

ANALOG INDIRECT BONDING – HAS IT BECOME OBSOLETE?



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Aim

Indirect bonding in form of an analog workflow has been used in clinical routine since many years. Enabled by technical progress, the procedure can nowadays also be carried out with full digital support. The aim of this paper is to compare both workflows based on clinical experience.

Material and methods

The following sub steps are compared: Impression/scan, placement of brackets on the digital/physical model, thermoforming/3d print of the tray, bonding itself. The comparison focuses on precision, time required, susceptibility to errors, needed equipment and material expenditure.

Results

	Analog 	Digital 
Precision	<ul style="list-style-type: none"> ✓ bracket base is individualized, better fit ✓ less adhesive used, less excess material 	<ul style="list-style-type: none"> ✓ more extensive magnification and display options
Time required	<ul style="list-style-type: none"> ✓ faster placing and tray manufacturing ✓ easily delegable due to intuitive handling ✗ more manual work 	<ul style="list-style-type: none"> ✓ less manual work ✓ more automation possible
Susceptibility to errors		<ul style="list-style-type: none"> ✗ brackets may detach from the tray mount ✗ tray parameters can be difficult to find (dependent on bracket model)
Equipment and material expenditure	<p><i>equipment:</i> thermoforming unit</p> <p><i>consumables:</i> alginate, plaster, thermoforming sheets, kneadable silicone, chemically curing composite, insulating material</p>	<p><i>equipment:</i> intraoral scanner, computer with software, DLP/SLA printer incl. washing and curing unit</p> <p><i>consumables:</i> resin</p>

Conclusion

Even by today's standards, the analog workflow is a valuable method for indirect bonding. Advantages arise in particular from lower upfront investment costs, shorter production time and good delegability to a dental technician. Which way is more suitable seems to depend mainly on the orientation and equipment of the practice.