The treatment of temporomandibular disorders with stabilizing splints in general dental practice

One-year follow-up

Robert W. Wassell, BDS, FDSRCS, MSc, PhD; Nigel Adams, BDS, MGDSRCS; Peter J. Kelly, BSc, PhD, FSS, CStat, Hon MFPH

In the United Kingdom, general dental practitioners (GDPs) and general medical practitioners traditionally have referred patients with temporomandibular disorders (TMDs) to hospitals, dental hospitals (which work in tandem with dental schools) or specialist centers. Many GDPs, however, provide TMD treatment in their practices, and this type of treatment's effectiveness is not well-documented, as controlled studies almost always have been carried out in specialist environments. However, in 2004 we published an article to show that suitably trained and interested GDPs can be effective in managing the treatment of four of five patients with TMD within their practices using splints.[1] This study was undertaken in collaboration among the Newcastle Occlusion Study Group, the University of Newcastle upon Tyne and Newcastle Dental Hospital.

In our 2004 study, we randomly allocated patients to either mandibular stabilizing (also termed "stabilization") splints (SS) or nonoccluding control splints (CS) (Figure 1). The CSs consisted of a lingual flange of acrylic extending up to, but not onto, the mandibular teeth. After six weeks of treatment, we identified subjects who were not responding to the CS (< 50 percent pain reduction) and had them begin

ABSTRACT

Background. The authors evaluated temporomandibular disorder (TMD) outcomes in general dental practice one year after treatment with stabilizing splints (SS) or nonoccluding control splints (CS).

Methods. Seventy-two randomly allocated subjects completed initial treatment. The outcomes measures were a pain visual analog scale (VAS), muscle tenderness, temporomandibular joint (TMJ) tenderness, interincisal opening, TMJ clicks and headaches. After initial treatment, 81 percent of the subjects were found to have been treated satisfactorily. The dentists referred the remaining subjects to a dental hospital. At one year, the authors recalled 52 of the original subjects for evaluation.

Results. Improvements after initial treatment were maintained at one year for all outcomes, except for TMJ clicking, which returned to pretreatment levels. Eighty-one percent of the subjects rated their treatment as either good or excellent in reducing jaw pain. The authors found that subjects were aware of more of their TMJ clicks than dentists observed at the one-year clinical examination, but most subjects thought their clicking or the associated pain had been reduced. Fifty-five percent subjects had used their splints in the previous six months, but only 31 percent of these had done so daily. There were no significant differences between splint groups.

Conclusion. At one year, a good response to TMD treatment in general practice had been maintained, but many subjects still had clicking TMJs.

Clinical Implications. Trained dentists can manage TMD satisfactorily, with only a small proportion of patients needing specialist attention.

Key Words. Temporomandibular disorders; clinical trial; occlusal treatment; stabilizing splint; general dental practice.

JADA 2006;137(8):1089-98.

Dr. Wassell is a senior lecturer, honorary consultant and the TMD Research Project director, Department of Restorative Dentistry, School of Dental Sciences, University of Newcastle, Framlington Place, Newcastle upon Tyne, England, NE2 4BW, e-mail "r.w.wassell@ncl.ac.uk". Address reprint requests to Dr. Wassell.

Dr. Adams is a general dental practitioner and the TMD Research Project coordinator, Mayfield House Dental Practice, Lansdowne Terrace, Gosforth, Newcastle upon Tyne, England.

Dr. Kelly is a visiting professor of medical statistics, Centre for Health and Medical Research, University of Teeside, and the director, Health Improvement and Public Health, Middlesbrough Primary Care Trust, Middlesbrough, England.

