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**F J Trevor Burke**

# The legacy that Declan Anderson left for toothwear patients

It was with sadness that I read the obituary for Declan John Anderson, who passed away, aged 95, on Easter Day 2016.<sup>1</sup> He was, according to his Obituary, best known for his work on the sensory mechanisms relating to pain from human dentine, with this work advising

us that the sensitivity was due to displacement of the contents of the dentinal tubules. Having graduated at Guy's in 1942, he gained a Chair at Bristol and formed a very successful group there.

However, it was a development of his work on recording masticatory forces in humans during natural chewing that brought his name to my attention.<sup>2</sup> It was probably one of Declan's less famous papers at the time, but it paved the way for a significant change in the way that dentists who read his work viewed occlusal changes. I did not read the paper (published in 1962 in the *Archives of Oral Biology*) at the time of its publication (even I was too young for that!) and it sadly remained hidden in the archives of dental publishing for some time. In this particular work, in five human subjects, the occlusal surface of the right lower first molar was raised by means of a removable metal cap of 0.5 mm thickness, this being a replica of the occlusal surface of the chosen tooth. It was worn continuously without discomfort for 23–41 days. Immediately after insertion of the cap, the subjects were unable to make contact anywhere with the jaws clenched, except between the capped tooth and its antagonists. He used a mini transducer (which was extremely innovative at the time) to record what happened, concluding that, within a short period, whole-arch centric occlusal contact became possible, and measurements between reference points on the capped tooth and antagonist and between other pairs of teeth showed that adjustments in tooth position took place. This paper, when viewed alongside the work of Bjorn Dahl, has made a fundamental change in the way that we can now treat toothwear, especially in anterior teeth.

Before the late 1990s, toothwear was treated by an extreme form of toothwear, namely crown preparation using a turbine drill. Readers of *Dental Update* will be well aware of the negative effects of such treatment on the pulp.<sup>3</sup> However, by 1997, papers describing the use of adhesive resin composite in toothwear cases placed at an increased occlusal vertical dimension (OVD) were published, among the first of these being in *Dental Update*.<sup>4</sup> This technique, avoiding crown preparation, was enormously welcome for clinicians as well as their patients. It relied upon the axial orthodontic movement of the anterior teeth, as well as the eruption of the posterior teeth which are dyscluded by the anterior composite build-ups, this having been described on many occasions in this journal. Early success rates left something to be desired but, as the materials (in particular, the dentine bonding agents) improved, the success rates of the technique improved, with the most recent work on the treatment of toothwear from Liverpool<sup>5</sup> demonstrating the viability of the technique, on a database of 164 patients and 1,010 composite restorations, to such a degree that, except in cases of 'severe wear', the need to crown worn teeth is largely a thing of the past.

For unbelievers who require a more up-to-date reference than Declan's original one, try the recent work from King's, London – a randomized controlled trial of 17 patients, half of whom received a single fixed restoration on a posterior tooth at an increased occlusal vertical dimension.<sup>6</sup> No increased mobility was noted and intrusion of the restored tooth took 10 days. The authors concluded that their work supports this treatment option 'where occlusal space is required and tooth reduction is not desirable'. The Hall technique for primary teeth is another example of this concept. This recent work indicates just how far ahead of his time Declan Anderson was; his work was later being expanded into the technique now called the 'Dahl Technique'. All toothwear patients now treated with adhesive composite restorations placed at an increased OVD owe a debt of gratitude to the pioneering work, over 60 years ago, of Declan Anderson which indicated the occlusal changes which could be achieved without causing patient problems.

The superb series of articles on Oral Cancer finishes with this issue. I am sure that readers will join me in thanking the authors for making such a potentially challenging subject so interesting.

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