British Journal of Orthodontics/Vol. 24/1997/159–162

A Combined Orthodontic/Restorative Clinic. Rationale, Evolution, and Experience

R. G. OLIVER, B.D.S., M.SC.D., PH.D., F.D.S.

D. H. EDMUNDS*, B.D.S., PH.D., F.D.S.

R. G. JAGGER*, B.D.S., M.SC.D., F.D.S.

Departments of Child Dental Health and *Restorative Dentistry, Dental School, Heath Park, Cardiff CF4 4XY, U.K.

D. C. JAGGER, B.D.S., M.SC., F.D.S.

Bristol Dental School, Lower Maudlin Street, Bristol BS1 2LY, U.K.

Abstract. *The rationale for running combined clinics between orthodontics and restorative dentistry is given, together with the history of the development and experience of such a clinic at the Dental School and Hospital in Cardiff. Brief details of the organization of the combined clinic and possible future developments are also given.*

Index words: Combined Clinics, Orthodontic/Restorative Interface.

Refereed Paper

Introduction

The idea of collaboration between orthodontists and restorative dentists is not new. Seventeen years ago it was reported that patients were `more ready to accept complex treatment plans in order to obtain the best occlusal and aesthetic result possible' (Evans & Nathanson, 1979). The increasing frequency of case reports in the literature indicating the benefits of a combined approach also attest to the perceived advantages for patient care (Ceen & Robler, 1985; La Sota, 1988; Ehrlich *et al.*, 1989; Miller, 1989; Duggal & Ogden, 1990; Enacar *et al.*, 1992; Howat & Warren, 1991; Woon & Thong, 1991; Harrison & Bowden, 1992; Lewis & Eldridge, 1992; Beckett & Evans, 1994; Hobkirk *et al.*, 1994). The levels of skills required to provide both complex orthodontic and restorative treatment are unlikely to be combined in one individual, and consequently a representative from each discipline is desirable to provide the full spectrum of expertise.

A collaborative approach to clinical management can be organized in an informal or formal manner. If specialists from both disciplines are available, then an 'on-the-spot' informal combined consultation may be possible. This has advantages for the patient in that it can produce an immediate decision on their clinical management, obviating the need for a second consultation at a future date. However, clinicians may face difficulties in adopting this approach as it may delay their own clinic if they are called away for more than a short time and, before a treatment decision can be reached, it may be necessary to obtain records such as radiographs or study models.

The alternative is a formally planned combined clinic which takes place on mutually agreed dates and sessions. This has obvious advantages in ensuring the presence of a specialist from each discipline, with adequate time set aside for thorough discussion and consultation between clinicians and the patient.

Additionally, base line records can be obtained at the initial consultation, prepared as appropriate (e.g. cephalometric tracing, Kesling set-up) and then brought to the clinic. This paper gives a brief history of the development of a combined orthodontic/restorative clinic at the Dental Hospital in Cardiff. It describes the organization of the clinics and the case load, discusses benefits of holding combined clinics, and looks to possible future developments.

Evolution

Formerly, solutions to clinical problems were often dependent on the clinic to which a patient was referred with little attention being paid to possible multi-disciplinary approaches. This evolved to a situation where treatment plans for such patients were formulated either following informal consultations between individual clinicians from the various departments, or by referral to consultants from the various departments who then provided a written report. In some complex cases this meant the patient attended several different consultant clinic for assessments. Some Combined Clinics within the Dental Hospital were being held for patients with other problems, for example, Oral Surgery/Orthodontics, Oral Surgery/Prosthetics and Orthodontics/Paediatric Dentistry, and in 1985 it was decided that sufficient referrals existed to justify establishing a combined Orthodontic/Restorative Clinic.

Initially the clinic was held between Orthodontics and Conservation. However, it soon became apparent that Prosthetic advice was also needed and, accordingly, in the Autumn of 1989 a consultant from the Department of Prosthetic Dentistry joined the clinic. His interest in temporomandibular joint dysfunction provided an added dimension to the range of problems seen and opinion/treatment available.

0301-228X/97/002000+00$02.00

In addition to the consultants, junior staff attend the clinics by rota. The services of a hygienist are available to provide appropriate advice and treatment to patients attending the clinic. Her activities are shared between the combined clinic and other clinicians working that session.

