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The Hall Technique 10 years on: its effect and influence

Opinion - Professor Richard Welbury

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The prevalence of dental caries in British Children is high with 31% of 5 year olds and 46% of 8 year olds having obvious dentinal decay experience. In the 5 year olds 4% had abscesses and 5 % of the teeth were unrestorable.¹ Unbelievably over 66,000 young people in the UK had to have a general anaesthetic for the management of their dental disease in 2013-2014.² Dental decay is the commonest reason for a general anaesthetic in this age group and the cost to the NHS is about £34 million per year. This is a national disgrace.

Even if the behaviour and cooperation for treatment in children was ideal, the restoration of their teeth would still be a technically demanding exercise due to the size and morphology of the primary teeth. If anyone who treats a lot of children was able to hope or dream of a new treatment for the treatment of the dental disease in children which might succeed where conventional treatments had failed, I would suggest that it would need to have the following properties:

- Overall easier for the child (and parent) to cope with
- Quicker to complete
- Not requiring local anaesthetic
- Proven efficacy by randomised controlled trials
- Easier to teach to students and general practitioners

The 'Hall Technique' originally pioneered by dental practitioner Norma Hall in response to an overwhelming amount of caries in the children under her care and subsequently taken up and tested scientifically by Evans, Innes and colleagues does exactly what it says it will do on the tin. It ticks all the five points above. We shouldn't be surprised because Dr Hall applied the science that she had been taught at dental school to her specific problem. The scientific evidence was available that glass ionomer cements bond to enamel and dentine, that bacteria denied of substrate and sealed into the tooth die and do not cause caries progression and that a crown is the best way of producing an effective marginal seal. So the Hall technique which utilises all those three principles is a truly biological technique borne out of our increasing scientific understanding of the caries process.

Evans, Innes and colleagues over the last 10 years have provided us with high quality scientific evidence of the efficacy of the technique and specifically an RCT of 5 years duration.³ There can be no argument as to efficacy. I am disappointed at scientific meetings when colleagues who teach their students to appraise the literature and decide to treat accordingly upon the evidence base seem to have selective blindness when it comes to the Hall Technique. They clearly are not practicing what they preach. It could also be argued by ignoring the attributes of the Hall Technique they are subjecting their patients to longer and more demanding treatment which has no proven improved efficacy.

Recent work by Page and colleagues⁴ in New Zealand has endorsed previous findings in the UK of the high acceptability of the technique to parents and children.⁵ In the New Zealand study crowns were fitted by dental therapists on primary molars with a mixed methods study design approach using qualitative and quantitative analysis. One focus group was conducted and ten thirty-minute phone interviews were undertaken with parents of children. An inductive approach was used to analyse the qualitative data and information was arranged into several categories based on the key themes which arose. Children treated with the Hall Technique were asked immediately after treatment whether they had enjoyed their visit to the clinic that day and nearly 90% responded positively. Common themes were found with regard to appearance, pain, the procedure and general questions on acceptability but overall there was a high degree of acceptance among both parents and children for the technique.

The Hall technique was introduced onto the UG paediatric dentistry curriculum in UK dental schools before 2010 and clinical teachers have witnessed an increase in student confidence and use of stainless steel crowns as a result.⁶ It is also being taught on Dental Therapist training courses with similar success.⁷

It is important to stress that the Hall Technique is being taught as an alternative to conventional preparation and not as a primary treatment for all patients. There are still clinical indications for conventionally placed stainless steel crowns and there are excellent outcomes reported in specialist practice at 10 years duration, albeit case series designs and not RCT^{8,9}. One recent retrospective study in the USA evaluated the clinical and radiographic success of stainless steel crowns used to restore primary molars with caries lesions, placed by both traditional technique (complete caries removal and tooth reduction) and the Hall Technique (no caries removal, no crown preparation and no use of local anaesthetic) and showed similar success rates.¹⁰

The common findings in quantitative studies involving undergraduate Dental and Therapy students is that the Hall Technique is an acceptable procedure giving favourable treatment experiences for operator and patient.

Despite the positive experiences of the Hall Technique during recent undergraduate training there is evidence of a reluctance by older practitioners to use them in practice. However the study by Taylor¹¹ shows how the enthusiasm of a vocational trainee to use the Hall Technique (learnt whilst an undergraduate), can lead to a change in practice restorative policy.

One often used reason for not using the Hall Technique is that it will increase the occlusal vertical dimensions. In fact there is evidence that the occlusion equilibrates after 30 days and there is no evidence of any long term issue.^{12,13} Similarly there is no evidence that preformed metal crowns placed without prior tooth reduction will have any influence at all on future spacing considerations in the developing dentition.

The Hall Technique has made a huge difference to children, parents and clinicians in the management of caries in the primary dentition. It has given us a biological solution to a significant national and international problem.

Our child safeguarding legislation in the UK is built around the five major principles outlined in the Children Act 1989:¹⁴

- the welfare of the child is paramount
- there is parental 'responsibility' and not 'right'
- 'No order' principle
- No delay in court proceedings
- Corporate responsibility and partnership across local authorities and between local authorities and other organisations

Three of these principles are directly applicable to our discussion about the Hall Technique. The welfare of the child is paramount. Caries which can cause pain and infection in the primary dentition should not be left. The Hall Technique gives us an extra technique in our armamentarium as clinicians to achieve treatment relatively atraumatically. The 'No order' means that any intervention you carry out must not leave the child in a worse position than if you hadn't intervened. Evidence has been presented to show that the Hall Technique is conclusively of benefit to the child and has shown no harmful effects. Finally it is the duty of every dental professional to help to reduce the burden to children and parents of caries in the primary dentition. We need to be more powerful advocates of the Hall Technique. It is not enough to acknowledge the sound scientific principles on which it is based but it is time to 'trust' its efficacy and use it more.

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Abstract.

Background. Dental caries in early childhood can have a very significant effect not only on the oral health of young children but on their quality of life and that of their families. Added to this are the long term infective risks to the host of untreated caries in primary teeth but also the risk of damage to successor permanent teeth.

Aim. This article by Innes reviews the Hall Technique scientific literature in quantity and quality over the last decade and how it has affected both the management of early childhood caries and hence its influence on wider oral and general health.

Results. Traditional restoration of damaged primary teeth has been shown to have only moderate outcomes depending on the techniques and materials used and the ability of children to cooperate because of age or other factors. The Hall technique has outperformed other techniques in randomized clinical trials.

Conclusions. The Hall technique applies sound biological principles to the treatment of dental caries and achieves greater success with less difficulty to patient and operator.

In Brief.

The Hall technique:

- Is easier for the child to tolerate
- Is quicker to complete and not requiring local anaesthetic
- Has proven efficacy by randomised controlled trials
- Is easily taught and mastered

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