Features Section

Editorial

Is Evidence-based Orthodontics a Pipedream?

One of the great buzz phrases over the last few years has been evidence-based care. While the realization is there that this is something that we all should aim for in our treatments, progress has been painfully slow. For example, all we have to do is scan the contents of the orthodontic journals, to see that the number of randomized controlled trials published in any area, apart from bonding studies, is low. When conference programmes are examined most of the papers are concerned with the opinion of different experts on their favourite type of treatment.

Furthermore, there is confusion over the meaning of 'evidence base'. This was illustrated vividly to me in a recent correspondence column in the *American Journal of Orthodontics and Dentofacial Orthopedics*. In this column, the results of a randomized controlled trial into the effects of functional appliances were criticized by stating that the appliances under investigation were outmoded, and then quoted 'evidence' on the effects of the Twin Block derived from a retrospective investigation that was full of selection bias!

What is the solution to this inertia and confusion? As always, this involves several complex interactions. First, our specialty needs to accept that the highest level of evidence on the care that we can provide is derived from the Randomized Controlled Trial (RCT). There is no real argument against this viewpoint and yet there is a remarkable level of non-acceptance of this fact. The most common reason against this view is based around the perception that the RCT is not relevant to the 'real world' of orthodontic practice. Yet, there is the apparent acceptance that the retrospective investigation (that only reports on successful treatment) is more useful. This, of course, would be fine if all treatment was successful, a situation far from the truth.

Secondly, there is the argument that it is not ethical to subject patients to a random allocation of treatments, if we already know that one of the treatments is superior. Unfortunately, we cannot believe that most treatments are superior to another because very few orthodontic treatment methods have been tested in an unbiased manner. The counter argument to this is that it is unethical to provide treatment that has not been properly evaluated. An example of this is the explosion of interest in distraction osteogenesis, which is a procedure that is still in the experimental stage for many human operators and patients.

Finally, we must consider the viewpoint of the people who carry out research into orthodontic treatment. There is a feeling that randomized controlled trials are very large and difficult to manage. As a result, they are expensive and large amounts of funding are required. It is not difficult to carry out small scale RCTs. All that is required is careful planning and management of the study. I would like to suggest that because most orthodontic clinical research is driven by the Masters research project that is carried out as part of specialist orthodontic training, this is something that we do not plan adequately. When projects are allocated we cannot get away from the concept of 'let's think of a question and see what answers we can find in the model and record store'. I know this happens . . . I have done this myself!

So what should we do? First, we should accept that, if we are to practice evidenced-based orthodontics, we must introduce a paradigm shift to accept that only poor evidence will be derived from retrospective investigations, and that the well carried out and reported RCT provides a high level of evidence. Secondly, orthodontic researchers must attempt to carry out randomized trials. All this requires is the belief that it is worthwhile, and all that is needed is careful planning and monitoring of projects. Finally, journal editors should promote and 'fast track' research based upon RCTs. This is certainly something that the *Journal of Orthodontics* has achieved. Since we adopted email refereeing, we have an average refereeing time of 5 weeks and the wait for publication from acceptance is 6 months.

This brings me to a final question as to whether journals should publish retrospective investigations. I feel that there is still a place for the retrospective investigation in which attempts have been made not only to reduce bias, but also report any bias that is inherent in the study. The *Journal of Orthodontics* will still publish this type of research and publish it quickly, providing the problems with this type of study are acknowledged. The great value of the retrospective investigation is that it can be used to generate questions for Randomized Trials and it therefore fuels higher-level research.

It is now time that we practised evidence-based orthodontics, but first let's go and find the evidence! I can assure you that the *Journal of Orthodontics* will play a part in this process by providing a rapid outlet for the evidence that we so badly need.

Kevin O'Brien

0301-228X/01/040000+00$02.00