BASIC GUIDE TO DENTAL PROCEDURES

Third Edition

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Contents

How to use this book

As the title suggests, the book has been written as an introductory guide to the more usual dental procedures carried out in a modern dental practice. It does not attempt to explain the full theoretical and clinical technique behind these procedures; rather, it aims to give a sufficient overview of them, with the use of 'before and after' colour photographs and various illustrations to hopefully make the book useful for helping to explain certain dental procedures to patients and also to unqualified dental nurses undergoing their primary training in dental nursing. In this third edition, each chapter has been updated as necessary in line with the latest dental techniques and materials available to the profession. A new chapter relating to treatment under conscious sedation has been included for the benefit of the patients and is also of relevance to the dental nurse in the United Kingdom, as their role in assisting during the treatment of patients under conscious sedation is an extended duty.

However, the main readership is envisaged to be dental care professionals, especially those unqualified or inexperienced dental nurses who may not have access to viewing many of the procedures described, as many practices continue to specialise in providing dental care only in certain areas of dentistry. It should be used, then, in conjunction with the excellent textbooks already available for dental nurse training, where more detail of instruments and materials used, more in-depth clinical information and other underpinning knowledge are provided. By popular request, photographic examples of the instruments and materials, which may be required for various procedures, have been retained in this edition, and while the images used provide guidance for those undertaking OSCE-style training and assessment, they are not intended to be exhaustive in their content.

The text in each section is laid out to explain the reasons behind the treatment described, the relevant dental background, the basics of how each procedure is carried out and any aftercare information necessary. It is beyond the remit of the book to cover every current technique in every dental discipline discussed, so it is hoped that the text provides at least the basic information required for the reader to gain an understanding of the procedure, before seeking a greater depth of knowledge elsewhere.

The inclusion and expansion of information on extended duties for dental nurses in this edition, as in the previous edition, is of particular relevance to the United Kingdom-based readership. Examples have been given throughout the chapter of the type and extent of 'in-house' training that may be provided in a broad selection of these duties, as well as examples of suggested recording sheets that may be used to provide evidence of monitoring and competency in various of the necessary skills discussed. It is hoped that the information provided will help UK dental practices train and extend the useful skills of its workforce in an effort to develop their dental team and widen their provision of dental services for the ultimate benefit of their patients.

Wherever possible, the correct dental terminology has been adhered to, but as the dental knowledge of the expected readership will vary widely, a glossary of terms has been updated again and included to clarify certain definitions in the context to which they have been referred to in the text.

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.

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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

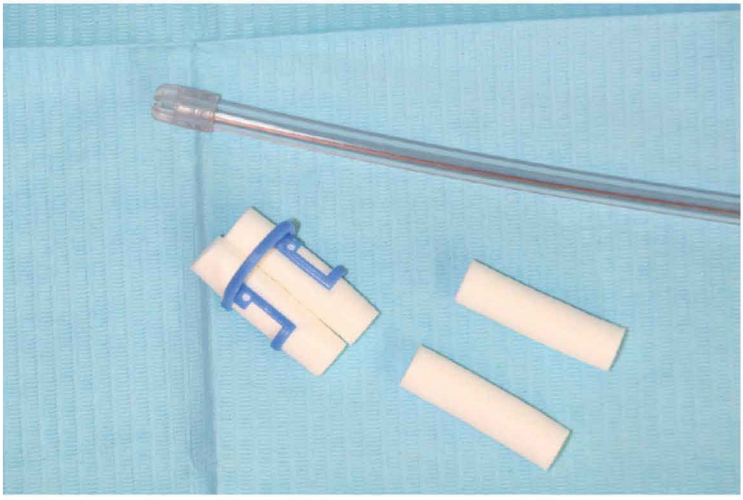

Figure 1.3 Tooth isolation techniques

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

Chapter 2

Oral hygiene instruction

REASON FOR PROCEDURE

Oral hygiene instruction is given to patients to ensure that they are maximising their efforts to remove plaque from their teeth and gingival margins to minimise the damage caused by dental caries and periodontal disease, respectively.

