Chapter 1. Literature review.

1.1. Errors and complications in non-removable prosthetics.

In 2009, S.I. Gazhva and O.A. Alyoshina in their work "Patient complaints as one of the indicators of the quality of work of an orthopedic dentist" for the journal "Clinical Dentistry", having studied 800 complaints received from patients of dental clinics, found that earlier, in the period from 1993 to 1996, mainly complaints about the organization prevailed work in the clinic, but since then the number of claims for poor-quality dental care has already begun to increase. This is due to changes in legislation in healthcare due to the emergence of market relations, the introduction of new technologies, as well as the improvement of legal awareness of patients.

The authors conducted an analysis and found that the frequency of unsatisfactory results of prosthetics with fixed orthopedic structures in the first 2-3 years of use is up to 29%. After prosthetics, the main complaints of patients were cementation of crowns, lack of contacts between dentitions, unsatisfactory aesthetics of metal-ceramic prostheses, chipped ceramics and pain in the temporomandibular joint when chewing and at rest. Of course, there were also unfounded complaints, but their share was small and amounted to only 7%.

Metal-ceramic structures are a common choice for non-removable prosthetics due to the excellent aesthetic properties of the structural material. Ceramics, in terms of physical and cosmetic properties, most of all corresponds to tooth enamel, and is a biologically neutral material, however, such structures are not without disadvantages. Various complications often arise in the process of using metal-ceramic prostheses. One of the most common is the chipping of ceramic cladding. The adhesion of ceramics to metal is ensured by Van der Waals forces, mechanical adhesion due to surface geometry, chemical bonding of oxides in the alloy composition and forces arising during cooling due to differences in temperature compression coefficients of porcelain and metal. The bond strength of a metal with a ceramic layer depends on the thickness of the oxide film on the surface of their interface, the method of sealing the porcelain layer, the heating rate during firing and cooling, the number of pores in porcelain and many other parameters. If the adhesive bond is not large enough, sections of the porcelain lining are detached from the metal, followed by exposing its surface. In the case of insufficient cohesive bond, destruction occurs on the surface of the ceramic mass, which remains on a part or on the entire surface of the metal.

Motorkina T.V., Polyanskaya O.G. and Shemonaev V.I. in their 2011 article "Possible complications at the stages of using solid-cast metal-ceramic structures. Methods of prevention and treatment" for the International Journal of Experimental Education, there are three situations that lead to complications in the use of metal-ceramic prostheses: the side effect of prostheses, the side effect of dental materials and medical or technical errors. The authors of the article note that mistakes by a doctor or technician as a cause of complications are most common. This is explained by the multi-stage and technological complexity of manufacturing such prostheses, which requires both a doctor and a dental technician to be highly professional and accurate in performing the work.

Other non-removable structures and complications in their use were evaluated in 2010 by A.K. Iordanishvili, I.A. Tolmachev, D.N. Bobunov, M.E. Gorbatenkov and A.M. Sagalaty in their article "Defects and complications in prosthetics with non-removable dentures" for the journal Clinical Dentistry. In order to determine the frequency of complications when using non-removable dentures and the causes that caused them, the authors examined 600 patients with dentures. Single crowns and bridges for these people were made in various state and non-state dental treatment and prophylactic institutions and offices in four different cities of Russia. The terms of use of dentures ranged from 6 months to 5 years.

The examination was performed using additional research methods, such as the Schiller-Pisarev test, radiography, and others. The authors cite various types of complications from inflammation of the tissues of the marginal periodontium and mobility of the supporting teeth to pathological tooth abrasion and pain in the temporomandibular joint. Most of the examined patients were simultaneously diagnosed with two or three prosthetics deficiencies, but when these dental prosthetics deficiencies were identified, patients complained only in 352 cases, which was slightly more than half of all the studied patients. The complaints were mainly about the presence of pain syndrome, discomfort when chewing, or an aesthetic flaw in the denture. However, the orthopedic surgeon did not make a record of the patient's complaints and claims in the outpatient records of patients.

As a result, it was concluded that the percentage of complications in the treatment of patients with non-removable prosthetics is quite high and that effective methods of cooperation should be developed between an orthopedic dentist and a dental technician to prevent negative consequences. The work of the therapist and the surgeon should also be coordinated, since the final rehabilitation of the patient, performed directly by the orthopedic surgeon, will depend on their preparatory actions.

The causes of complications are not always only the doctor's mistakes or the patient's disinterest in his treatment.

