Dental care for the patient with a cleft lip and palate. Part 2: The mixed dentition stage through to adolescence and young adulthood

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This is the second of two articles looking at dental care for the patient with a cleft lip and palate. Part 1 looked at the needs of the child from birth through to the mixed dentition stage. Part 2 looks at dental care from the mixed dentition stage through to adolescence and young adulthood.

The mixed dentition stage

As in the early years, the main emphasis throughout the mixed dentition stage should be on the prevention of dental disease. The dentist has an important role in helping to balance the child's developing independence with a continuing need for parental help and supervision. This is the period when the child should be encouraged to start accepting responsibility for his own dental health and learn how to look after his mouth.

Accepting the appearance of the cleft and the teeth in this region is often a big hurdle for some patients and their parents. By working together closely with the parent and child, any anxieties can be more readily identified and overcome. In general, society reacts negatively to facial disfigurement[1] and many patients with a cleft lip and palate experience problems with teasing at school.[2] Psychological counselling arranged by the cleft team is sometimes required to help the child and support the family.

Parents become increasingly keen for the orthodontic treatment to start if the upper permanent anterior teeth erupt into unfavourable positions. The teeth in the cleft region can show marked rotations, or retroclination combined with anterior crossbite. Hypodontia is also a problem, with the upper permanent lateral incisor commonly missing. The increased tendency towards a Class III incisal relationship may become more apparent at this stage (Fig. 1). The dentist can provide valuable support and reassurance with regard to these developments. The patient and family are encouraged to focus on the continuing importance of the prevention of dental disease and the maintenance of oral health.

In some cases, orthodontic treatment is started early. For example, a simple upper removable appliance may be provided to correct an anterior crossbite. Patients with an alveolar cleft may require orthodontic expansion with a fixed appliance (Fig. 2) to create space for placement of an alveolar bone graft. The alveolar bone graft is usually carried out between the ages of 8–10 years. The aim of this surgical procedure is to repair the residual bony defect to allow the eruption of the permanent lateral incisor and canine tooth into the cleft region.[3] Definitive orthodontic treatment is carried out when the permanent dentition is fully erupted.

Preventive management

Whilst preventive management is essential for all children, this section aims to highlight aspects of dental care which are particularly important for children with a cleft.

Dietary counselling is best achieved with a three-day diet diary.[4,5] This is a procedure that can be carried out at any stage of the child's dental development, especially when there is a caries problem. Erosive tooth surface loss due to the excessive intake of acidic food or drink is also a potential problem in this age group. Any observed tooth wear needs to be carefully monitored and addressed.[6]

In brief

- The patient is encouraged to start accepting responsibility for his or her own dental health with prevention playing a key role.
- Teasing at school can be a problem.
- Patience, support and skilful behaviour management are important.
- Patient motivation can decrease in the teenage years. Multiple visits for cleft-related care are a factor.
- Good communication with the cleft team is essential. Dental extractions should be carried out only after consultation with the orthodontist involved with cleft care.

Difficulties with toothbrushing often arise as the upper permanent incisors erupt, due to lack of sulcus depth and tightness of the repaired lip. As in the primary dentition, the upper permanent central incisors in the patient with a bilateral cleft lip and palate may be severely retroclined. Simple measures such as showing the child and parent the cleft region in a hand mirror and disclosing the plaque deposits, especially on

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REFEREED PAPER
Received 17.03.98; accepted 04.06.99
 188: 131–134

Fig. 1A Class III incisal relationship in a 7 year-old child with a bilateral cleft lip and palate.

the teeth around the cleft, will assist with toothbrushing instruction. This will also help the child to come to terms with the appearance of the cleft and the associated teeth.

Worries about bleeding from inflamed gingivae around the cleft region should be identified. The child and parent can be nervous about brushing the area for fear of traumatising the soft tissues, especially following alveolar bone graft surgery. Oral hygiene prior to bone grafting must be of a very high standard as gingival inflammation can cause loss of the new bone.[7] A 0.2% chlorhexidine gluconate mouthwash is useful for short periods following surgery or to help stabilise gingival health in severe cases of gingival inflammation, where the patient is anxious about the bleeding gingival tissues and is nervous to brush. However, there is no substitute for good toothbrushing and this should be re-established as soon as possible.

Access to the teeth in the cleft region is often difficult and a baby-sized toothbrush is still useful even at this age, especially where the upper lip is tight. This can be supplemented with an interspace brush. Teeth often need to be targeted individually when toothbrushing, as conventional brushing round the arch will exclude abnormally positioned teeth in the cleft region, particularly those placed palatally (Fig. 3). The child is shown how to lift the upper lip out of the way to facilitate brushing (Fig. 4). The cleaning of any anterior teeth positioned high in the labial sulcus should be given special mention. Home use of disclosing tablets and the importance of a hand-held or bathroom mirror to aid toothbrushing should be discussed. Parental support with toothbrushing is helpful throughout the mixed dentition period and supervision is advised until at least 7–8 years of age.

