

LOCK FASTENERS (ATTACHMEN) IN ORTHOPEDIC DENTISTRY

Kuzieva Madina Abdusalimovna

Asia International University

kuzievamadina84@mail.com

The abstract: Attachments (english attachment) is a locking or hinged device designed for mechanical fixation, retention and stabilization of a denture.

Keywords: attachment, fixation, prosthetics, lock fastening.

The attachments consist of two main parts that are inserted into each other and provide direct fixation of the denture. The part of the attachment that is usually fixed on the supporting tooth, tab, half-crown or crown is called the matrix. She is a negative part of the attachman. The other part of the attachment, which is usually connected to a removable denture, is called the patrica. She is a positive part of the attachman. Depending on the design features of the attachment, both the matrix and the matrix can be reinforced in a removable denture. All locking joints, as a rule, provide relative mobility of the prosthesis in the vertical direction, which allows it to be freely inserted and removed. In some designs, the mobility of the inlay part is limited by this, in others, movements of the hinge type are possible. Traditionally, one part of the attachment is installed in a removable prosthesis, the connecting component is on a cast or metal-ceramic (metal-plastic) crown or other non-removable denture. At the same time, recent developments in dentures fixed on composites have led to the use of connecting components that are attached using this technique directly to the enamel of teeth. When using removable bridge prostheses, one part of the lock is attached to the supporting tooth, the second part is in the body of the prosthesis. The first attachmen were proposed in the late nineteenth and early twentieth centuries. Currently, there are more than 100 varieties of attachments. Removable dentures, fixed with lock fasteners, have higher aesthetic qualities. The period of habituation of patients to such prostheses is shorter. The service life of such prostheses is on average 5-7 years. There is a significant difference between the action of the clamp and the locking fastener. The clamp can be adjusted so that when the prosthesis is at rest, it will not have an active force. Tension arises in it only during the movement of the prosthesis. A slightly different position is formed in the lock fasteners. To create a frictional force, one of the outer parts must be in a state of tension at all times. This leads to rapid wear of the material and breakage of the locking fastener, and the need to replace it. The relative disadvantages of locking fasteners include their higher cost compared to clasps, higher requirements for the quality of technical work (modeling, precision casting of the prosthesis frame) and the availability of additional equipment (milling device, soldering / welding equipment).

V.N.Kopeikin and I.B.Lebedenko distinguish between intra-continental, extra-continental unregulated sliding locks, activated friction hinge locks, combined hinge locks, push-button locks, and intrinsically erosive rotary locks. In addition, attachments are classified by the number of guides, as well as by the manufacturing method and the fit tolerance into precise (produced factory-made with strict tolerance and exact matching of parts) and semi-regular (produced factory-made, but with a less precise tolerance). The latter can be made in the form of plastic, nylon, wax, or modeled from wax by hand. In relation to the supporting teeth, attachments are

classified into intradental and extradental. When an attachment is inserted into the crown (root) of the supporting tooth (introcoronal), they are called intradental or internal. When attachments are placed extracoronally in relation to the supporting tooth, it is called the extradental or external (external).

Locking fasteners can be used with a sufficient height of the clinical crown (at least 4 mm). The supporting tooth is combined with artificial crowns (splinted) with one or two adjacent teeth to counteract the tipping moment created when using locking fasteners. To create them, factories use an alloy of gold and platinum with the addition of iridium, a cobalt-chromium alloy, and elastic plastics. More often, a modified oral clamp arm with an end surface resting on the ledge of the artificial crown of the supporting tooth is used next to the lock attachment, with an inlay part at the tip entering the guide channel between the crowns of the two supporting teeth. High-precision locking fasteners are manufactured by milling on computer-controlled machines. The permissible inaccuracy in the linear dimensions of such fasteners is less than 0.01 mm. The composition and strength of the alloys used to make high-precision lock fasteners are also strictly regulated. This type of lock fastener is usually installed by welding. The use of factory-made components makes it relatively easy to carry out the restoration of locks.

There are lock fasteners obtained by casting on factory-made or individually created polymer or wax blanks. Most of these blanks are prepared by injection molding from ash-free plastics. The accuracy of the linear dimensions of lock fasteners of this type depends on the conditions of the technological process. The advantages of these lock fasteners are their relatively low cost, the ability to obtain them from any available cast alloys, and the absence of welding (soldering) of the fastener and the prosthesis frame. In addition to the standard locking fasteners, there are individual fasteners that are specially modeled for each patient. Depending on the lock design, either a matrix or a matrix can be reinforced in the base or frame of the removable prosthesis. As a rule, it is necessary to strengthen the most complex, activated part of the locking fastener in a removable prosthesis, since it goes out of service earlier and it is necessary to provide for the possibility of easy correction, and if necessary, its replacement without completely redesigning the prosthesis.