In 2015, the journal "Modern Problems of Science and Education" published an article by Mikhalchenko D.V., Gumilyevsky B.Yu., Naumova V.N., Virabyan V.A., Zhidovinov A.V. and Golovchenko S.G. "Dynamics of immunological parameters in the process of adaptation to fixed orthopedic structures" in which adaptation to prostheses and its the relationship with the general condition of the body. The authors examined the gingival and oral fluids of 50 patients aged 35-64 years at the stages of orthopedic treatment: before tooth preparation, after fixation of fixed dentures for 3, 7 and, if necessary, for 30 days.

The authors concluded that, since each patient is different, the timing of adaptation may vary significantly. Taken together, the data obtained indicated that the process of adaptation of patients to non-removable dental bridges is usually accompanied by the development of an inflammatory reaction in the oral cavity. This inflammation is associated with the activation of the mechanisms of innate immunity.

In 2010, S.I. Gazhva, G.A. Pashinyan and O.A. Alyoshina studied in detail the causes of adverse outcomes of prosthetics with fixed structures and the complications that arise and published the results of their research in the article "Analysis of errors and complications in prosthetics using fixed orthopedic structures" for the journal Dentistry. The authors of the article examined 840 patients. The survey showed that the frequency of unsatisfactory results of prosthetics with fixed structures in the first 2-3 years of their use is up to 29%. The main complaints of patients after prosthetics were "cementation of crowns, lack of contacts between dentitions, violation of the aesthetics of metal-ceramic prostheses and chipped ceramics, the presence of a metallic taste in the mouth, pain in the temporomandibular joint when chewing and at rest." In order to identify errors and complications, the type of prosthesis, the length, the number of supporting teeth, the quality of the marginal fit of the crowns on the supporting teeth, the nature of the occlusal relationships between the dentitions were evaluated, aesthetic parameters and the condition of artificial teeth were evaluated in the frontal group, periodontal tissues were examined in the area of the prosthesis, the quality of endodontic treatment was determined by radiographs. Prints and working models were also studied to identify errors at the stage of manufacturing structures.

Based on the conducted research, the most common errors and complications in prosthetics with fixed structures were identified. Among the errors at the stage of preparation for prosthetics: violation of the principles and, consequently, the quality of endodontic treatment of supporting teeth, inconsistency of the chosen treatment method with the established diagnosis, injury of the neurovascular bundle during mechanical processing of the supporting tooth without water cooling, depulpation of the supporting tooth without indications, perforation of the root canal during its preparation for the tab, damage to the marginal gum, preparation of the tooth without a ledge, excessive taper of the supporting tooth, lack of temporary structures and errors in bite registration. Among the errors at the stage of taking casts, the most common were: the use of alginate impression mass for the main cast, inaccuracy of the casts, the gap between the base and correcting layers, the shift of the cast at the time of application, taking the cast without first using a retraction thread and tearing the cast from the spoon. The most common mistakes at the stage of checking the prosthesis in the oral cavityThere were: excessive processing of the frame during the inspection, processing of cermets at high speeds and violation of the shape, color, size of the crown. Errors in fixing the prosthesis most often turned out to be the following: incorrect choice of fixing material, violation of instructions when working with fixing materials, uneven compression of the prosthesis during fixation. The errors identified by the authors at the stages of prosthetics led to a number of complications, such as: cementation of prostheses, ceramic chips, gingivitis in the area of the supporting teeth, traumatic periodontitis, traumatic pulpitis or periodontitis, gum recession, discoloration of the gums around the crown, secondary caries, destruction of the stump of the supporting tooth under the crown, TMJ dysfunction, pain sensations in the area of the intermediate part of the prosthesis, allergic stomatitis and galvanism.

After analyzing the data obtained, the authors proposed the following methods to improve the quality of orthopedic treatment: to standardize methodological approaches to the examination and choice of treatment for patients with partial tooth loss, to introduce protocols for the management of patients with partial tooth loss into the practice of orthopedic dentistry, to consider dispensary observation a necessary stage of rehabilitation for such patients, to conduct a comprehensive examination of patients with subsequent preparation of a plan treatment in each specific clinical situation, and also to use objective methods of assessing the clinical situation when making a diagnosis, including radiography at the preclinical, clinical stages and during the follow-up period.

1.2. Errors and complications in removable prosthetics.

When using removable structures, complications also often arise.

The textbook "Removable prostheses" by M.L. Mironova says that the causes of complications in removable prosthetics can be both medical errors and errors made at the stage of manufacturing structures. There may also be a side effect of the construction material. In this case, patients usually complain about unsatisfactory fixation of the prostheses, pain and burning under the prosthesis, diction disorders, broken parts or cosmetic defects. Sometimes mistakes can not be corrected, in which case it is necessary to redo the prosthesis, starting prosthetics from scratch, which takes time, and sometimes the patient's patience. The defect of the prosthesis can be the result of an error at any stage of the manufacture of the prosthesis, starting from gluing a plaster cast and ending with the application of the prosthesis to the jaw. For example, inaccurate gluing of parts of a plaster prosthesis leads to a violation of the relief of the surface of the impression, which distorts the contours of the future prosthesis.

