Chapter 1

Preventive techniques

REASON FOR PROCEDURE

Preventive techniques are aimed at reducing a patient's risk of experiencing the onset of dental caries in teeth, thereby helping 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. Plaque is the term used to describe the soft, sticky film that forms in the mouth whenever food is ingested and is composed of food debris and oral bacteria. Patients usually clean their teeth by brushing, flossing, using other interdental cleaning aids, mouth washing, 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), especially the first permanent molars which erupt at around 6 years of age. Fissures are seen on the occlusal (biting) surface of the teeth, while pits are usually seen on the buccal (cheek side) of the teeth.

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 behind the deciduous set of teeth).
- They erupt at an age (around 6 years old) when a good oral hygiene regime is unlikely to have been developed, so may be cleaned poorly by the patient initially.

Basic Guide to Dental Procedures, Third Edition. Carole Hollins.

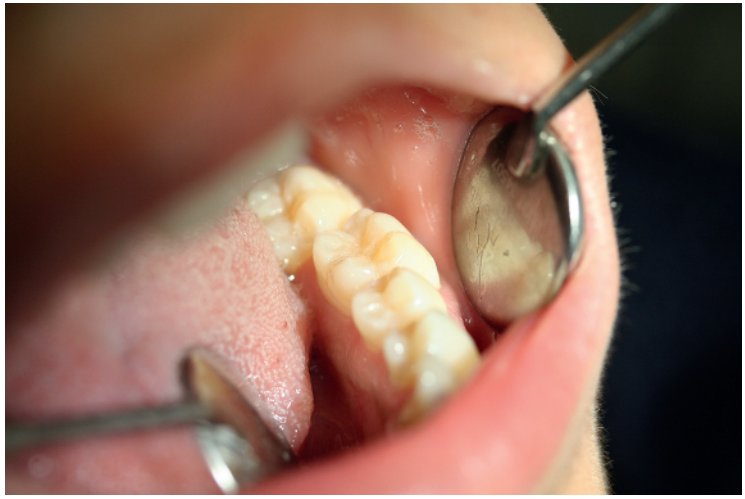

Figure 1.1 Occlusal fissures of lower left molar tooth

- Younger patients often have a diet containing more sugar than adults, as the concept of dietary control will not yet be appreciated.

DETAILS OF PROCEDURE – FISSURE SEALANTS

The occlusal pit or fissure needs to be eliminated to prevent it from acting as a stagnation area and allowing plaque to accumulate there, and this is achieved by filling in the inaccessible depth with a sealant material.

The materials used are either unfilled resins, flowable composites, glass ionomer cement, or a combination of these latter 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 operator and the patient wear suitable personal protective equipment
- 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 flowable materials listed above is used to replace the demineralised enamel surface