Depending on the design features, the following fasteners are distinguished: rail, spherical, articulated (articular), girder and plug-and-turn (bolt). Rail lock fasteners: intracoronary, which are used for included defects, end defects, in removable bridge-like prostheses; extra-coronal, when the crown of extra-coronal rail lock fasteners in the form of a rectangular or circular tube is located on the artificial crown of the supporting tooth. The matrix of these attachments is usually made of high-precision elastic plastic. They are used for included, double-sided end defects. Spherical are extra-lateral locking fasteners, the crown of which resembles a sphere. The ends of spherical retainers can be located on the root caps, on the beam, on the artificial crown of the supporting tooth.

A gap can be left between the patch and the matrix of spherical locking fasteners, which, under the action of chewing pressure, allows for vertical and rotational movements of the removable prosthesis, the volume of which depends on the shape of the patch and the complexity of the attachment itself. They are used for included and terminal defects, in covering or overlapping prostheses. The design of the beam attachment consists of a non-removable beam fixed between the caps and the stump tabs and a fitting shell in the base of the prosthesis. There are Dolder beams (oval or teardrop-shaped arc, the attachment system of which is a groove), Ackerman

beams (round arc, the attachment system of which is a clamp), Shredder beams (ovoid), and Tiller beams (rectangular). Beams of rectangular cross-section are located mainly in the lateral sections, and round or oval - in the front. Articulated (articular) locking fasteners have the possibility of rotational or articulated movements to crush the load falling on the supporting teeth, and, accordingly, to prevent functional overload of the periodontium. It is used for terminal defects of the dentition. The two parts of the plug-in (bolt) lock fasteners are connected effortlessly and locked with a special "key". A transverse locking pin or a rotary latch can be used as a "key".

The position of the transverse locking pin is changed by a special button or rod. Thus, the removal and application of the prosthesis is not accompanied by additional pressure on the supporting teeth. Such retainers are used for included and terminal defects of the dentition, they can also be included in various rods. The matrix is fixed in the matrix in two ways: due to the friction force acting on the contact surface of both structural elements (telescopic crowns, push-button lock fasteners, pads with ledges and grooves); due to the geometric closure with the help of profile elements in the form of ribs, pins, dowels and the like, acting as an "intermediate link", fasteners (bolt bolts, lock fasteners with spring elements). In addition to these mounting elements, there are also combined mounting elements: pads with additional (for example, push-button) fixation, tiller rods, Dolders, etc. The design of the locking fasteners may allow for the adjustment (activation) of the force required for disconnection. In attachments, where the connection is due to the friction force, this is achieved by increasing the adhesion force acting between the matrix and the matrix in the connected state, which increases with increasing pressure on the contact surfaces or by increasing the coefficient of friction when replacing worn elements with new ones. Recently, the most widely used systems are spherical intra-root attachments (8PEGISAI Rioi lie), 2e8I APSOG 8u8Iet technology, and less often the magnetic attachment system (Opa 8u8Iet). 2e8I APSOG 8u8Iet is a precision attachment system that provides for the use of a special centralizer gasket between the matrix and the matrix, which ensures the amortization viscosity and the necessary correspondence between the matrix and the matrix. The matrix in this system has a cup-shaped shape with a spherical recess. It is connected as a single block with an intra-root pin, due to which the matrix is fixed in the root of the tooth using one of the dental cements. The matrix fixed in the base of the removable prosthesis is made of nylon and has a conical shape ending in a sphere. Due to the elastic compression of the matrix sphere and its retention inside the matrix sphere, reliable fixation and stabilization of the removable denture is ensured.

Conclusions:

Thus, the use of attachments is reduced to the purpose of leveling the clamp fixation, which is relatively disadvantageous in aesthetic terms, as well as for hygienic reasons. They provide support, retention, reciprocating movements, stabilization and fixation of removable dentures. The use of precession lock fasteners ensures their relatively low cost, the possibility of manufacturing from any available cast alloys, the absence of dissimilar metals in the prosthesis and the need for soldering / welding parts of the lock fasteners and the prosthesis frame. They can be used in the manufacture of partial removable dentures, end and embedded defects of the dentition, collapsible bridges of long length, bridges with convergence or divergence of teeth,

dentures fixed on implants. Proper use of lock fasteners successfully solves the physiological and aesthetic problems of classic removable dentures.