The atypical shape of the supporting teeth and the incorrect location of the retaining part of the clamp relative to the line of sight can cause unsatisfactory fixation of the removable denture. Therefore, the supporting teeth during the clamp fixation of removable dentures should have a well-defined equator and a sufficient crown height, or it is worth covering the supporting teeth with atypical crowns.

Often, the reason for patients' complaints about the unsatisfactory fixation of removable dentures is the balance of the prosthesis on the upper jaw in the absence of isolation of the pronounced palatine torus. To avoid such a situation, the torus is palpated on the palate at the stage of making a wax model and isolated by grinding the inner surface of the base.

Special attention should be paid to exostoses - bony protrusions in the premolar region of the lower jaw. It is necessary to isolate them from direct contact with the prosthesis using lead foil on the model. The prosthesis must completely overlap the bony protrusion, and its border must reach the movable mucous membrane, otherwise the prosthesis is thrust into the protrusion, which causes the formation of bedsores and severe soreness. If the prosthesis does not meet the requirements, it must be adjusted.

If poor fixation occurs due to improper placement of artificial teeth, they are cut off from the base, and the central occlusion is redefined. Unsatisfactory fixation is also possible with uncertain relationships in various phases of all types of occlusion.

Complaints of patients about diction defects in the process of adaptation to prostheses are inevitable, therefore it is advisable to carry out preliminary diction control with a wax base or arc design.

Injury or compression of the mucous membrane, inaccurate placement of artificial teeth, lack of isolation of the torus, exostoses and other areas of the mucous membrane without a submucosal layer can lead to pain and burning under the prosthesis. An orthopedic surgeon should always carry out differential diagnosis in a timely manner and be ready to provide the necessary assistance. In addition, burning can also cause unsatisfactory hygienic care of the prosthesis, leading to an accumulation of microflora on the inner surface of the base of the prosthesis with toxic effects on the underlying mucous membrane.

In addition to all of the above, one should not forget about the toxic effects of plastic bases on the mucous membrane due to poor-quality polymerization of plastic. In this case, depolymerization must be carried out: heat treatment in a cuvette, ultraviolet or ultrasonic irradiation.

The textbook by M.N. Kopeikin and M.Z. Mirgazizov "Orthopedic dentistry" says that artificial teeth in removable dentures are made of plastic and porcelain. They are placed exactly in the center of the crest of the alveolar process, compliance with this condition is monitored at the stage of checking the design of the prosthesis. Failure to comply with this rule leads to a number of complications: overturning of prostheses, overload of supporting teeth, increased bone atrophy of the prosthetic bed or fracture of the base, especially if it is made of plastic.

The authors point out that long-term monitoring of the condition of prostheses with artificial teeth made of plastic allowed to establish their increased erasability. This not only reduces the chewing efficiency, but can also cause a number of complications, such as a traumatic node, the Popov-Hodon phenomenon, the development of deep incisor overlap with a change in the topographic and anatomical relationships of both dentition and elements of temporomandibular joints. Most often, this condition is not subjectively manifested: the patient does not experience discomfort and pain due to the high adaptive and adaptive properties of the dental system.

In the "Manual of Orthopedic Dentistry" by I.Y. Lebedenko, E.S. Kalivrajiyan and T.I. Ibragimov, it is indicated that the verification of the prosthesis design in the clinic consists of three stages: the first is an examination of plaster models of the jaws, the second is an assessment of the correctness of the placement of teeth in the articulator, the third is a check of the wax structure of the future prosthesis in the oral cavity. When evaluating the quality of models, attention is paid to their integrity. Check whether there are chips, pores, signs of injury with a technical spatula used for setting teeth. At the same time, the following rule should be followed: "it is better to remove the functional impression again than to use models that are questionable."

In 2014, in the article "Analysis of errors and complications made in the manufacture of removable denture structures, according to an advisory professorial appointment" for the Ural Medical Journal, S.E. Zholudev analyzed the documentation of 187 patients, and based on clinical signs and objective indicators, almost all were diagnosed with chronic periodontitis of mild, moderate or severe degrees. In case of partial tooth loss, arc or partial plate prostheses are used among removable dentures, which in most cases are used with bent wire retaining clamps of various modifications. The author explains that such structures transfer chewing pressure mainly to the underlying tissues of the prosthetic bed, to the mucous membrane of the oral cavity. It is not adapted to the perception of pressure and in some cases responds to it with an acute or chronic inflammatory reaction. If the mucous membrane of the patient's prosthetic bed is atrophic, thin and sensitive, pain complaints are possible, which may be the reason for refusing to use the structure.

