

Orthodontic Products Update

Bracket Recycling—Who Does What?

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Abstract. *At present there is debate concerning the practice of recycling orthodontic components. A survey of 300 members of the British Orthodontic Society showed that 47.5 per cent of respondents recycled metal brackets and that more specialist practitioners than consultants did so ($p < 0.001$). Only 7.2 per cent of the orthodontists who recycled brackets informed their patients that recycled brackets were used.*

Index words: Orthodontic Appliances, Recycling.

Introduction

The recycling of orthodontic appliances has been the subject of debate within the profession following the introduction of Department of Health regulations concerning the use and reuse of medical devices (Department of Health 1995). This issue is of interest to professionals, manufacturers and the public.

According to the bulletin from the Medical Devices Agency (1995), any organisation reprocessing devices designed primarily for single use needs to be able to demonstrate that:

- The processes by which the items are cleaned, disinfected or resterilised and otherwise prepared for reuse, have been validated to prove that the methods do produce a safe, effective and acceptable product;
- The properties of the materials remain unchanged at the end of the cleaning, disinfecting or resterilising operation;
- The number of episodes of safe reuse has been determined and records kept to ensure that this number has not been exceeded;
- Appropriate records relating to the reprocessing operation have been made and provision is made for their safe retention.

These regulations have a period of transition until 13 June 1998. During this time organisations can follow either national regulations or the provisions of the directive, thereafter all devices will require a 'CE' (Conformité Européenne) marking to indicate that the product conforms to the Medical Devices Directive. Three main areas of concern have subsequently been highlighted by the British Dental Trade Association (British Orthodontic Society 1996):

- Patients and their parents would be concerned if they found out that their appliances had previously been used in another patient's mouth, even if they were aware that the appliance had been reprocessed and sterilised. The public's perception of the dental profession might also

be harmed especially if the issue came to the attention of the press;

- NHS fees for orthodontic treatment take into account the cost of new materials;
- Many orthodontic manufacturers label their appliances for 'single use only'. This raises the question as to who would take responsibility if a problem arose with a recycled appliance?

When recycling appliance components an orthodontist needs to consider whether reuse is safe, how many times they can be recycled, whether the properties of the components are affected and the financial aspects of recycling. In addition, if a problem arose with a recycled appliance it is unclear who would be liable, the manufacturer or the clinician. In case of injury suffered by a patient arising out of the use of a medical device, the manufacturer may attempt to transfer liability to the clinician. If the injury arose out of the use of a reprocessed 'single use only' device this would be an additional complication.

The University Teachers Group of the British Orthodontic Society discussed these issues at their AGM at the British Orthodontic Conference in Scarborough 1996, and concluded that if the properties of a component were not affected by the recycling process there was no scientific reason why components should not be reused. However, perhaps the most important issue was that informed consent of patients and parents must be obtained if reused materials were to be placed in a patient's mouth (Rock 1996).

What Are The Recycling Practices in The UK?

A postal questionnaire (Table 1) relating to the recycling practices of orthodontists using metal direct bond orthodontic brackets was sent to 300 members of the British Orthodontic Society in the UK. The sample consisted of 100 members of the Consultant Orthodontists Group and 200 members of the Specialist Practitioners Group. Alternate names were selected from lists of both groups provided by the British Orthodontic Society. In

order to protect the confidentiality of the respondents, all replies were anonymous.

263 (88%) of the questionnaires were returned. 93 out of 100 (93%) questionnaires were returned by consultant orthodontists and 170 out of 200 (85%) were returned by specialist practitioners. Metal brackets were recycled by 47.5 per cent of all respondents, 24.7 per cent of consultants and 60 per cent of specialist practitioners (Table 2). This difference was highly significant, $\chi^2 = 29.983$ ($p < 0.001$).

