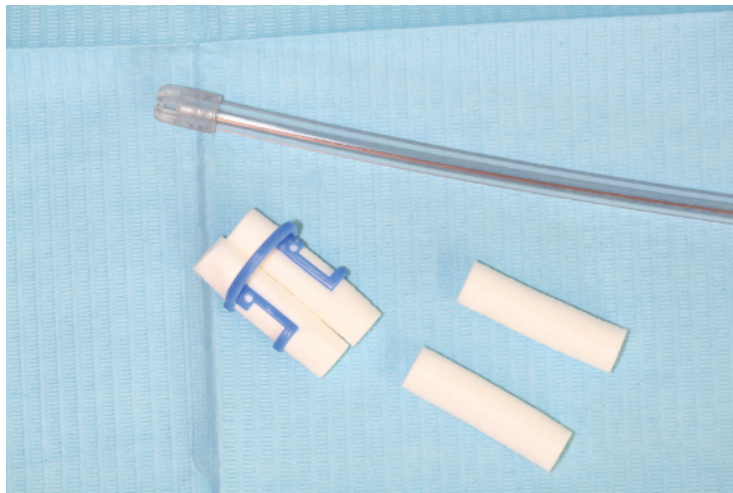
- The tooth is kept isolated from saliva contamination, as materials will not adhere to the tooth when it is wet
- Isolation techniques include the use of cotton wool rolls and low speed suction techniques using a saliva ejector (Figure 1.3)



- The occlusal fissures and pits are chemically roughened with acid etch to allow the microscopic bonding of the sealant material to the enamel
- The etch is washed off and the tooth is dried; the etched surface will appear chalky white
- Unfilled resin is run into the etched areas to seal the fissures or pits, and then locked into the enamel structure by setting with a curing lamp
- If any demineralisation of the fissure is present, one of the alternative materials listed above is used to replace the enamel surface



**Figure 1.2** Fissure sealant instruments and materials



**Figure 1.3** Tooth isolation techniques





## BACKGROUND INFORMATION OF PROCEDURE – TOPICAL FLUORIDE

Other very difficult to clean areas of the teeth are the points where they have contact with each other in the dental arch – the interproximal (interdental) areas.

There are certain oral health products available specifically for cleaning these areas, such as dental floss and interdental brushes, but they require a certain amount of dexterity and determination by the patient to be used effectively.

All fluoridated toothpastes provide some protection of these areas from caries, but some patients require additional full mouth fluoride protection by the professional application of a topical fluoride varnish or gel.

They are:

- Children and vulnerable adults with high caries rates
- Physically disabled patients who are unable to achieve a good level of oral hygiene
- Medically compromised patients for whom tooth extractions are too dangerous to be carried out (haemophiliacs, patients with some heart defects)

## DETAILS OF PROCEDURE – FULL MOUTH TOPICAL FLUORIDE APPLICATION

A high concentration of fluoride is required to be applied to the interproximal areas that is viscous enough not to be washed away quickly by saliva, so that it can be taken into the enamel structure of the tooth and make it more resistant to caries. The usual material used is a sticky fluoride varnish or gel, such as that shown in Figure 1.4.



**Figure 1.4** Fluoride gel for professional application – Duraphat

**TECHNIQUE:**

- The operator and the patient wear suitable personal protective equipment
- The teeth are polished with a pumice slurry to remove any plaque present and allow the maximum tooth contact with the fluoride
- The polish is thoroughly washed off and the teeth are dried
- Adequate soft tissue retraction and moisture control are provided by the dental nurse, so that the dry tooth surfaces are accessible and the gel will not be displaced by accident during the procedure
- The viscous fluoride gel is manually applied to all available surfaces of each tooth, using one or more applicator buds and one arch at a time

**DETAILS OF PROCEDURE – SPECIFIC TOOTH TOPICAL FLUORIDE APPLICATION**

In some patients, individual teeth may show signs of previous acid attack from certain foods and drinks as a 'brown spot' lesion on the enamel surface (Figure 1.5). Other patients may have gingival recession present, which exposes the root surface of a tooth to dietary acids and sugars, therefore making it vulnerable to attack by dental caries (see Figure 5.8). These specific areas can be protected by the direct application of a localised fluoride varnish such as that shown in Figure 1.4, using a similar technique to that of a full mouth application as described earlier.



**Figure 1.5** Brown spot lesion indicating previous enamel damage