Clinic Organization

In order that the combined clinic runs smoothly with minimal wastage of time, strenuous efforts are made to ensure that all patients who attend have a standardized set of records available. Delays can occur if the patient is booked without appropriate records, or if additional records, e.g. further radiographs, are required. These standardized records comprise of a full medical and dental history with an outline of the clinical problem, orthodontically trimmed study casts, (articulated if necessary) extra-oral and intra-oral photographs, and appropriate radiographs. Extensive use is made of Kesling set-ups to assist with treatment planning for the clinicians and as an aid when discussing proposed treatments with the patients.

Patients are booked at 15-minute intervals during the clinic. In some cases, consultation will exceed this time limit, but there is usually opportunity to catch up on cases which need less discussion or if a patient fails to attend.

At the end of each clinic appropriate letters are written back to the referring clinician and a summary of each patient's problems and treatment recommendations is provided for each consultant. These summaries provide a useful reference for patient follow-up.

Usually one, but occasionally two visits are required for finalization of a treatment plan. Some young patients do not have a definitive treatment plan because of anticipated problems associated with further growth and occlusal development, and are seen again following an appropriate interval of time. As clinics run on a monthly basis, most patients do not have to wait longer than 4 weeks for an initial appointment.

Case Load

Just over a third of patients seen on the clinic reside within the Dental Hospital's Health Authority boundary. The remainder are predominantly from adjacent Health Authorities (Table 1a). Just over 60 per cent of cases are referred through the orthodontic clinic, with the remainder coming principally from the restorative disciplines (Table 1b).

The majority of the patients seen present with spacing arising from hypodontia (Table 2) and require decisions to be made on space closure, space maintenance or tooth movement prior to restorative work, which may involve individual adhesive restorations, bridgework, or removable partial dentures. Other reasons for attendance include abnormal abrasion/attrition associated with the occlusion, erosion, and temporomandibular joint dysfunction associated with a complex occlusal problem.

Most patients attending the clinic who accept treatment require orthodontic tooth movement prior to restorative work (Table 3). They are seen again near to the completion of orthodontic treatment to consider whether 'fine tuning' of tooth position is required before the restorative phase and to discuss details of orthodontic retention during the transition to restorative work.

TABLE 1 *Origins of referrals to combined clinic*

(a) County of residence	% of total
South Glamorgan*	36
Mid-Glamorgan	35
Gwent	15·5
Other	13·5

*The Dental Hospital is situated in South Glamorgan.

(b) Referring clinic	% of total
Orthodontics (U.G.)	16
Orthodontics (P.G.)	47
Conservation	19
Prosthetics	4
Other	14

TABLE 2 *Reason for attendance at clinic*

Presenting problem	% of total
Hypodontia:	
<4 teeth missing	36
>4 teeth missing	10
Difficult crown/bridge	13
Tooth surface loss	5
T.M.J.	6
Cleft	3
Crowding	7
Spacing	11
Other	9

TABLE 3 *Outcome of consultation*

Treatment planned	% of total
No treatment	9
Orthodontics only	13
Conservation only	17
Prosthetics only	2
Ortho/restorative (fixed appliances)	47
Ortho/restorative (removable appliances)	3
Other	9

The number of clinics held and the number of patients seen on the clinics are shown in Table 4. On average, two-thirds of the patients seen were female. The number of clinics held and the total attendances have increased substantially since 1985. In recent years the proportion of review patients has increased, as all are seen again near the end of an orthodontic phase of treatment. The mean age of the patients attending in 1991 was 23·8 years with a range of 9–55 years. Patients below the age of 14 years are usually managed by a combined Orthodontic/Paediatric Dentistry clinic, although patients who are younger then 14 are referred if the anticipated restorative work will be complex.

Although the clinic has the potential to provide advice and treatment for patients with cleft lip and palate, separate clinics, dedicated to cleft care, are held with restorative advice available from within the hospital.

TABLE 4 *Combined orthodontic/restorative clinics 1985–1995*

Year	Number of clinics	New patients	Total attendances	Males (%)
1985	1	9	9	22
1986	2	16	16	37·5
1987	1	9	11	54·5
1988	2	14	16	37·5
1989	5	35	38	29
1990	6	37	49	37
1991	11	71	101	42·5
1992	10	58	79	32
1993	10	61	85	27
1994	8	49	64	39
1995	11	63	89	31

TABLE 5 *Consultant numbers*

(a) *Number of consultants in post in England and Wales 1995*

	Orthodontics*		Restorative†	
	NHS	Academic	NHS	Academic
1995	157	25	57	93

* H. Knight, personal communication, 1996.
† R. F. Deans, personal communication, 1996.