The article also says that the rejection of the prosthesis is possible in periodontal diseases and secondary traumatic occlusion, since the design in this case gives a functional overload. Traumatic periodontitis often occurs due to improper planning of their number and type of clamps. Complications are possible if bent wire clamps are improperly manufactured, when the body in the clamp is completely missing, and a rigid shoulder is obtained, which constantly presses on the supporting tooth. There are cases of incorrect choice of supporting teeth.

Complications when using partial lamellar prostheses include traumatization of the gingival margin, interdental and palatine papillae due to poor reproduction of the edge of the prosthesis adjacent to these areas and microexcursions of the base during chewing movements. Injury to the tissues of the prosthetic bed is possible if the density of the base is violated to the supporting teeth, when there is a gap between the preserved teeth and the base of the plate prosthesis. Such a discrepancy is possible in case of tooth breakage on plaster models, carelessness in packing removable structures, when a doctor or dental technician changes the basis of the prosthesis adjacent to the teeth.

If the central occlusion is determined incorrectly, due to the concentration of masticatory pressure on a small area, erosion on the alveolar process may occur, and in particularly difficult cases, decubital ulcers. Chronic injury to the mucous membrane of the prosthetic bed often leads to the development of papillomas on the back of the tongue, hard or soft palate, lips, cheeks. Lobular fibroma may develop under the influence of chronic irritation of the underlying tissues of the prosthetic bed.

The author of the article also established a direct dependence of the condition of the mucous membrane of the prosthetic bed on the hygienic care of dentures. Studies have shown that the unsatisfactory hygienic condition of plate prostheses contributes to the appearance of prosthetic stomatitis, the development of the microbial flora of prosthetic plaque, and a decrease in local immunity factors. The most satisfactory hygiene of removable dentures was observed in women, especially under the age of 55, and the worst in men over 55 years of age. The main complications in the study of patients with terminal defects were as follows: most often, in almost a third of cases (29%), it was the rejection of prostheses. Further, complications such as fracture of the bases, breakage of the clamps and pathological mobility of the supporting teeth were more frequent. With complete loss of teeth, the main complications were poor fixation and stabilization of prostheses (73.5% of cases), as well as the phenomenon of intolerance to structural materials.

The literature also describes cases of pathology of the temporomandibular joint as complications when using removable structures.

The problem was studied in detail by K.G. Seferyan, N.Yu. Seferyan and N.V. Lapina, who presented the results of their work in the article "Dysfunctional disorders in temporomandibular joints as a result of errors in prosthetics with removable orthopedic structures" in the International Journal of Applied and Fundamental Research in 2014.

TMJ dysfunction syndrome occurs when the joint is constantly experiencing increased stress. Accordingly, one of the reasons for such loads may be errors in orthopedic treatment. The main problem of temporomandibular joint dysfunction is its late diagnosis.

To date, there is no unified classification of errors and complications in prosthetics that lead to TMJ dysfunction. The authors of the article attempted to establish the significance of the influence of medical errors in prosthetics with removable structures on the occurrence of TMJ dysfunction. A group of 464 patients was examined, 75.2% of whom had complaints of various symptoms in the TMJ. The study showed that in 23% of cases, prosthetics led to the development of TMJ pain. It is noted that "symptoms of pain, crunching, clicking in the TMJ occurred against the background of a decrease in occlusal height and distal displacement of the mandible, oblique prosthetic plane. Their degree and severity increased with an increase in the number of lost teeth, depended on the topography of defects and the time from the day of tooth extraction to the start of prosthetics."

Studies have also shown that the cause of pathological symptoms of dysfunction in the TMJ in 30% of cases is the simultaneous manufacture of removable orthopedic structures with an increase in the interclusal height by more than 3.5 mm. In 35% of cases, the time without fixation of occlusal relationships on temporary structures, elapsed between tooth extraction and prosthetics, was more than eight weeks. In 15% of cases, prosthetics were performed without taking into account the prosthetic plane, with the replacement of orthopedic structures only on the lower jaw. In 20% of cases, patients used orthopedic structures for more than 10-15 years, which led to abrasion of both their own and artificial teeth, and, consequently, to a violation of the occlusal surface, periodontal overload of the remaining teeth in the dentition and the development of traumatic occlusion. At the same time, 56% of patients had a history of pathological symptoms in the TMJ, but this was not taken into account in any way when drawing up an orthopedic treatment plan.

Accordingly, conclusions were drawn: it is necessary to carefully collect anamnesis and not forget about annual preventive examinations, study the occlusion of the patient and exclude parafunction of the masticatory muscles.