Dietary advice is also given to help patients avoid foods and drinks that are particularly damaging to their teeth – those high in refined sugars or those that are acidic.

When the advice is correctly followed on a regular basis, the patients can enjoy a well-cared-for and pain-free mouth, as well as avoid the expense of reparative dental treatment.

The procedures discussed are:

- Use of disclosing agents
- Toothbrushing instruction
- Interdental cleaning instruction
- Dietary advice to reduce the risk of dental caries

BACKGROUND INFORMATION OF PROCEDURE – DISCLOSING AGENTS

Disclosing agents are harmless vegetable dyes supplied in liquid or tablet form and in various colours, usually red or blue (Figure 2.1). Alternatively, a similar disclosing action can be achieved by swilling the mouth with a solution of food colourant liquid (such as those used to colour cake icing).

The disclosing agents act by staining any plaque on the tooth surface to their colour (Figure 2.2), thus making it far easier to show the presence and location of the plaque to the patient, as plaque is normally a creamy white colour and may be difficult for the patient to see otherwise (Figure 2.3).

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Figure 2.1 Examples of disclosing tablets

Figure 2.2 Disclosed teeth showing the presence and extent of plaque build-up

Once stained, suitable oral hygiene instructions can be given to remove the plaque effectively. The dyes stain the plaque present on the teeth and gums, but not the teeth themselves, nor any restorations. However, they will also stain any plaque present on other soft tissues, such as the tongue – an area that few patients would think to brush as a matter of routine. Showing the presence of stained plaque in these areas helps persuade patients to carefully brush them routinely as part of their oral hygiene regime.

Figure 2.3 Appearance of undisclosed gingival plaque

DETAILS OF PROCEDURE – DISCLOSING AGENTS

The agents can initially be used at the practice by the oral health team so that the correct problem areas can be identified and suitable cleaning advice can be given. The patient can then use the agents at home to check their progress on a regular basis. The most common agents used are disclosing tablets, but liquid colourants used for cake icing are equally effective.

TECHNIQUE:

- A protective bib is placed over the patient so that their clothing is not inadvertently marked
- The patient is given one disclosing tablet and asked to chew it for about 1 min
- After this time, they are asked to spit out the chewed tablet and saliva, but are instructed not to rinse their mouth out
- Using a patient mirror, any stained plaque is pointed out by the oral health team, and the worst areas are noted (very often the gingival margins or around uneven teeth)
- Detailed advice is then given on how to improve their toothbrushing and cleaning techniques to eliminate the plaque from these areas
- The patient can follow these instructions immediately so that all the stained plaque is removed while under the supervision of the oral health team
- This enables the patient to learn more thorough and more effective techniques for plaque removal, especially in the identified heavily stained areas
- With the plaque easily visible due to the disclosing agent, the patient is able to see their progress and develop the skill to maintain good oral hygiene

BACKGROUND INFORMATION OF PROCEDURE – TOOTHBRUSHING

Toothbrushing is the most commonly used method by patients to remove plaque from the easily accessible flat surfaces of the teeth, but not from the interdental areas unless a sonic-type electric brush is used (Figure 2.4).

Many toothbrushing techniques have been suggested over the years – especially side-to-side brushing and rotary brushing – but the technique used is immaterial as long as the plaque is removed successfully without causing damage to the tooth surface. Disclosing agents can be used to determine the most successful method for a patient.

When performed thoroughly and to a consistently high standard, manual brushing with a good quality brush should be just as effective as that completed with a good quality electric brush on the flat surfaces of the teeth, but the latter takes the effort out of good brushing for those patients who lack the time and skill to perform manual brushing well.

When toothbrushing is combined with the application of a fluoridated toothpaste, the teeth and gums are cleaned free of plaque, and the teeth are protected from dental caries by the action of fluoride on the tooth enamel.

Figure 2.4 Example of sonic-style electric toothbrush

DETAILS OF PROCEDURE – TOOTHBRUSHING

Good toothbrushing aims to remove plaque from the gingival margins and some stagnation areas of the teeth and to protect the tooth surface from carious attack with a layer of fluoride.