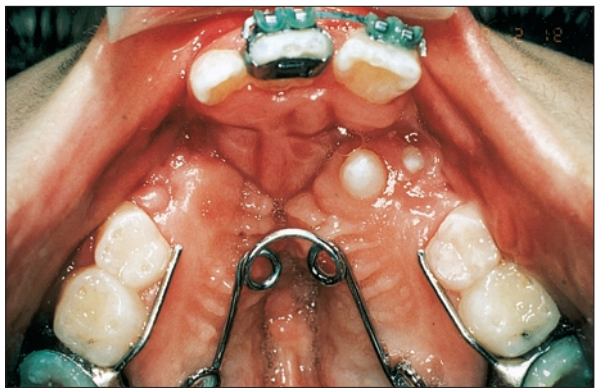

Fig. 2 A 9 year-old child with a bilateral cleft lip and palate, wearing a fixed appliance to expand the upper arch prior to an alveolar bone graft. A supernumerary tooth is visible in the left cleft region of the palate.

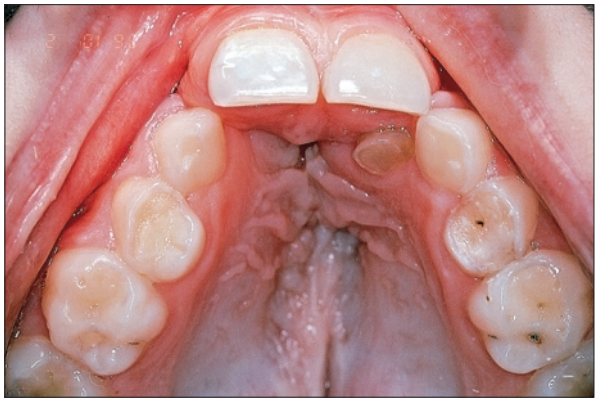

Fig. 3 Bilateral cleft lip and palate in an 8 year-old child showing the left primary lateral incisor in the palatal cleft.

Fissure sealants are an important consideration for this group of patients.[8] The procedure is advisable for first and second permanent molars, and premolars where indicated. Fissure sealing should be carried out as soon as the teeth have erupted sufficiently to allow adequate moisture control of the occlusal surfaces.

The application of fluoride varnish is a valuable preventive measure. It is particularly useful for hypoplastic permanent incisors, areas of early demineralisation, teeth in the cleft region and partially-erupted permanent molars prior to fissure sealing. Fluoride tablet supplements should be continued throughout this phase if appropriate, or fluoride mouthwash usage could be introduced at this stage if only a topical effect is required.

Fig. 4 Toothbrushing instruction — an 11 year-old child with a bilateral cleft lip and palate being shown how to lift the upper lip for good access to the cleft region.

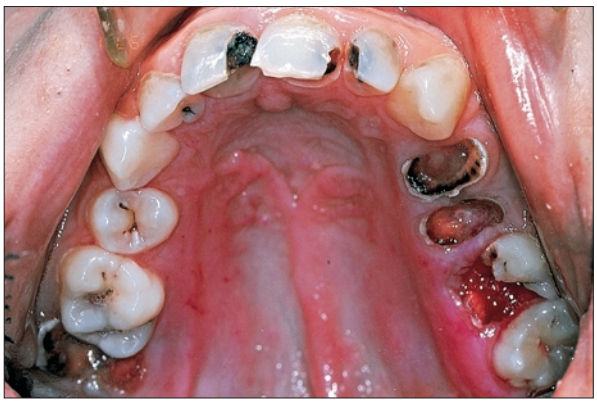

Fig. 5 A 20 year-old patient with a cleft of the soft palate only. Needlephobic. Multiple carious lesions.

Radiographic management

Patients with a cleft lip and palate require many radiographs to monitor growth and development, facilitate planning for orthodontic treatment or surgery and assess outcome and stability. Clear guidelines are laid out regarding the recommended frequency of radiographs to diagnose or monitor caries.[9] For comprehensive dental care, the bitewing radiograph (or lateral oblique view in the less co-operative patient) is essential to permit thorough treatment planning. Further radiographs will be required, as necessary, to investigate the developing dentition and any pathology, trauma, or other dental conditions.

Fig. 6 A 37 year-old patient with a left unilateral cleft lip and palate who attended Bristol Dental Hospital in pain. Neglected oral health. Last dental attendance at 14 years - he disliked multiple visits for cleft-related care.

Restorative care

If restorative work is needed it should be carried out to a high standard. Pulp treatment procedures and stainless steel crowns for primary molars should be used where appropriate. The aim is for these teeth to exfoliate naturally, thereby maintaining the original arch relationships and space for the permanent successors, unless extractions are indicated for orthodontic reasons. Sealant restorations provide a solution to the early carious lesion, especially in the occlusal surfaces of permanent molar teeth.[10]

The upper permanent incisor teeth can show varying degrees of hypoplasia in the patient with a cleft lip and palate. This can range from mild hypoplasia to a marked loss of tooth substance. Teeth with marked hypoplasia can be sensitive and difficult to keep clean giving rise to gingival inflammation. Reassurance and careful preventive advice are important. Adhesive restorations can be placed to protect these teeth, make them easier to clean and improve their aesthetics. These restorations can serve as an interim measure prior to more advanced restorative work carried out in the young adult years following the completion of orthodontic treatment and possible surgery. Improvement of appearance is of crucial importance for patients with a cleft lip and palate, who may be subject to teasing and suffer from a poor self-image.