Of the consultants who reported that they recycled brackets 11 (47.8%) did so only once, whilst 9 (39.1%) did not know the number of recycling episodes (Figure 1). Of the specialist practitioners who reused brackets 21 (20.6%) recycled only once, 20 (19.6%) recycled more than three times and 45 (44.1%) did not know the number of recycling episodes (Figure 2).

All consultants who recycled brackets used a commercial company. All except 3 specialist practitioners had their brackets recycled commercially, these three used the Esmadent 'Big Jane'® machine. Both UK and American recycling companies were used, although some UK firms only act as agent for companies based in the USA.

Only 9 (7.2%) out of 125 respondents who recycled brackets informed their patients that brackets were recycled. This group contained one consultant and 8 specialist practitioners.

Orthodontists who did not recycle brackets ranked the reasons suggested in the questionnaire in the following order of importance:

- The quality of the recycled products is not satisfactory;
- Too much trouble,

TABLE 1 Questionnaire format.

1. Do you recycle metal brackets?
2. If you recycle, how many times do you recycle each bracket?
3. If you recycle your brackets, do you:
 - a. send them to a recycling company
 - b. recycle them yourself
4. If you send your brackets to a recycling company do you use:
 - a. UK company
 - b. USA company
5. If you are recycling your own brackets, please describe the method being used
6. Do you advise patients that brackets are recycled?
7. If you do not recycle your brackets, please list in order of importance which of the following factors influenced your decision: (1 = most important)
 - a. Not financially worthwhile
 - b. Too much trouble
 - c. Liability after reuse
 - d. Quality reduced
 - e. Cross infection risk
 - . Other

TABLE 2 Number of respondents who recycled brackets.

	Recycle		Do not recycle		Total
	Number	%	Number	%	
Consultants	23	24.7	70	75.3	93
Specialist practitioners	102	60	68	40	170
All respondents	125	47.5	138	52.5	263

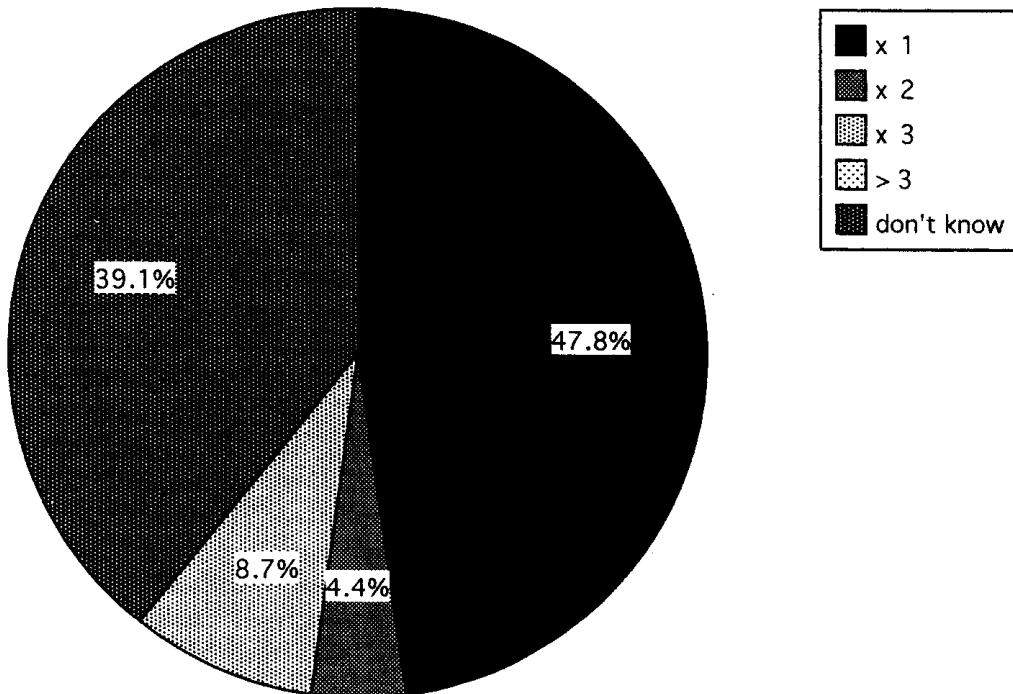


FIG. 1 Number of times that brackets were recycled by consultants (Total 23).