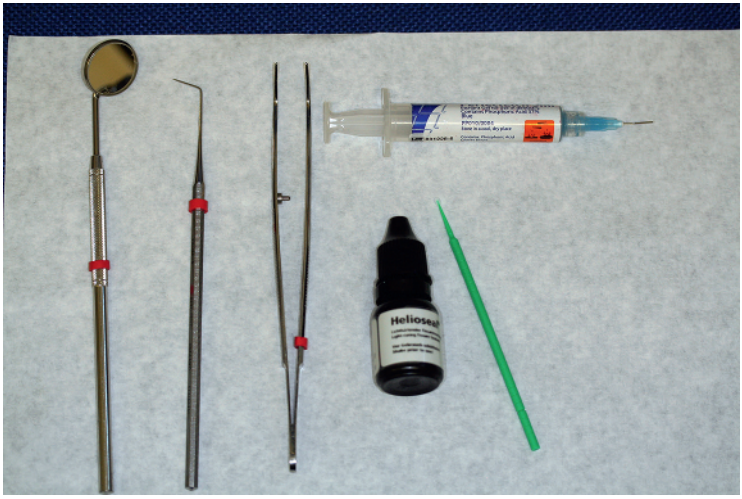

Figure 1.2 Fissure sealant instruments and materials

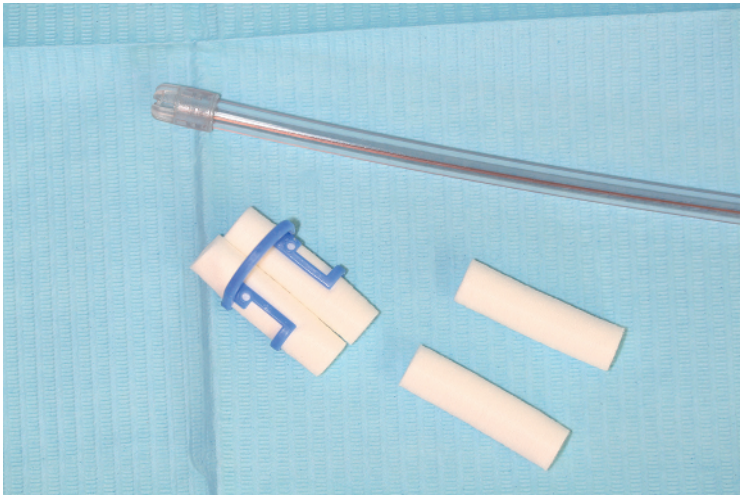

Figure 1.3 Tooth isolation techniques

BACKGROUND INFORMATION OF PROCEDURE – TOPICAL FLUORIDE

Other areas of the teeth that are very difficult to clean 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 dental caries ('tooth decay'), 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
- Children undergoing fixed orthodontic treatment (fixed braces)
- Adults with increased risk factors for caries, such as a heavily restored dentition, persistent dry mouth due to medications or medical conditions, and so on
- Physically disabled patients who are unable to achieve a good level of oral hygiene due to the limitations of their physical disability
- 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 are viscous enough not to be washed away quickly by saliva so that it can be taken into the enamel structure of the tooth during contact, thereby making it more resistant to caries. The usual material used is a sticky fluoride varnish or gel, such as one of those shown in Figure 1.4.

Figure 1.4 Examples of topical fluoride varnishes for professional application

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 treating one arch at a time
- Previously, an alternative application technique involved the use of preformed trays for each arch, which were loaded with the fluoride varnish before insertion and then held in place by the operator for some time to allow the fluoride to become incorporated into the enamel surface. The aforementioned manual application technique tends to be better tolerated by the patient

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, such as a 'brown spot' lesion on the enamel surface (Figure 1.5). Other patients may have an area of gingival recession or toothbrush abrasion present, either of which exposes the root surface of a tooth to dietary acids and sugars, therefore making it vulnerable to attack by dental caries (see Figure 5.9). These specific areas can be protected by the direct application of a localised fluoride varnish, such as those shown in Figure 1.4, using a technique similar to that of a full-mouth application as described earlier.

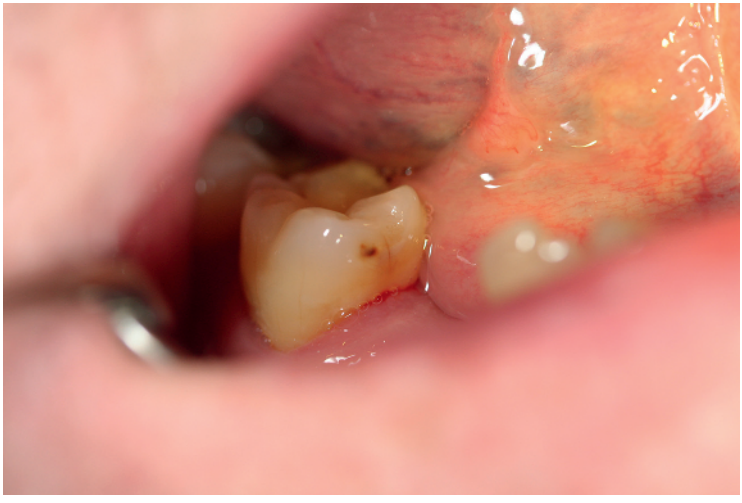

Figure 1.5 Brown spot lesion indicating previous enamel damage