Unsatisfactory preparation of the oral cavity for prosthetics, manufacture of prostheses in the early stages after tooth extraction, even before complete epithelization of the wells, incorrect choice of prosthesis designs, unjustified reduction in the area of removable dentures, numerous errors in determining the central ratio of the jaws, especially with complete loss of teeth, incorrect placement of clamps, unsatisfactory placement of teeth, shortening of the boundaries of the bases of prostheses and other design errors are the causes of unsuccessful treatment, which leads to conflict situations.

P.O. Romodanovsky and Yu.N. Urukov investigated the problem of refusal of removable dentures in 2010 in their article "Refusal to use removable dentures as one of the factors of conflict situations" for the journal "Healthcare of Chuvashia". 210 cases of refusal to use removable dentures were analyzed.

The authors found that almost all patients who refused to use removable prostheses had a history of general somatic diseases. In the process of collecting anamnesis, it was found that 76 people had diseases of the gastrointestinal tract, 55 had diseases of internal organs due to metabolic disorders that cause changes in the oral cavity, its sensory-receptor reactions. This leads to a decrease in the patient's adaptive resource, which affects the interaction of the body and removable orthopedic structures. At the end of the article, it is concluded that "poor-quality manufacturing of prostheses, which is aggravated by prolonged use, contributes to pathological changes in the dental system and affects the nature of interaction with the body as a whole." Such conditions cause the development of conflict situations between the doctor and the patient, which in most cases require prevention by repeated prosthetics. This makes it possible to solve the problem at the pre-trial level, but complications can also occur with repeated prosthetics.

The issue of such complications was addressed by S.Y. Maksyukov, E.S. Belikova and A.S. Ivanov, who presented the results of their research in the article "Analysis of complications, shortcomings and defects of repeated prosthetics with clasp and removable plate prostheses" in the journal Kuban Scientific Medical Bulletin in 2013. 102 patients were examined, 67 of whom had removable plate prostheses, and the rest had clasp prostheses. The most common complications among patients with removable prostheses were inflammatory changes in periodontal tissue, a gradually progressive decrease in fixation of the prosthesis, discomfort and lack of habituation to prostheses.

The authors of the study note that breakdowns of removable plate prostheses on the lower jaw were most often observed in the area of the supporting teeth, and on the upper jaw, on the contrary, along the midline. The most significant disadvantages when using removable dentures were gum injury when eating solid food and visibility from the clamps during the patient's conversation. Patients also complained of violations of temperature and taste sensitivity, frequent correction of prostheses.

The authors of the article analyzed cases of unsatisfactory prosthetics of teeth with removable dentures. In 20.9% of cases, patients noted the inability to use removable dentures due to their inconsistency and soreness, in 17.9% of patients noted poor fixation of dentures and their instability, in 14.9% - diction disorder. At the same time, 14.9% of patients complained of pain arising under dentures. Violation of the act of chewing was noted by patients in 11.9% of cases. With the same frequency, patients noted a burning sensation and dryness in the oral cavity. But only 9% of patients were concerned about pain in the temporomandibular joints. Many complications occurred during prosthetics with plate prostheses and were not noted during clasp prosthetics: for example, prosthesis breakdowns, inflammatory periodontal changes, chewing and speech disorders.

Taking into account the above, the authors came to the conclusion: in prosthetics using lamellar prostheses, breakage is a common problem, and the second most important problem is insufficient fixation of the prosthesis.

At the end of the article, according to the results of calculations, it is indicated that with repeated prosthetics with lamellar prostheses, complications of orthopedic treatment develop in 83.6%, deficiencies - in 61.2%, and defects - in 71.6% of observations. These indicators are significantly lower with clasp prosthetics (complications of orthopedic treatment develop in 25.7%, deficiencies – in 22.9%, and defects – in 20% of cases, respectively). Thus, the authors conclude: "The optimization of repeated removable prostheses is associated with the use of clasp prostheses and with the limitation of the widespread use of plate prostheses."

Thus, it should be said that the register of errors in the practice of orthopedic doctors is of a different nature. Despite the study of the problem of errors and complications, as well as descriptions of their research by various authors, errors in the treatment of removable and non-removable structures have happened at all times and continue to happen to this day. Although the problem is widely known, there are no fewer errors from year to year.

The aim of the work was to conduct another study to reduce the number of errors in prosthetics.

Chapter 2. Materials and methods of research.

2.1 Survey of orthopedic dentists.

To conduct the study, the method of questioning orthopedic dentists working in state polyclinics and commercial structures was chosen, followed by an analysis of the questionnaires. A total of 42 doctors participated in the study.

In accordance with the objectives of the study, orthopedic doctors were offered the following questionnaire to fill out anonymously:

Questionnaire (to be filled out anonymously by an orthopedic doctor)

1. I work:

a. In a state polyclinic.

b. In a commercial structure.