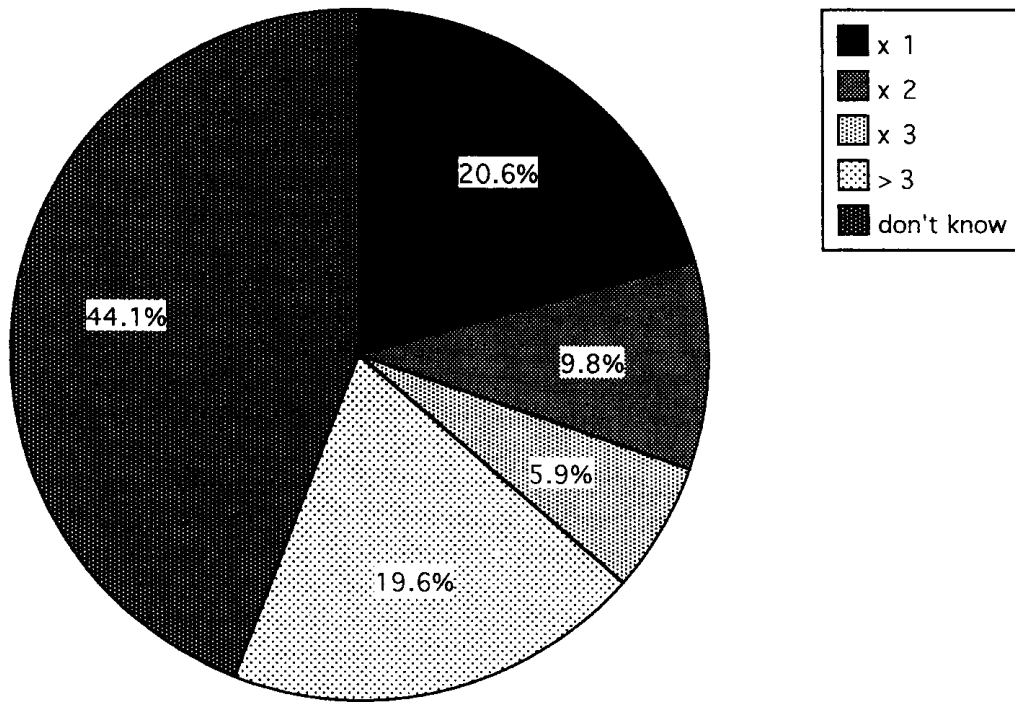


FIG. 2 Number of times that brackets were recycled by specialist practitioners (Total 102).

- It is not financially worthwhile;
- The manufacturer does not accept liability if the product is reused;
- There is a risk of cross infection;
- Other.

Reasons given in the 'other' category were as follows:

- It is not ethical to recycle brackets;
- Trust policy does not allow the reuse of appliances;
- Self ligating brackets are not amenable to recycling;
- The loss of markings on recycled brackets makes subsequent identification difficult;
- Jigs are not supplied with recycled brackets.

Discussion

The fact that almost 90 per cent of questionnaires were returned suggests a high degree of interest in the subject of recycling at present. Commercial recycling of metallic orthodontic brackets appears to be a widespread practice amongst British orthodontists. Results of the present survey suggest that approximately half of British orthodontists recycle metal brackets and that recycling is more popular amongst specialist practitioners than hospital based consultants. A number of factors appear to influence the decision as to whether or not to recycle, indicating that

recycling is not purely financially driven. The results of this questionnaire would suggest that orthodontists do not routinely inform their patients that their brackets are recycled, a practice which is felt to be unethical by the University Teachers Group.

Acknowledgements

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