(b) *Number of consultants in post and percentage change since 1985*

No. of Consultants	Year			
	1985	1988	1990	1993
Orthodontics	149	154 (+3·4%)	156 (+4·7%)	153 (+2·7%)
Restorative	115	109 (−5·2%)	100 (−13%)	116 (+0·9%)

Discussion

We consider the clinic provides a useful service in reducing the necessity for separate patient attendances at different clinics, and avoids the inconvenience and delay of their being placed on separate waiting lists in individual departments.

Informal consultations between colleagues still occur, usually when treatment is nearing completion, for discussion of minor details, and avoids additional visits to the combined clinic. We consider that the concentration of patients onto such a clinic has led to the accumulation of a level of experience which is beneficial to the patients and also provides opportunities for junior staff training. All the Specialist Advisory Committees overseeing the training of Registrars encourage attendances at joint clinics and this clinic has been of benefit both to orthodontic registrars on their 3-year basic specialty training course and to restorative trainees.

Attendance of junior staff by rota has been found to be necessary. Allowing all junior staff from the different disciplines to attend together can have the effect of intimidating the patient, subsuming the patient's interests below the interests of teaching to an unacceptable level, and slowing down the throughput of patients, thus making the clinic less cost-effective.

Whilst undergraduate dental students do not attend this clinic, its existence and function are known to the student body and serve to reinforce the message that we are treating patients rather than 'orthodontic' or 'restorative' problems.

Since 1989 careful monitoring of the various problems presenting on clinic has revealed low numbers of cases with multiple teeth missing which require a removable prosthesis as part of their rehabilitation (Table 2). Accordingly, the Consultant in Prosthetic Dentistry no longer attends the clinic; however, he is available 'on-call' when the clinics are held to provide appropriate advice.

Hitherto co-ordination of the clinic has been carried out on an *ad hoc* basis by the clinicians and D.S.A.'s. Whilst a clinic co-ordinator would be beneficial, to run one clinic per month such a person would not be cost-effective. However, a clinic co-ordinator to cover all combined clinics held in the Dental Hospital would be a valuable asset.

Unfortunately, whilst a combined clinic is relatively easy for a Dental Teaching Hospital to initiate, it is more difficult for many regional units because of the distribution of appropriate manpower. Table 5a gives the numbers of consultants in post in England and Wales for orthodontics and restorative dentistry. In orthodontics the balance is weighted towards NHS appointments, with only 14 per cent being academic consultant appointments; within restorative dentistry, apart from an overall smaller total number of consultant appointments, 65 per cent are academic appointments.

Table 5b uses data obtained from Health Trends (1986, 1989, 1991, 1994). The fall in restorative consultant numbers may, in part, be due to the removal of senior hospital dental officer posts from the calculations after 1985. Comparison of the orthodontic figures with those held on the Consultant Orthodontist Group database (H. Knight, 1996, personal communication) suggest that the government figures over-estimate the consultant manpower by 35, 28, and 10 per cent for the years 1985, 1988, and 1990, respectively, and underestimate by 11 per cent for 1993. With two such authoritative sources of information, this is clearly an area for misunderstanding and conflict. Reasons for such large discrepancies should be identified and measures taken to harmonize the figures.

The ability of consultants to plan their services for the complex cases are complicated by the reorganization of health care within the United Kingdom. Whilst at present the Dental Hospital in Cardiff is immune from the difficulties of cross-boundary referrals, in other Districts this can be a substantial problem. Furthermore, there is a growing recognition that complex cases in other areas of dentistry that require multi-disciplinary care are best handled by regional teams with a high volume of patients (Williams *et al.*, 1994). The competitive aspect of delivery of health care induced by the current reforms makes the establishment and running of such teams especially difficult.

These trends have to be considered against the background of recent papers, all of which suggest that in the future there will be an increase in the need for '. . . advanced restorative treatment, including endodontic treatment, crowns, bridges and chrome-cobalt dentures' (Williams, 1987). Reinhardt & Douglass (1989) state that 'Adult patients . . . will present a volume and variety of

restorative treatment needs unlike ever before . . . operative dentistry will become more challenging, and will certainly require increasing time effort, and skill'. Cutress and Hunter (1992) suggest that there will be a decrease in the demand for traditional dental care and increase in the variety of dental needs, and that auxiliary personnel will be able to cope with the less complex dental needs of the population. Barmes (1994) foresees a shift from moderate to high technology needs in the next millennium. In view of this it is disappointing that the call for a pilot scheme to evaluate the need for and structure of a District based restorative consultant service has not been followed up (Williams, 1987; Ralph, 1995).

