Action plan There should be clear protocols and referral routes for follow-up at Birmingham Dental Hospital for oral health care provision on the diagnosis of cancer.

A dental care pathway will be formulated including: (i) children are seen by a dentist before commencing caner therapy to screen for dental disease; (ii) if the child is registered by a primary care dentist this can be done locally. It has been suggested an information leaflet be created for the patients to give to the primary care dentist concerned explaining the need for dental input; (iii) for those patients with no access to a primary care dentist a specific referral form has been designed to refer the patient to the dental specialities department at Birmingham Children's Hospital; and (iv) dental therapy should be in an ordered and planned fashion allowing the child to be dentally fit before commencing cancer therapy therefore reducing the risk of dental infection during this difficult time. Further audit is recommended at Birmingham Children's Hospital once the recent changes to the primary care dental services have

been fully implemented. References

- 1 Stiller C, Quinn M, Rowan S. The Health of Children and Young People. London: Office for National Statistics, 2004.
- 2 Stevens MC, Mahler H, Parkes S. The health status of adult survivors of cancer in childhood. Eur J Cancer 1998; **34**: 694– 698.
- 3 NICE. Guidance on Cancer Services. Improving Outcomes in Children and Young People with Cancer. The Manual. London: National Institute for Health and Clinical Excellence, 2005.
- 4 UKCCSG & PONF. Mouth Care for Children and Young People with Cancer: Evidence Based Guidelines. Manchester: UKCCSG-PONF Mouth Care Group, 2006.

## An audit on the presence of a final working length recording for patients undergoing apexification REBECCA JOHN, DEBORAH FRANKLIN & PETER CRAWFORD

Department of Paediatric Dentistry, Bristol Dental Hospital, Bristol, UK

### rebeccakjohn@hotmail.com

© 2008 The Authors

**Introduction** Apexification is defined as a method to induce a calcified barrier in a root with an open apex or continued apical development of an incomplete root in teeth with necrotic pulp<sup>1</sup>. Calcium hydroxide is commonly used for this procedure.

Calcium hydroxide is an irritant if it extrudes beyond the canal. If the material is short within the canal the barrier can form in an undesired location. The location of the calcified barrier is determined by the level at which calcium hydroxide meets vital tissue capable of hard tissue formation. To avoid a hard tissue barrier forming inside the canal the operator should ensure that the entire length of the root canal is filled with calcium hydroxide.

We encountered a small number of patients in the trauma clinic with calcium hydroxide dressings in the canal that were 'less than ideal' which may have affected the outcome of treatment. The majority of these patients had calcium hydroxide placed in the canal without a radiographic working length being established. In teeth with incomplete root formation with a wide open apex, granulation tissue can grow into the root canal especially if there is insufficient calcium hydroxide in the canal. Therefore a periapical radiograph to determine working length is necessary at the start of treatment.

Aim The aim of this audit was to ensure that all patients undergoing apexification in the Department have a final working length recorded by the end of the second treatment appointment for apexification.

## **Clinical Effectiveness Bulletin**

Standards

Criteria	Target	Exceptions	Source of evidence
Patients undergoing endodontic treatment in the Department of Paediatric Dentistry should have an established a working length prior to instrumentation	100%	Nil	Mackie <i>et al.</i> <sup>2</sup> (3) Strength B

Methods Data were collected retrospectively by the audit lead from case notes of patients who had non-vital permanent incisors with open apices. The patients were undergoing apexification in the Department of Paediatric Dentistry. Data were collected for the first 50 cases treated from January 2004 on a dedicated proforma (hppt://http://www.bspd.co.uk). The staff involved in treating these patients included senior house officers, postgraduate students, specialist registrars, lecturers and consultants.

**Results** Of the 50 patients included in the study, six did not have a working length established radiographically by the end of the second appointment. Of the six patients who did not have a radiographic working length, four were treated by a postgraduate student and the other two by specialist registrar or lecturer.

**Discussion** As mentioned earlier, it is essential that a final working length be established prior to instrumentation. The literature shows that the remnants of the Hertwig epithelial root sheath (HERS), under favourable conditions organize the apical mesodermal tissue into root components. Over-instrumentation can disrupt the HERS and affect barrier formation. Overfilling or under filling of the canal with calcium hydroxide can cause irritation or barrier formation in an undesirable location. Hence the importance of a definite working length cannot be over-emphasized. The current audit highlighted that the standard had not been achieved.

Action plan A flow chart outlining the steps involved in the process of apexification has been placed on clinic to ensure that all staff are reminded to obtain a final working length prior to instrumentation. Re-audit carried out after 1 year showed a marked improvement in compliance. Only one patient of 50 did not have a radiographic working length prior to instrumentation.

### References

- 1 American Association of Endodontics. American Association of Endodontics Glossary of endodontic terms, 7th edition. Chicago, IL: American Association of Endodontics, 2003.
- 2 Mackie IC, Bentley EM, Worthington HV. The closure of apices in non-vital immature incisor teeth. Br Dent J 1988; 165: 169–173.

# Continuing health care in patients treated for childhood malignancies

REBECCA JOHN<sup>1</sup>, JONATHAN PENNY<sup>2</sup>, ANTHONY BROOKS<sup>1</sup>, DEBORAH FRANKLIN<sup>1</sup> & MICHAEL STEVENS<sup>3</sup> <sup>1</sup>Department of Paediatric Dentistry, Bristol Dental School, Bristol, UK, <sup>2</sup>Audit Facilitator, Bristol Children's Hospital, Bristol, UK, and <sup>3</sup>Department of Paediatric Oncology, Bristol Children's Hospital, Bristol, UK

rebeccakjohn@hotmail.com

**Introduction** The oral cavity is a site where complications frequently develop as a direct result of the malignancy or as an unwanted effect of treatment<sup>1</sup>. In the United Kingdom there are approximately 1200 new cases of childhood cancer each year. Up to 90% of the paediatric oncology patients may suffer oral

Copyright of International Journal of Paediatric Dentistry is the property of Blackwell Publishing Limited and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.