Many toothpastes are available (fluoridated, tartar controlling, desensitising, whitening, etc.; Figure 2.5), and the oral health team will advise on the most suitable to be used in each case – patients who have no gum disease issues; for example, do not need to use toothpaste specifically to treat gum disease, and so on.

Similarly, many toothbrush designs are available – both manual and electric – but as a general rule, the head should be small to allow easier manoeuvrability, and the bristles should be multi-tufted and made of medium nylon. Even so, some patients brush with such force that they actually 'saw' into the necks of their teeth and produce abrasion cavities (Figure 2.6).

Figure 2.5 Examples of various toothpastes

Figure 2.6 Abrasion cavity at the neck of a canine tooth caused by heavy-handed toothbrushing

TECHNIQUE:

- Identify those patients with regular residual plaque after toothbrushing
- Apply a small amount of toothpaste to the patient's brush, then allow them to brush their teeth in their usual way and at their usual speed
- Disclose the residual plaque once they have finished brushing to identify the areas of its continued accumulation
- Develop a more thorough brushing technique with the patient to remove all the plaque, particularly that which has accumulated at the gingival margins (Figure 2.7)
- This may involve a change of brush from manual to electric or vice versa, as well as a change of brushing technique by the patient
- Once an effective technique has been identified, a methodical approach is to be developed so that a routine brushing technique is carried out every day
- This tends to be more effective if the more difficult areas are tackled first, such as the lingual surfaces of the lower teeth
- The patient then systematically brushes all the teeth, starting in the same place and ending in the same place each time
- Advice can then be given on the frequency of brushing – usually twice daily as a minimum, but some patients may continue with a high-sugar diet and need to brush after each meal
- Full dietary advice should also be discussed and ideally adjusted where necessary, especially for those patients identified as having a high sugar or dietary acid intake
- Toothbrushes should be replaced once the bristles start to splay, as they will not remove plaque effectively when worn down (Figure 2.8)

Figure 2.7 Toothbrushing the gingival margins

Figure 2.8 Comparison of new and worn toothbrush

BACKGROUND INFORMATION OF PROCEDURE – INTERDENTAL CLEANING

The surfaces of the teeth that remain untouched by routine toothbrushing are the contact points or interdental areas – the points where the 'front' (mesial surface) of one tooth touches the 'back' (distal surface) of the adjacent tooth in each quadrant of the dentition (Figure 2.9). Plaque accumulates here just as easily as on the flat surfaces of the teeth, and

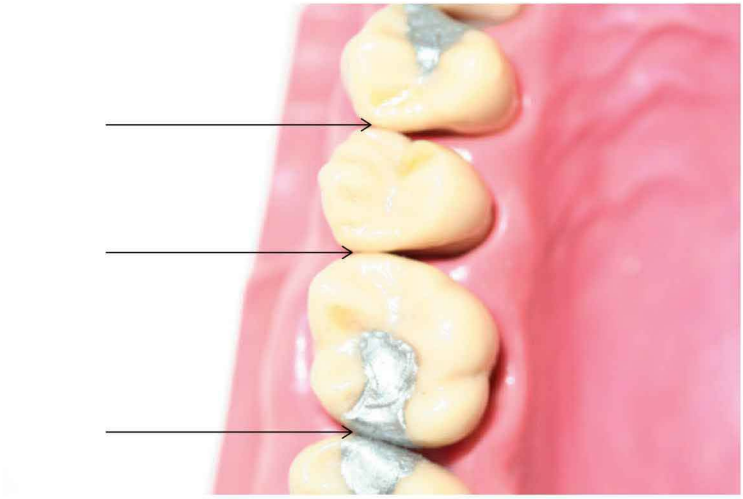

Figure 2.9 Contact points of the teeth (arrowed)

even more so when restorations extend into the interdental areas, as microscopically, the restoration margins provide a greater surface area for plaque to accumulate.