Q. I combine work in organizations of various forms of ownership.

2. Your work experience:

a. 0-5 years.

b. 6-10 years.

c. 11-15 years.

d. More than 15 years.

3. Gender:

a. Male.

b. Female.

4. The average number of patients per year who had removable dentures installed:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. The average number of patients per year who were fitted with permanent prostheses:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Frequency of complaints about installed removable structures:

a. During the practice, complaints were never received.

b. Several times a year.

c. \_\_\_\_\_\_\_\_\_ once a month.

7. The reason for complaints about the removable structure (in case of several, specify each one):

a. Unsatisfactory care of the prosthesis on the part of the patient or non-compliance with the patient's care recommendations.

b. Lack of instruction and insufficient information from the patient about the rules of care for the prosthesis.

c. A complication caused by no fault of the patient.

d. Other causes unrelated to complications.

8. Frequency of complaints about fixed structures installed:

a. No complaints have ever been received during the practice.

b. Several times a year.

c. \_\_\_\_\_\_\_\_\_ once a month.

9. Reason(s) of complaints about non-removable structures (in case of several, specify each one)

a. Unsatisfactory care of the prosthesis by the patient or non-compliance with the patient's recommendations for care.

b. Lack of instruction and insufficient information from the patient about the rules of care for the prosthesis.

c. A complication caused by no fault of the patient.

d. Other causes unrelated to complications.

In questions No. 7 and No. 9, the answer "Complication caused by the fault of the doctor and/or dental technician" was hidden under the answer option "C" for greater reliability of the study.

2.2 Data collection from completed questionnaires.

 All the answers from the collected questionnaires were transferred to the general table (Table.1) for further analysis.

The empty cells in the last two columns informing about the causes of complaints are explained by the absence of complaints about prosthetics in the practice of this doctor.

Chapter 3. The results of the study.

The analysis of the results showed that non-removable prosthetics is performed somewhat more often than removable ones: 3625 patients with removable structures versus 4455 with removable ones (Table 1). At the same time, most of the removable (more than 1900 patients) and non-removable (more than 2225 patients) structures were installed in state polyclinics (Diagrams 1, 2).

The vast majority of patients (80%) complained about the installed removable structures several times a year (Figure 3). Complaints occurred more often only in 1% of cases. In another 19% of cases, there were no complaints at all. Most likely, this is due to the work experience of orthopedic doctors (Table 2). In total, there were 8 cases of no complaints about removable structures. Of these, in 5 cases, the length of service of doctors was from 0 to 5 years. In two more cases, the doctors' experience ranged from 6 to 10 years. And finally, only one case was recorded when a doctor with more than 15 years of experience had no complaints.

The situation is a bit similar with non-removable structures (figure 4). Most complaints are received several times a year (90% of cases). Some patients (10%) had no complaints at all. Presumably, this may be due either to the short experience of doctors, as in the case of removable prosthetics, or to the high professionalism of doctors (Table. 3), including when instructing the patient on the care of the prosthesis.

Such a number of complaints is primarily due to the deterioration of the prostheses due to unsatisfactory care of the patient's design, or due to negligence and banal non-compliance by the patient with recommendations for the care of the prosthesis (diagrams 5, 6).

Unsatisfactory care of the removable structure was found in 79% of cases, and for the non–removable structure - in 78% (in the diagrams, the area is marked with a red outline for clarity). As can be seen from these statistics, the results are very similar, and the frequency of complaints about the design due to patient negligence is quite high in both cases. At the same time, unsatisfactory prosthetic care due to lack of instruction and insufficient information about the patient's care was only in 3% of cases with removable prosthetics. Therefore, it can be said that the patients themselves were not very interested in successful treatment, or simply could not or forgot to follow the instructions given to them. In the case of removable dentures, the doctor was to blame for the complication in 15% of cases, and in the case of non–removable ones - in 14%.

Chapter 4. Conclusion and conclusions

4.1 Conclusion.

 During the study, it was found that with complaints about installed removable and non-removable structures, patients after dental treatment turn to orthopedic doctors employed both in government institutions and in commercial organizations. Despite the increased level of service in commercial structures, presumably the use of better equipment and materials, more time devoted to the patient, all this cannot exclude mistakes by doctors, the occurrence of complications and complaints from patients. Contrary to popular belief, a higher level of service in commercial organizations does not always mean better provision of services. Ultimately, the role is always played by the doctor's approach to treatment and personal interest in the successful treatment of the patient.

