

Armande S.

ANALYSIS OF USAGE OF VARIOUS ADHESIVE SYSTEMS AND BONDING PROTOCOLS BY DENTISTS

Scientific research supervisor PhD, assist. Dounar H. G.

*1st Department of Therapeutic Dentistry
Belarussian State Medical University, Minsk*

Introduction. Numerous studies of the adhesion of composite materials to tooth tissues suggest that despite a wide variety of adhesive systems many unresolved questions still remain. One major reason why successful bonding to dentin is difficult to achieve is that dentin is a wet substance while adhesives are hydrophobic. The ethanol wet-bonding technique (EWBT) was introduced in an attempt to overcome the problems caused by high hydrophilicity and/or incomplete penetration of adhesive systems, but its efficacy hasn't yet been proved.

Aim: to compare the ethanol- and water-wet bonding techniques according to the literature data, and to evaluate the frequency of usage of different adhesive systems and bonding protocols by dentists.

Material and methods. 30 literature sources on the problem of EWBT were analyzed using the databases and search engines Elsevier, Scipers, European Journal of Dentistry and Science Direct. Also 102 dentists from Belarus and 31 dentists from Iran were surveyed about their usage of adhesive system and bonding protocols.

Results and discussion. EWBT suggests the idea of replacing water in the demineralized collagen matrix with ethanol. This strategy is thought to increase the bond strength and durability by saving the structure of collagen fibers from collapse, creating conditions for fibers infiltration with a hydrophobic monomer, increasing interfibrillar space, decreasing hydrolysis of hybrid layer and activity of matrix proteinases. In Belarus, most dentists (36%) use 5th generation of adhesive system, 28% use self-etching 6th generation and 20% use self-etching 7th generation of adhesives. In Iran, most dentists (48%) work with 5th generation of adhesive systems, 30% – with the 6th generation and 18% – with self-etching 7th generation. In Belarus, most dentists (30.6%) prefer Single Bond Universal, 9.8% – Adper Single Bond 2 and 9% – Opti Bond FL, but In Iran most dentists (27.5%) use Single Bond Universal, 19% work with Tetric N-Bond 2 and 9% – with Opti Bond FL. Among dentists who were questioned, in Belarus 31% don't know which adhesive solvent they use in their adhesive system, 28% use acetone-containing adhesives and 17% – alcohol-based. In Iran, 32% use acetone adhesive solvent, 30% use water-acetone-based and 26% use alcohol-containing. 47% of Belarusian dentists and 48.4% of Iranian dentists process the tooth cavity with 2% chlorhexidine solution before its filling. 56.2% of Belarusian dentists had never used ethanol bonding, 19.4% tried it one or more times but no longer use it and 19.4% often use both protocols (water and ethanol). 67.8% Iranian dentists had never used ethanol bonding, 19.4% of them tried it one or more times but no longer use it and 6.4% use both protocols in their practice.

Conclusion. The literature data reveals similar and sometimes controversial results of the effectiveness of ethanol- and water-wet techniques application. Most investigations demonstrate EWBT to show better results than the water protocol in vitro. However, longitudinal clinical evaluation of the EWBT is still unclear and is the subject of further research.

In our research, we found out that most Belarusian and Iranian dentists use similar adhesive systems and bonding protocols, with some differences among methods and percentage.