REFERENCES

1. Kuzieva, M., Akhmedova, M., & Khalilova, L. (2025). MODERN ASPECTS OF CHOICE OF MATERIAL FOR ORTHOPEDIC TREATMENT OF PATIENTS IN NEED OF DENTAL PROSTHETICS. *Modern Science and Research*, 4(1), 322-333.
2. Kuzieva, M., Akhmedova, M., & Khalilova, L. (2025). GALVANOSIS AND ITS DIAGNOSTIC METHODS IN THE CLINIC OF ORTHOPEDIC DENTISTRY. *Modern Science and Research*, 4(2), 203-212.
3. Kuzieva, M. A. (2023). Clinical and Morphological Criteria of Oral Cavity Organs in the Use of Fixed Orthopedic Structures. *Research Journal of Trauma and Disability Studies*, 2(12), 318-324. 458 ResearchBib IF- 11.01, ISSN: 3030-3753, Volume 2 Issue 3
4. Abdusalimovna, K. M. (2024). THE USE OF CERAMIC MATERIALS IN ORTHOPEDIC DENTISTRY. (Literature review). *TADQIQOTLAR*, 31(3), 75-85.
5. Abdusalimovna, K. M. (2024). CLINICAL AND MORPHOLOGICAL FEATURES OF THE USE OF METAL-FREE CERAMIC STRUCTURES. *TA'LIM VAINNOVATSION TADQIQOTLAR*, 13, 45-48.
6. Abdusalimovna, K. M. (2024). THE ADVANTAGE OF USING ALL-CERAMIC STRUCTURES. *TA'LIM VA INNOVATSION TADQIQOTLAR*, 13, 49-53. 1286 ResearchBib IF- 11.01, ISSN: 3030-3753, Volume 2 Issue 6
7. Abdusalimovna, K. M. (2024). MORPHO-FUNCTIONAL FEATURES OF THE METHOD OF PREPARATION OF DEPULPATED TEETH FOR PROSTHETICS. *SCIENTIFIC JOURNAL OF APPLIED AND MEDICAL SCIENCES*, 3(4), 301-307
8. Abdusalimovna, K. M. (2024). Clinical and Morphological Features of the Use of Non Removable Orthopedic Structures. *JOURNAL OF HEALTHCARE AND LIFE SCIENCE RESEARCH*, 3(5), 73-78. 800 ResearchBib IF- 11.01, ISSN: 3030-3753, Volume 2 Issue 4 1285 ResearchBib IF- 11.01, ISSN: 3030-3753, Volume 2 Issue 5
9. Kuzieva, M. A. (2024). CARIOUS INFLAMMATION IN ADOLESCENTS: CAUSES, FEATURES AND PREVENTION. *European Journal of Modern Medicine and Practice*, 4(11), 564-570.
10. Kuzieva, M. A. (2024). Malocclusion–Modern Views, Types and Treatment. *American Journal of Bioscience and Clinical Integrity*, 1(10), 103-109.
11. KUZIEVA, M. A. (2024). MODERN ASPECTS OF MORPHO-FUNCTIONAL DATA AND TREATMENT OF AGE-RELATED CHANGES IN THE MAXILLOFACIAL REGION. *Valeology: International Journal of Medical Anthropology and Bioethics*, 2(09), 126-131.
12. Kuzieva, M., Akhmedova, M., & Khalilova, L. (2025). MODERN ASPECTS OF CHOICE OF MATERIAL FOR ORTHOPEDIC TREATMENT OF PATIENTS IN NEED OF DENTAL PROSTHETICS. *Modern Science and Research*, 4(1), 322-333
13. Khalilova, L., Akhmedova, M., & Kuzieva, M. (2025). MAIN ASPECTS IN CARIES DIAGNOSIS. *Modern Science and Research*, 4(1), 697-706.
14. Kuzieva, M. (2025). MODERN ASPECTS OF CHOICE OF MATERIAL FOR ORTHOPEDIC TREATMENT OF PATIENTS IN NEED OF DENTAL PROSTHETICS. *Modern Science and Research*, 4(1), 311-321. 459 ResearchBib IF- 11.01, ISSN: 3030 3753, Volume 2 Issue