The minimum number of complaints or their complete absence is mainly typical only for doctors whose work experience is less than 5 years. The absence of complaints may be due either to the talent of these doctors and their impeccable performance of their work, or to the fact that, unlike doctors with solid experience, they believe that their work ends with the installation of an excellent structure in the oral cavity and do not bother with instructions and explanations, on the contrary, they perform their full work work, paying due attention and time to the instruction. In addition, it is possible that for some reason they may be lying when answering this questionnaire question.

The study also showed that the gender of an orthopedic surgeon does not affect the incidence of complications during prosthetics.

It is worth noting the unsatisfactory care of the prosthesis by the patient, or the patient's non-compliance with care recommendations as the main cause of complications with any type of prosthetics, the arrival of the orthopedic structure in an unsuitable condition for further use and, as a result, the appearance of complaints to the orthopedic doctor. In the case of removable prosthetics, the frequency of this cause was 79%, and in the case of non–removable prosthetics - 78%.

At the same time, in only 3% of cases of removable prosthetics, proper care of the prosthesis was not observed due to the lack of instruction from the doctor.

Unsatisfactory care of the prosthesis in patients with removable structures due to age is associated with deteriorating memory, or the inability to read the instructions – if the doctor issued it – with an algorithm of actions to maintain the prosthesis in a suitable condition, if there simply were no glasses at hand.

It is also possible that some patients are too lazy to look for instructions when they get lost among other papers and documents.

Orthopedic errors at the stages of prosthetics play a much smaller role. Thus, according to the results of the study, a medical error in removable prosthetics was made and caused complications in 15% of cases, and in non–removable prosthetics - in 14% of cases. This factor is a manageable cause in the occurrence of complications after treatment, and measures aimed at optimizing this section of medical work can give quick results and improve the quality of dental care provided.

4.2 Conclusions.

1. In the practice of orthopedic physicians employed in organizations of various forms of ownership, various errors and complications may occur when prosthetics of patients with both removable and non-removable structures, with the predominance of complications caused by unsatisfactory patient care for the prosthesis.

2. The final result of dental treatment is determined not only by the doctor's literacy, individual approach to each patient and the correct sequence of actions, but also by the patient's attitude to the treatment, his personal interest in achieving positive results.

3. Orthopedic doctors should instruct the patient in detail and fully, talk about the rules of use and rules of care for manufactured orthopedic structures in order to consolidate the positive results of treatment.

4.3 Practical recommendations.

 1. The algorithms for providing orthopedic care approved by a dental medical organization should include the obligation of each orthopedic dentist to instruct the patient on the care of the prosthesis and the rules of its use.

2. Carrying out work aimed at creating motivation and personal interest of the patient in successful treatment should be an integral part of a medical appointment. Patient loyalty has a positive effect on compliance with the recommendations received and minimizes the frequency of complications.

3. A visual demonstration of proper oral hygiene is advisable.

For this purpose, you can ask to bring personal hygiene products to the reception – a toothbrush and dental floss, and conduct a hygiene lesson in the dental office, showing the correct movements of the brush with sweeping movements at an angle of 45 degrees, the correct position of the dental floss and other details. During the same visit, it is worth talking about how important it is to remove all pieces of food from the mouth and clean off all plaque.

It should be advised to use irrigators after brushing your teeth.

It is necessary to recommend to the patient a mandatory visit to the dentist every six months for a preventive examination.

 In the case of removable prosthetics, you should tell the patient not only about the careful attitude to the prosthesis, but also give instructions on the care of the prosthesis as a whole.

4. In order to eliminate problems with forgetting, loss of instructions for the care of the prosthesis or inability to read it, we offer a specially designed booklet for issuing to each patient at the last stage of orthopedic treatment after the installation of prostheses in the oral cavity and the briefing. The booklet with bright and clear pictures contains a minimum of words, the necessary information is presented in the most visual form.

 The first drawing illustrates a person who has just finished eating. This tells the patient that the action should be performed after eating (Fig.1).

 The second figure shows the actions directly necessary to perform: a person takes out his prosthesis from the oral cavity and prepares to start cleaning the structure (Fig.2).

The third figure illustrates the need to clean the prosthesis with a toothbrush over the sink to remove food particles and plaque (Fig.3).

The fourth figure shows the process of washing the prosthesis under a tap with running water (Fig.4).

In the fifth picture, the patient uses cleansing tablets by dissolving them in a glass of warm water (Fig.5).

 In the sixth picture, a prosthesis is placed in this glass for 10-20 minutes (Fig.6).

The seventh picture illustrates a satisfied patient with a prosthesis in the oral cavity (Fig.7).

The eighth picture shows the patient that the prosthesis should be placed in a glass of water at night (Fig.8).

 The drawings are made in the form of squares 22.58cm x 22.58cm, which, when reduced by half, will make either a square book-type booklet of 8 pages (4 sheets), or a double-sided instruction that will accommodate 4 pictures on each side (Fig. 9, 10). Each picture is numbered so that the patient does not get confused. Both options will be understandable to people of any age and will help you not forget about proper dental care.

