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THE EDITOR'S CORNER

The Indirect Approach

Indirect bonding has been the subject of innumerable papers and meeting presentations since it first appeared in the orthodontic literature in the mid-'70s.[1-5] The reasons for using indirect bonding are readily apparent. An indirect technique allows more precise bracket positioning simply because it is much easier for the operator to see what he or she is doing when working on a plaster model on the laboratory bench top, with 360° lighting and unimpeded physical access to all areas, as opposed to working directly in the mouth, with a restricted field of view and a constant struggle to maintain a dry field and some degree of patient comfort. The importance of proper bracket placement cannot be overemphasized.[6,7] The other major benefit of indirect bonding is that, once mastered, it can reduce the chairtime required for complete appliance placement dramatically, improving patient comfort and maximizing the efficiency of staff and space utilization.

Given the many advantages of indirect over direct bracket placement, why do so many orthodontists still prefer direct bonding? Two areas seems to be the focus of objections: cost and technique. The time spent in pouring and trimming working casts, placing brackets on the setup, and fabricating trays can be considerable. Few doctors perform these burdensome laboratory procedures themselves, preferring to let their lab staff do the preliminary setups and merely checking the bracket placement prior to final tray fabrication. Most doctors I know who make their own setups do so out of a commendable desire to maintain personal control of all aspects of quality assurance, or simply because they enjoy lab work. Others do so to avoid the added staff expense of indirect bonding. On the other hand, advocates of the indirect technique argue that whatever increased cost is generated by the lab work is more than recovered in chairtime. In a future JCO Management & Marketing column, Dr. Robert Haeger will investigate this cost-efficiency issue with data from his own practice.

Even if we ignore the cost involved, however, orthodontists who do not routinely bond indirectly maintain

that the time and accuracy advantages ascribed to indirect bonding are valid only if the technique works for *all* of the teeth, *all* of the time. Preparation time—the time spent isolating, etching, and drying the teeth to be bonded—is about the same as with direct bonding. Therefore, the chairtime purportedly saved by indirect bonding is lost when one or more brackets in the transfer tray fail to bond acceptably. If that happens, the doctor and staff have to prepare the unsuccessful teeth and brackets for direct reapplication. The situation is worsened if one or more brackets are bonded securely, but in the wrong place, due to improper bonding technique or loosening of the brackets in the transfer tray. Significant time can be lost, considering the misplaced brackets need to be removed before preparation for rebonding.

Some clinicians who have used direct bonding for years are frustrated when several brackets come off with the tray the first few times they try the indirect technique. Like any other clinical procedure, indirect bonding involves a significant learning curve. Most of the articles on the subject—JCO alone has published 35 since 1974—involve attempts to address the technique sensitivity associated with the process. Modifications are usually suggested in one of three areas: the way the brackets are applied to the plaster casts, the materials and techniques used to fabricate the transfer trays, or the materials and techniques used to bond the brackets to the teeth. Recommended materials for affixing the brackets to the lab models have included caramel candy, two-step and no-mix chemically cured adhesives, thermally cured laboratory adhesives, light-cured adhesives, and various combinations of the above. Methods for tray fabrication have involved impression materials, vacuum-forming techniques, and hot-glue guns. Adhesives recommended for the actual intraoral procedure have covered the entire spectrum of orthodontic bonding materials. The overall trend seems to be toward using light-cured adhesives for both laboratory and operatory bracket placement, along with a combination of polyvinyl silicone around the brackets and either hot glue or vacuum-formed plastic for the trays.

Given the volume of published information on indirect bonding, it may well be difficult for the individual practitioner to make an intelligent decision about which procedure to attempt. I usually try out the techniques submitted to JCO if they seem promising for my practice and my patients. I've liked a few and disliked many more. In our current issue, Drs. Fortini, Giuntoli, and Franchi of Florence, Italy, present a technique using light-cured adhesive for laboratory bracket placement, silicone impression material and hot glue for the transfer trays, and flowable composite for intraoral bonding. Like many of the papers we print, it's a slight modification of an older method—in this case, Larry White's technique, which was first published in JCO in 1999.[9,10] The Italian variation has worked well for me, and I invite our readers to give it a try.

With each new modification that appears in the literature, indirect bonding evolves, and the objections of cost and technique sensitivity diminish. Eventually, the advantage of bracket placement accuracy will decisively outweigh any disadvantages. RGK

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