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THE ORTHODONTICS REVOLUTION: THE EVOLUTION OF BRACELETS AND MODERN TECHNOLOGIES

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Abstract: The article analyzes the evolution of braces, one of the main tools of orthodontic treatment, their types and improvements based on modern technologies. Depending on the material, braces are divided into metal, ceramic, sapphire and plastic types, and their advantages and disadvantages are studied from a scientific point of view. Also, the methods of installing braces and the criteria for selecting systems that meet the individual needs of patients are covered. The results of the study show that modern innovative technologies play an important role in increasing the effectiveness of orthodontic treatments.

Keywords: Orthodontics, bracket systems, ligature braces, self-ligating braces, metal braces, ceramic braces, lingual braces, vestibular braces, dental anomalies, modern orthodontic technologies.

Аннотация: В статье анализируется эволюция брекет-систем — одного из основных инструментов ортодонтического лечения, их виды, а также их совершенствование на основе современных технологий. В зависимости от материала брекет-системы подразделяются на металлические, керамические, сапфировые и пластиковые, а их преимущества и недостатки изучены с научной точки зрения. В нем также рассматриваются методы установки брекетов и критерии выбора систем, отвечающих индивидуальным потребностям пациентов. Результаты исследования показывают, что современные инновационные технологии играют важную роль в повышении эффективности ортодонтического лечения.

Ключевые слова: ортодонтия, брекет-системы, лигатурные брекеты, самолигирующиеся брекеты, металлические брекеты, керамические брекеты, лингвальные брекеты, вестибулярные брекеты, аномалии зубов, современные ортодонтические технологии.

INTRODUCTION

Braces are fixed orthodontic appliances used to straighten teeth. They are commonly used to correct open bites, gaps between teeth, underbites, overbites, and various other dental and

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jaw-related problems. Braces are also used in conjunction with other orthodontic appliances to widen the palate or jaw.

LITERATURE ANALYSIS AND METHODOLOGY

Types of braces by material

Metal braces

Metal braces are made of medical steel - an alloy of chromium and nickel or an alloy of titanium and nickel. They are considered the most effective: they move teeth faster. If a metal brace becomes stuck, it can be re-glued. This is not possible with braces made of other materials: after the first or second time, you will have to re-glue it.

Another type of metal braces is titanium braces. They are used for patients with an allergic reaction to nickel. The average price of metal braces: 6-8 million soums.

Advantages:

• Low price compared to other types;

• Durability;

• Guaranteed effectiveness.

Disadvantages:

• Unaesthetic;

• Risk of tissue irritation and injury.

Figure 1. Metal braces.

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Ceramic braces

Ceramic braces match the color of tooth enamel, so they are almost invisible. However, they need to be worn longer than metal braces and are more expensive. Ceramic braces also change color quickly, so doctors recommend that patients avoid beets, coffee, and strong black tea. The average price of ceramic braces: 8-14 million soums.

Advantages:

• Aesthetic appearance.

Disadvantages:

• Need to be worn longer than metal braces;

• Not suitable for complex cases;

• Change color;

• Less durable.

Figure 2. Ceramic braces.

Sapphire braces

Sapphire braces are made of artificial crystal. They are completely transparent and are the most expensive braces. However, they are fragile and can break or break during meals. Average price: 12-14 million soums.

Advantages:

• Completely transparent and barely visible on the teeth.

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Disadvantages:

• Expensive;

• Fragile;

• Changes color;

• Lasts longer than metal braces;

• Not suitable for complex cases

Plastic braces

Plastic braces are made of semi-transparent polyurethane. They are not noticeable on the teeth, but quickly change color and break easily. Average price: 12 million soums.

Advantages:

• Aesthetic.

Disadvantages:

• Fragile;

• Changes color.

Figure 3. Plastic braces.

RESULTS

Types of braces by the method of installation

Braces are divided into ligature and self-ligating types.

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Ligature braces

In ligature braces, the wire is fixed with a special clasp - a thin wire or a rubber band. In this system, a monthly check-up is required.

Self-ligating braces

In these braces, the wire is fixed with special locks or clips. This system requires fewer visits to the doctor.

Types of braces by the place of installation

Vestibular braces

Installed on the front surface of the teeth. This is the most commonly used brace system. The disadvantage is that they are visible on the teeth.

Lingual braces

Installed on the back surface of the teeth, so they are not visible from the outside. Initially, lingual braces may cause discomfort to the tongue.

Figure 4. Oral braces.

Preparation for braces

Before installing braces, the following should be done:

1. Treating caries

2. Choosing an orthodontist

3. Taking a panorama of the jaw (orthopanotomogram)

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4. Removing teeth

5. Taking a cast of the jaw

6. Cleaning the teeth

CONCLUSION

Braces are an effective orthodontic method for correcting dental anomalies, changes in bite, and creating an aesthetic smile. Modern technologies are creating new opportunities in orthodontics and improving the quality of life of patients.

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