Communication with the cleft team

Good communication with the cleft team becomes particularly important from the mixed dentition stage onwards, as orthodontic treatment is often started early for this group of patients. Teeth with a poor prognosis should be discussed with the orthodontist involved with cleft care. Extractions should be carried out only after consultation with the orthodontist. The dentist should ensure that the child is seen regularly throughout any course of orthodontic treatment for specific toothbrushing instruction, reinforcement of dietary advice and the use of a fluoride mouthrinse where necessary.

The permanent dentition — adolescence to adulthood

The presence of the permanent dentition usually heralds the start of definitive orthodontic treatment. Patients with a cleft lip and palate often undergo a long course of appliance therapy, sometimes in conjunction with orthognathic surgery to correct the jaw relationship.

Once again the main role of the dentist is to help the patient maintain good oral health and prevent dental disease.[11] During the teenage years the patient can lack motivation and find it difficult to visualise the end result of the orthodontic treatment. Peer group pressures are strong and school commitments become more demanding. Missed dental appointments may occur. It is important to be aware that patients with clefts are not necessarily as dentally-motivated as routine orthodontic patients. The latter are a selected group who have chosen to proceed with orthodontic treatment. The dentist is in a position to encourage and support the patient in carrying out the appropriate preventive measures and making him aware of the importance of attending both orthodontic and regular dental check-up appointments. The adolescent with a cleft may have to make multiple hospital visits for cleft-related care in addition to other possible medical problems and this should be taken into account.

Preventive management

Messages about oral health need to be given repeatedly and kept simple. Positive reinforcement should be given to encourage the patient to maintain or improve their motivation. Dietary counselling continues to be of paramount importance. The patient needs to be made aware of the potential problem of decalcification around the orthodontic brackets and other dental caries problems if the frequency and amount of sugar intake is not controlled. Acidic foods and beverages need to be regulated to avoid the possibility of erosion. A three-day diet diary may again be indicated. Written instructions, in addition to verbal advice, are helpful for the patient to refer to at home.

Regular oral hygiene monitoring and instruction is necessary, especially if fixed appliances are being worn. A toothbrush with a small head is recommended and the interspace brush and twinspiral brush are valuable interdental aids. When fixed appliances are not being worn the use of dental floss may be appropriate. The regular use of disclosing tablets should be encouraged for all patients. Toothbrushing can be particularly difficult around the cleft region in the early stages of fixed appliance therapy where there is marked misalignment of teeth. Any unrestored hypoplastic teeth may provide potential areas for plaque accumulation.

Professionally-applied topical fluoride, in the form of fluoride varnish, continues to be useful, particularly in the cleft region, around hypoplastic teeth and in areas of early demineralisation. Patient-applied topical fluoride in the form of a mouthrinse (daily or weekly) is worthwhile especially during orthodontic treatment.

It is essential that the patient with a cleft is monitored closely and that regular dental care is maintained at all times. During the transition from teenage years to adulthood the patient will need to be encouraged to accept responsibility for his own dental health, with prevention playing a key role (Figs 5 and 6).

Restorative care

Restorations required as a result of caries should be carried out prior to the start of orthodontic treatment, and regularly reviewed and maintained throughout this period. Adhesive restorative techniques for the remodelling of tooth form, composite or porcelain veneers and resin bonded bridges are used to achieve aesthetic improvements after the completion of orthodontic treatment.[12] Conventional crowns and bridges or the provision of a chrome-cobalt partial denture (possibly combined with an upper retainer) are sometimes necessary. The patient's dental health needs to be stable before advanced restorative techniques can be considered. The dentist needs to make the patient aware of the importance of long-term preventive care and regular dental check ups.

Communication with the cleft team

In addition to seeing the orthodontist, the adolescent with a cleft may have consultations with the maxillo-facial surgeon if orthognathic surgery is planned. The plastic surgeon may be seen to discuss the need for further reconstructive surgery. The consultant in restorative dentistry will be involved with the planning and timing of any complex restorative work.

The patient may be emotionally overwhelmed and confused by all the different aspects of his cleft care.[13] The dentist needs to be sensitive to the needs of the patient, using time and patience to maintain good communication during the teenage years. It is important that the dentist raises any concerns about the patient with the cleft team. Psychological counselling is available for patients with a cleft who feel that they are unable to cope with their problems or discuss their worries.[2,14]

Summary

Patients with a cleft lip and palate are a priority group. The dentist has a key role to play in providing continuing, high-quality, preventive-based dental care. Thorough treatment-planning, patient support and skilful behaviour management are important aspects of this multi-faceted care. Good communication on a regular basis between the dentist and relevant members of the cleft team helps to achieve the best oral health outcome for the patient.

Note added in proof: The address of the Cleft Lip and Palate Association was incorect in the first part of this article (*Br Dent J* 2000; **188**: 78–83). The correct address is 235–237 Finchley Road, London NW3 6LS.

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