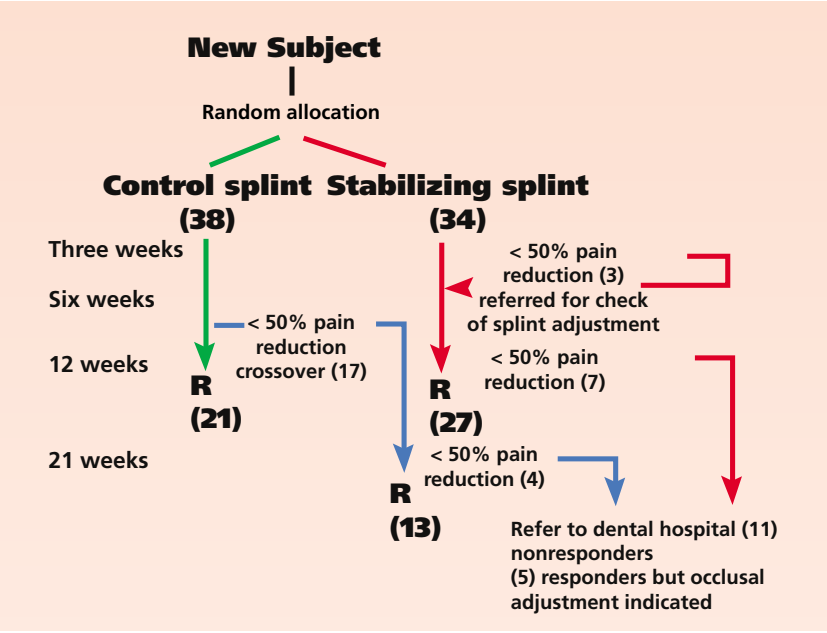

Figure 1. Schematic diagram of trial design and the number of subjects involved at each stage of initial treatment; the numbers of subjects are in parentheses. The 38 subjects in the control group and 34 subjects in the stabilizing splint group completed treatment.[1] Sixty-one subjects were scheduled for one-year follow-up visit, and 52 attended. R: One-year follow-up. Adapted with permission of The British Dental Journal from Wassell and colleagues.[1]

using the SS at their next follow-up visit. Our short-term results showed that at six weeks there were no significant differences between a SS and CS for any of the selected outcome measures. The nine dentists who participated in our study who had attended courses about occlusion were surprised at these results, which suggested that the occlusal surface of the splint was not of major importance for the majority of subjects with TMD seen in practice.

Initial treatment lasted between three and five months, after which 11 of the 72 subjects completing treatment had to be referred to a dental hospital for further treatment, as they had had less than 50 percent reduction of original pain. Six more subjects (five responders and one nonresponder) required occlusal adjustment, which was done at the dental hospital.

We found four other randomly controlled trials of SS versus CS in the literature, all of which were carried out at specialist centers. When we compared these trials with our study, two showed similar results. Dao and colleagues[2] reported no difference between splint types, and Rubinoff and colleagues[3] reported a minor difference. By contrast, in their two studies (one concentrating on pain of arthrogenous origin and the other concentrating on pain of myogenous origin), Ekberg and colleagues[4,5] found that SSs were significantly better than the CSs. The arthrogenous group was followed up after one year.[6] Such follow-up is unusual, as most studies only report the results after initial treatment. In a systematic review of occlusal treatments for TMD, Forssell and colleagues[7] found that only three of 18 randomly controlled trials had followed up subjects for more than six months.

As initial treatment may not guarantee long-term success, it is important that patients with TMD return for a follow-up visit after a reasonable length of time. In our trial, we considered such follow-up essential to determine whether initial success of splint treatment was not merely a short-lived response. Longer follow-up also gives patients time to reflect on their treatment management, and clinicians can determine whether splints still are being used. In long-term trials, clinical outcome measures can be repeated to supplement subjective scores, which provides a more robust assessment than follow-up visits that are restricted only to questionnaires or telephone calls.[8,9]

The aims of our study were

- to determine if there had been any significant changes in outcome measures between the end of splint treatment and a one-year follow-up for subjects showing improvement after initial treatment;
- to investigate subjects' perceptions of how effective the splint had been in treating jaw pain;
- to investigate subjects' perceptions of how clicking had changed from the start of treatment;
- to ascertain the need for continued splint wear and its frequency.

SUBJECTS, MATERIALS AND METHODS

We published details of initial treatment in 2004.[1] In this article, we summarize the one-year follow-up part of our study. Five local ethics committees in the areas in which the dentists practiced granted ethical approval for our trial.

We originally enrolled 93 patients into the trial using a concealed randomization process in which dentists were blinded to the allocation until after