Whilst consultants run the clinic at Cardiff Dental Hospital, this is by no means essential. Many of the cases seen can be transformed from difficult to easy restorative problems by relatively simple orthodontic treatment, and vice versa. There is no reason why, with appropriate facilities, good communication and co-operation, and suitably trained personnel, similar clinics could not run outside the hospital service, with referral on to the hospital consultants for management of the more challenging problems.

Summary

We feel that the existence of the combined clinic satisfies a clinical need, provides high quality care for the patient in a resource-efficient manner. It also provides a good teaching material and clinical experience for junior staff, and prepares them for the increasing numbers of complex adult cases predicted by various authorities. We are concerned that reforms within the health service will jeopardize these valuable activities.

Reference

Barmes, D. E. (1994)
The oral health challenge at the dawn of the third millennium,
British Dental Journal, **177,** 387–390.

Beckett, H. A. and Evans, R. D. (1994)
The interface between orthodontics and restorative dentistry in the management of anterior tooth surface loss,
British Journal of Orthodontics, **21,** 231–237.

Ceen, R. F. and Robler, C. G. (1985)
Orthodontic intervention as an aid in restorative dentistry,
Dental Clinics of North America, **29,** 279–291.

Cutress, T. W. and Hunter, P. B. (1992)
Past, present, and future trends in dental health and the dental system in New Zealand,
New Zealand Dental Journal, **88,** 2–9.

Duggal, M. S. and Ogden, A. R. (1990)
The combined orthodontic and restorative management of oligodontia,
Dental Update, **17,** 210–212.

Ehrlich, J., Yafte, A. and Hochman, N. (1989)
Various methods in achieving anterior guidance,
Journal of Prosthetic Dentistry, **62,** 505–509.

Enacar, A., Altay, O. T. and Haydar, B. (1992)
Orthodontic intervention in adult patients as an adjunct to prosthetic and restorative dentistry,
Journal of the Nihon University School of Dentistry, **34,** 50–56.

Evans, C. A. and Nathanson, D. (1979)
Indications for orthodontic-prosthodontic collaboration in dental treatment,
Journal of the American Dental Association, **99,** 825–830.

Harrison, J. E. and Bowden, D. E. J. (1992)
The orthodontic/restorative interface. Restorative procedures to aid orthodontic treatment,
British Journal of Orthodontics, **19,** 143–152.

Health Trends (1986)
Medical and dental staffing prospects in the NHS in England and Wales,
Health Trends, **18,** 49–56.

Health Trends (1989)
Medical and dental staffing prospects in the NHS in England and Wales in 1988,
Health Trends, **21,** 99–106.

Health Trends (1991)
Medical and dental staffing prospects in the NHS in England and Wales in 1990,
Health Trends, **23,** 132–141.

Health Trends (1994)
Medical and dental staffing prospects in the NHS in England and Wales in 1993,
Health Trends, **26,** 70–79.

Hobkirk, J. A., Goodman, J. R. and Jones, S. P. (1994)
Presenting complaints and findings in a group of patients attending a hypodontia clinic,
British Dental Journal, **177,** 337–339.

Howat, A. P. and Warren, K. (1991)
A restorative-orthodontic treatment approach in the older patient,
British Journal of Orthodontics, **18,** 195–201.

La Sota, E. P. (1988)
Orthodontic considerations in prosthetic and restorative dentistry,
Dental Clinics of North America, **32,** 447–456.

Lewis, D. H. and Eldridge, D. J. (1992)
Orthodontic/restorative interface,
Dental Update, **19,** 195–203.

Miller, T. E. (1989)
Orthodontic therapy for the restorative patient. Part II: The esthetic aspects,
Journal of Prosthetic Dentistry, **61,** 402–411.

Ralph, J. P. (1995)
Consultant services in restorative dentistry,
British Dental Journal, **179,** 188–189.

Reinhardt, J. W. and Douglass, C. W. (1989)
The need for operative dentistry services: projecting the effect of changing disease patterns,
Operative Dentistry, **14,** 114–120.

Williams, A., Shaw, W. C., and Devlin, H. B. (1994)
Provision of services for cleft lip and palate in England and Wales,
British Medical Journal, **309,** 1552.

Williams, D. M. (1987)
Manpower requirements in dentistry. A symposium at the Royal Society of Medicine,
British Dental Journal, **163,** 125–126.

Woon, K. C. and Thong, Y. L. (1991)
A multi-disciplinary approach in achieving aesthetics and function,
Journal of the Irish Dental Association, **37,** 15–17.