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Mini Review

# Plastic Devices & Orthodontics

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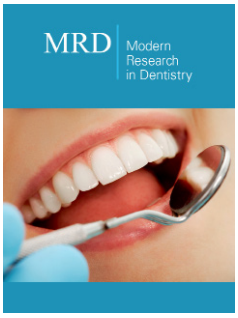


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**Abstract**

Orthodontics is branch of dentistry which deals with dento-maxillary discrepancies. An Orthodontist deals with various developmental and/or developed dento-skeletal malocclusions. For dealing all type of developing malocclusion orthodontist opt preventive or interceptive approaches to restrict or minimize the dento-skeletal anomalies. For developed malocclusion the orthodontist has only corrective approach to correct it as much as possible. Growing patients has various developing discrepancies which may require intermediate prosthesis or devices for the correction. Specific characteristics of plastics will determine the realization of product at a high-quality level, with high technological performance and reliability. The plastics materials are produced on a polymer base by thermal polymerization or chemical polymerization. They are characterized by high mechanical strength, low density, high chemical stability, thermal insulation and electric insulation properties.

**Keywords:** Plastic devices; Plastic material; Dento-maxillary discrepancies; Aligner

## Introduction

The term plastic refers to those materials (usually called plastics or plastic materials), which is synthetic products of an organic, inorganic or mixed nature, which can be easily processed into various forms, hot or cold, with or without pressure [1]. Plastics are classified on the basis of the chemical structure of the polymer backbone and side chains; categories of plastics are acrylic, polyether, polyurethane and halogenated. A different classification criterion is the chemical process used in the synthesis of plastics: condensation reactions, polyaddition or cross-linking [1].

Organic materials are represented by plastic-non-metallic compounds obtained synthetically, consisting of organic compounds that, in the plastic phase, can be shaped into various shapes and then harden, forming solid bodies. Acrylate is a plastic resin that is processed by polymerization in specific furnaces. Temporary work is the most important indication of acrylic restoration. The temporary acrylate crown no longer needs a supporting frame because it only has to last until the final work is completed [2]. Specific characteristics of plastics determine the realization of product at a high-quality level, with high technological performance and reliability. These properties help to make various orthodontic appliances which help the clinician to restrict the unwanted movement, restrain the muscle, realign the teeth and remodel the bone growth [3].

## Principle

These plastic devices are generally removable appliances used in orthodontics for correction or to maintain the achieved correction. This device mainly works on two principle, first force elimination and second force application. They act to realign teeth, re-strain muscles and influence jaw growth, it works by applying light pressure on teeth and jaw. In orthodontic treatment, the forces are divided according to their nature into artificial or mechanical forces

and natural or functional forces: artificial forces produced by the properties of the materials from which orthodontic devices are made. The natural forces are generated by the contractions of the Oro-facial muscles resulting from the modification of the balance of the antagonistic muscle group [4].

## Advantages

A. Cost effective

B. Easy to fabricate.

C. Less time required to fabricate

D. Various colour available

E. Sufficient strength

F. Easy to repair

G. Easy to modify according to patient comfort.

## Different Plastic Appliances

1. Habit breaking appliances [5] -various habit breaking devices are fabricated by stainless steel wire and plastic (acrylic resin) component. These appliances work on interceptive approach. Some habit breaking devices are tongue crib, bluegrass appliance, oral screen etc.

2. Myofunctional appliances [6]-These appliances work on force application and force elimination principle. Activator, Bionator, Twin block, Frankel appliance are the example of some myofunctional appliance made up of plastic.

3. Plastic braces [7]-In attempt to create an esthetic bracket with lower frictional resistance and easier debonding features than ceramics, a variety of new ceramic reinforced plastic brackets have been introduced.

4. Aligners [8,9]-Aligners are the new trend of orthodontic treatment for mal-aligned teeth. They involve custom made clear plastic tray that fit over your teeth. They were made up of thermoplastic material and responsible for the active movement of the teeth.

5. Retainers [10]-Retention is the one of the most important parts of orthodontic treatment. Various types of removable retainers are advised to patient to wear after fixed orthodontic treatment. Some of them are hawley's retainer, begg's retainer and clear retainer.

6. Others [11,12]-various devices used in orthodontics which were made up of plastic and used for short time of period during treatment. For example, anterior and posterior bite plane, space maintainer, removable arch expansion appliance, catlan's appliance etc.

## Conclusion

Use of plastic (polymer resin) for making orthodontic appliances/devices gets popularity due to its high technological performance and reliability. Its affordable cost and easy fabrication technique makes it more popular among practitioners. Advanced quality polymer plastic provides better aesthetic appearance in appliances which make it more acceptable for the patient. Its high strength and low weight make it one of the best materials of choice for appliance design and fabrication.

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