 Thus, the frequency of complications of removable prosthetics can be reduced, and, consequently, the frequency of complaints.

Chapter 4. Conclusion and conclusions

4.1 Conclusion.

 During the study, it was found that with complaints about installed removable and non-removable structures, patients after dental treatment turn to orthopedic doctors employed both in government institutions and in commercial organizations. Despite the increased level of service in commercial structures, presumably the use of better equipment and materials, more time devoted to the patient, all this cannot exclude mistakes by doctors, the occurrence of complications and complaints from patients. Contrary to popular belief, a higher level of service in commercial organizations does not always mean better provision of services. Ultimately, the role is always played by the doctor's approach to treatment and personal interest in the successful treatment of the patient.

The minimum number of complaints or their complete absence is mainly typical only for doctors whose work experience is less than 5 years. The absence of complaints may be due either to the talent of these doctors and their impeccable performance of their work, or to the fact that, unlike doctors with solid experience, they believe that their work ends with the installation of an excellent structure in the oral cavity and do not bother with instructions and explanations, on the contrary, they perform their full work work, paying due attention and time to the instruction. In addition, it is possible that for some reason they may be lying when answering this questionnaire question.

The study also showed that the gender of an orthopedic surgeon does not affect the incidence of complications during prosthetics.

It is worth noting the unsatisfactory care of the prosthesis by the patient, or the patient's non-compliance with care recommendations as the main cause of complications with any type of prosthetics, the arrival of the orthopedic structure in an unsuitable condition for further use and, as a result, the appearance of complaints to the orthopedic doctor. In the case of removable prosthetics, the frequency of this cause was 79%, and in the case of non–removable prosthetics - 78%.

At the same time, in only 3% of cases of removable prosthetics, proper care of the prosthesis was not observed due to the lack of instruction from the doctor.

Unsatisfactory care of the prosthesis in patients with removable structures due to age is associated with deteriorating memory, or the inability to read the instructions – if the doctor issued it – with an algorithm of actions to maintain the prosthesis in a suitable condition, if there simply were no glasses at hand.

It is also possible that some patients are too lazy to look for instructions when they get lost among other papers and documents.

Orthopedic errors at the stages of prosthetics play a much smaller role. Thus, according to the results of the study, a medical error in removable prosthetics was made and caused complications in 15% of cases, and in non–removable prosthetics - in 14% of cases. This factor is a manageable cause in the occurrence of complications after treatment, and measures aimed at optimizing this section of medical work can give quick results and improve the quality of dental care provided.

4.2 Conclusions.

1. In the practice of orthopedic physicians employed in organizations of various forms of ownership, various errors and complications may occur when prosthetics of patients with both removable and non-removable structures, with the predominance of complications caused by unsatisfactory patient care for the prosthesis.

2. The final result of dental treatment is determined not only by the doctor's literacy, individual approach to each patient and the correct sequence of actions, but also by the patient's attitude to the treatment, his personal interest in achieving positive results.

3. Orthopedic doctors should instruct the patient in detail and fully, talk about the rules of use and rules of care for manufactured orthopedic structures in order to consolidate the positive results of treatment.

4.3 Practical recommendations.

 1. The algorithms for providing orthopedic care approved by a dental medical organization should include the obligation of each orthopedic dentist to instruct the patient on the care of the prosthesis and the rules of its use.

2. Carrying out work aimed at creating motivation and personal interest of the patient in successful treatment should be an integral part of a medical appointment. Patient loyalty has a positive effect on compliance with the recommendations received and minimizes the frequency of complications.

3. A visual demonstration of proper oral hygiene is advisable.

For this purpose, you can ask to bring personal hygiene products to the reception – a toothbrush and dental floss, and conduct a hygiene lesson in the dental office, showing the correct movements of the brush with sweeping movements at an angle of 45 degrees, the correct position of the dental floss and other details. During the same visit, it is worth talking about how important it is to remove all pieces of food from the mouth and clean off all plaque.

It should be advised to use irrigators after brushing your teeth.

It is necessary to recommend to the patient a mandatory visit to the dentist every six months for a preventive examination.

 In the case of removable prosthetics, you should tell the patient not only about the careful attitude to the prosthesis, but also give instructions on the care of the prosthesis as a whole.

4. In order to eliminate problems with forgetting, loss of instructions for the care of the prosthesis or inability to read it, we offer a specially designed booklet for issuing to each patient at the last stage of orthopedic treatment after the installation of prostheses in the oral cavity and the briefing. The booklet with bright and clear pictures contains a minimum of words, the necessary information is presented in the most visual form.

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