Although toothbrushes are too large to clean interdentally, other oral health products have been designed to do so:

- Tape or floss – ideal for dislodging food debris that is trapped at the contact point itself
- Manual interdental brushes – ideal for physically cleaning the interdental area (the mesial and distal surfaces of the adjacent teeth)
- Dental wood sticks – not usually recommended for use by the oral health team, as they can splinter during use or exert excessive force on the soft tissues, as can plastic alternatives
- Some specialised electric toothbrush heads
- Some mouthwashes
- Waterpik devices

The first four are used to physically clean plaque and food debris from the interdental areas, while some mouthwashes can be vigorously rinsed and swished through the interdental areas by the patient to dislodge larger particles of debris. Alternatively, a water pick device can be used to achieve the same aim.

The patient requires a certain amount of manual dexterity to use dental tape or floss effectively, and a lack of dexterity is often the cause of patients abandoning the technique. Some products have been developed to help, whereby a fork design holds a small piece of tape or floss firmly while it is used with one hand to enter and clean the interdental areas – often referred to as 'flossettes' (Figure 2.10). This removes the need for the patient to wrap the tape around the fingers and hold it firmly while trying to access the interdental areas.

Figure 2.10 Interdental 'flossettes'

DETAILS OF PROCEDURE – FLOSSING

This is the technique used by many patients who routinely clean interdentally despite it being the most difficult to achieve.

Some tapes and flosses are waxed to assist easier entry through tight contact points, and others are impregnated with fluoride so that the interdental surfaces of the teeth are protected from tooth decay once accessed (Figure 2.11).

Figure 2.11 Examples of dental floss and tape products

TECHNIQUE:

- Ideally, the patient should carry out flossing with the aid of a mirror in a well-lit room
- A piece of tape or floss (approximately 20 cm) is removed from the holder and wrapped around both index fingers, leaving a central portion between the hands (Figure 2.12)
- This is held over both thumb pads and guided into each interdental area, one at a time
- Once in the area, the thumbs are used to adapt the tape to first the surface of one tooth and then the other, forming the contact point (Figure 2.13)
- While in contact with the tooth surface, the tape is drawn from side to side to wipe any plaque from each surface
- As the tape is dirtied, it is loaded off one finger and onto the other so that a clean portion is available for the next interdental area
- Tape is gentler on the gingivae than floss if the patient is heavy-handed or if force is required to access some tight interdental areas, but some patients may find tape too thick to use effectively

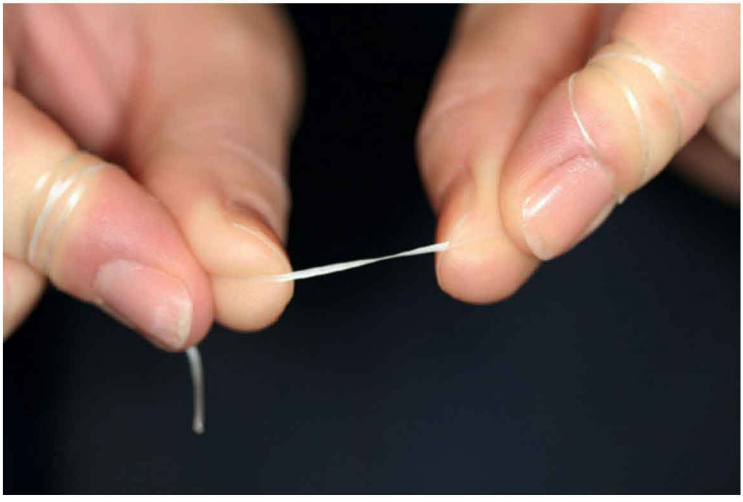

Figure 2.12 Correct positioning of floss around fingers

DETAILS OF PROCEDURE – INTERDENTAL BRUSHING

This is an alternative and useful technique for cleaning the interdental areas of patients who have contact points wide enough to admit a specially designed interdental brush into the area. Several 'bottle-brush' style designs of interdental brush are available, and a selection of popular examples is shown in Figure 2.14. These brushes are provided in a

Figure 2.13 Flossing technique

Figure 2.14 Selection of popular interdental brushes

variety of colour-coded width sizes so that patients with spaced teeth can successfully use larger brushes to clean their interdental areas, while patients with tight contact points are also able to insert the smallest design of brush to clean their interdental areas and then replace the colour-coded size when necessary (Figure 2.15).