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Clear aligner materials in Orthodontics

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Orthodontic clear aligners are a popular alternative to traditional braces for straightening teeth. Clear aligners are made of a clear plastic material that is custom-fit to the patient's teeth. Unlike traditional braces, which are affixed to the teeth with brackets and wires, clear aligners are removable and must be worn for at least 22 hours per day.

With the rapid technological improvements in biomaterials, computer-aided design (CAD) and manufacturing (CAM), clear aligner therapy (CAT) has emerged as a promising alternative to conventional fixed appliances (FAs) in orthodontics.

One of the key factors that contribute to the success of clear aligners is the quality of the material used. Over the years, there have been several advances in clear aligner materials that have resulted in improved performance and patient comfort.

Recent advancements in orthodontic clear aligner materials have resulted in improved mechanical properties and increased patient comfort. One such material is thermoplastic polyurethane (TPU), which is a type of flexible plastic that has good elastic recovery and shape memory. TPU clear aligners have been shown to have better mechanical properties than traditional polyethylene terephthalate glycol (PETG) aligners, making them less likely to crack or deform during use. Additionally, TPU aligners have been shown to cause less discomfort and irritation to the soft tissues of the mouth than PETG aligners. Another advanced material used in clear aligners is a composite of polyurethane and polyethylene glycol dimethacrylate (PEGDMA). This material has been shown to have excellent mechanical properties and to be more resistant to staining than other clear aligner materials. Furthermore, PEGDMA composite aligners have been found to be more effective at moving teeth than PETG aligners.

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Biography

Ali Riza Ozdurmus was born in 1989 in Bodrum, Turkey. He graduated from Near East University Faculty of Dentistry in 2013. After completing his master's degree, he worked as a general dentist for a while in Izmir. In 2017, he started his doctorate program in the Department of Orthodontics at Izmir Katip Celebi University. He is currently a PhD candidate at Department of Orthodontics, Faculty of Dentistry, Izmir Katip Celebi University. He is also a member of Turkish Orthodontic Society and Turkish Aligner Society.

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