

British Society of Paediatric Dentistry: a policy document on management of caries in the primary dentition

This policy document was prepared by S. A. Fayle, R. R. Welbury and J. F. Roberts on behalf of the British Society of Paediatric Dentistry (BSPD). Policy documents produced by the BSPD represent a majority view, based on a consideration of currently available evidence. They are produced to provide guidance with the clear intention that the policy be regularly reviewed and updated to take account of changing views and developments.

Introduction

Dental caries is still one of the most prevalent diseases of children in the United Kingdom. Although a significant decline in caries experience in children has been observed over the last few decades, this improvement ceased in the primary dentitions of younger children in the early 1980s and since then the only change has been an increasing polarisation with more of the disease occurring in a smaller proportion of the population [1]. This situation has been compounded by a reduction in the proportion of dental caries treated by fillings, particularly in the younger age groups [2]. The British Society of Paediatric Dentistry believes that dental services in the United Kingdom are failing to meet the needs of many younger children and urgent steps must be taken to improve the standard of dental health among this vulnerable group.

Consequences of Dental Disease

If left untreated, dental caries in primary teeth can lead to pain and infection. The acute phase of such infection can have systemic effects and may, rarely, be fatal. Chronic infection around one or more teeth can result in damage to localised structures, such as developing permanent teeth. Children with certain medical conditions, such as congenital cardiovascular disease, immunodeficiency or immunosuppression are at increased risk of developing systemic complications from dental infections. In

those with cardiovascular defects, there is strong evidence that untreated dental disease is an important aetiological factor in the causation of infective endocarditis, a condition which still carries a high risk of mortality [3,4].

Dental caries, and the associated pain, may have a number of other detrimental effects, such as interference with nutrition, loss of sleep, behavioural disturbance, and poor aesthetics. It is therefore essential that active dental caries in children receives adequate treatment.

Management Strategies

A number of strategies exist for the management of dental caries in the primary dentition. In all cases a comprehensive diagnosis, including the taking of necessary radiographs [5] should be completed prior to finalising treatment.

Preventive Approaches

Preventive dental care is a key component of the management of dental caries and is the primary way in which the underlying causes of dental caries are treated. The management of any child with dental caries in the primary dentition must include appropriate comprehensive preventive care, with involvement of parents and carers, as this is the key to preventing further caries in the primary and permanent dentitions.

The fluoridation of public water supplies has been demonstrated to significantly reduce the incidence of caries in young children, and the Society supports community water fluoridation schemes. For individual children, preventive care should include appropriate advice on the use of fluorides both in toothpaste and as dietary supplements [6], appropriate dietary counselling, provision of fissure sealants where indicated [7] and oral hygiene instruction. Professional topical application of fluoride may also be of advantage.

For children with active caries, preventive strategies are rarely adequate on their own and repair or extraction of damaged teeth will usually be necessary to re-establish oral health, oral function and prevent further dental pathology and infection.

Restorative Management of Dental Caries

It is clear from the latest surveys of child dental health in the United Kingdom that only a small proportion of dental caries in young children is being treated by dental fillings. In the latest national survey of 5-year-olds, a mean of only 14% of dental caries had been treated by filling [2]. In spite of the fact that many well researched and effective restorative strategies exist for the treatment of dental caries in primary teeth, a recent national survey of diet and nutrition for pre-school children aged 1½–4½ years found that 83% of dental caries was untreated and virtually none had been treated by restoration [8]. Restorative options include plastic restorations, such as amalgam, composites and glass ionomers, all of which perform best in small one and two surface restorations [9–11]. Stainless steel (pre-formed metal) crowns are widely recognised as the most effective and durable restoration for primary molars. They are the restoration of choice for primary molars with multi-surface lesions, extensive caries and those where pulpal treatment has been performed [9,12–14], and yet few practitioners provide such restorations.

New materials, for example compomers, show some promise [15,16], and efforts should be continued to evaluate the efficacy of these materials when used to restore primary teeth. New strategies for the treatment of caries, such as caries dissolution liquids, are under development, but adequate data from controlled trials is required before the use of such new approaches can be advocated.

Pulpal treatment of primary teeth is highly successful, if appropriate techniques are employed

[17,18]. It is essential that dentists whose practice includes caring for children should be fully familiar with and able to practice primary tooth pulp treatment.

Local analgesia is strongly advocated for the restoration of all but minimal cavities in primary teeth. Rubber dam is also a valuable adjunct to restorative care in children, making the treatment easier and safer for both child and operator, and providing a valuable adjunct to cross infection control [19,20]. Its use is to be encouraged.

Access to a complete range of appropriate anxiety and behaviour management services should be easily available for very young children, those anxious about dentistry and those who find dentistry difficult to accept due to communication difficulties or handicap. Such children often require treatment under sedation and, in some instances, complete dental care under general anaesthesia. Adequate provision of such services is essential.

Most of the techniques suitable for the restoration of primary teeth are technically as straightforward as the techniques used in the restoration of permanent teeth. However, providing such treatment for the child patient is often more time consuming. Fees paid to dentists for the restoration of primary teeth should reflect this. Unfortunately, this is not currently the case. Even after the recent reintroduction of fees for restorations in children in the UK general dental services, a class II restoration in a primary tooth attracts a fee less than half that of the same restoration in an adult permanent tooth.

Extraction

Dental extraction under local or general anaesthesia is the most basic way of managing dental caries in the primary dentition. Extraction would also appear to be currently the most commonly adopted treatment strategy in the UK, accounting for a greater proportion of treated dental caries in 5-year-olds than fillings [2].

Extraction of unrestorable teeth is usually unavoidable, but extraction of otherwise restorable teeth may have a number of disadvantages. Premature extraction of primary molars can result in drifting of other primary and permanent teeth, leading to space loss in the buccal segments, dental centreline shifts and insufficient room for the ideal eruption and alignment of the permanent teeth. The early loss of primary teeth, especially those at the front of the mouth, can

also detrimentally affect the child's appearance and consequently diminish their own self esteem. Unrestorable primary teeth which are asymptomatic, may not require immediate extraction, especially if the child is anxious, or has difficulty co-operating with treatment. However, such an approach can only be advocated where strenuous preventive measures have been introduced and the teeth in question are being closely monitored. Where signs or symptoms of infection, with or without pain, are evident, or where there is evidence of lesion progression, intervention must be considered.

It is widely appreciated by both dentists and patients that the treatment of permanent tooth caries by extraction is generally undesirable and detrimental. Apart from the primary dentition having successors, there is no reason why the premature loss of primary teeth should be any less undesirable.

Dental extraction may also be an unpleasant and particularly negative experience, especially where this is carried out using a general anaesthetic and this may have a detrimental effect on future dental attendance and attitudes to dental treatment. A recent study has shown a high incidence of morbidity following dental extraction under general anaesthesia in children [21]. Dental general anaesthesia also carries a small, but significant, risk of mortality [22] and should only be employed where other management strategies (such as local anaesthesia alone, or with inhalation or oral sedation as an adjunct) are not appropriate [23]. Current guidelines should be followed when making decisions to employ general anaesthesia as an adjunct to dental treatment [24].

Dental extraction is, however, indicated for some child patients. Where the procedure is being carried out under a general anaesthetic, it enables children with multiple carious teeth to be expediently rendered caries free in one procedure. This approach does have a place in the management of children with extensive caries where parental motivation is poor and re-attendance for multiple visits is unlikely to occur. Where other strategies, such as local analgesia, have failed or are inappropriate, and facilities for restorative care under general anaesthesia do not exist, extractions under general anaesthesia may be preferable to no treatment at all in the management of extensive caries in young children. In addition, extraction may be the only practical approach for children in acute pain and is usually the only treatment for teeth that are

unrestorable. Where posterior primary teeth are extracted, balancing extractions should be considered in order to minimise any disruption of the developing dentition [25,26].

It is essential that the value of primary teeth is recognised and that the standard of care, and the efficacy of dental treatment, provided for children matches that already available for adults. In addition, it must be recognised that children are not merely small adults. Many of the most appropriate management strategies for caries in children are technically and philosophically different to those employed in adults, and in many cases special skills are required to manage children's behaviour so that optimum care can be delivered and accepted. Adequate training of dental practitioners in the dental care of children with primary dentition caries at both undergraduate and postgraduate level is imperative if the dental needs of children are to be satisfactorily met. In common with adult dentistry, the skills required to adequately care for some children, especially those with special medical or dental needs, are outside the realm of most generalist dental practitioners and require the specialised services of a Paediatric Dentist. When compared with countries such as the USA and Canada, the United Kingdom currently has relatively few specialised Paediatric Dentists. Consequently, training in Paediatric Dentistry at Postgraduate level needs to be developed both to meet the need for further specialists and to cater for the continuing professional education and development of existing specialists.

A high standard of dental care for children with dental caries will only be achieved by ensuring that all dentists involved in the dental care of children are appropriately trained, that access to specialised paediatric dental services is available to those children requiring it, and that adequate financial support exists for children's dental services.

Summary of Recommendations

- The dental care of all children, especially those with dental caries experience, should include appropriate comprehensive prevention.
- Where children have active dental caries, preventive strategies alone are rarely adequate to secure oral health, with restorations or extractions usually being necessary to re-establish oral health, oral function and prevent further dental pathology and infection.

- Restoration of teeth with amalgam, composite resins or glass ionomer cements should be reserved for one or two surface restorations in primary molars. Other materials, such as compomers show considerable promise for these types of restoration, and efforts should be continued to evaluate the efficacy of these materials when used to restore primary teeth.
- The use of stainless steel crowns and pulp treatment should be encouraged and be more widely available for the restoration of extensive and/or multi-surface caries in primary molars.
- Oral or inhalation conscious sedation is an essential adjunct to the dental treatment of some children. General anaesthesia still has a role, especially for multiple extractions and/or restorations in young or anxious children. It is essential that adequate facilities exist for the safe provision of dental sedation and dental general anaesthesia for those children who require it.
- The management of children with special medical and dental needs often requires the specialised services of a Paediatric Dentist. The United Kingdom currently has relatively few specialised Paediatric Dentists. The training and appointment of further Paediatric Dentists is a priority.
- It is essential that the value of primary teeth is recognised and that the standard of care, and the efficacy of dental treatment, provided for children matches that already available for adults.
- Children's dental care, especially restorative care, should be adequately funded. The system of remuneration for dentists in the UK currently pays the dentist considerably less for restoring a primary tooth than for carrying out the same procedure in a permanent tooth. The fees for primary tooth restorations should more realistically reflect the time and skill needed to achieve an adequate result.

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