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ANALYSIS OF EYE PROSTHETICS SERVICE IN THE REPUBLIC OF UZBEKISTAN

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INTRODUCTION

Artificial eyes appeared many years before the new era. Egyptians, Greeks and Romans first inserted them into statues, mummies, and then began to use them in patients. The materials for prostheses at that time were stone, wood, ivory, gold, silver and precious stones. But these materials were very heavy and gave way to glass [6].

The present history of eye prostheses begins from the time of the French physician Ambroise Paré (1510-1590), who gives a description of the prosthesis, with appropriate drawings attached.

At the end of the XVI century, two types of artificial eyes were used: enamel-covered gold and silver shells similar to half of a walnut shell, on the outer surface of which an iris with a pupil was drawn, and glass prostheses.

In the middle of the XVII century, the production of artificial eyes were engaged in Venice, where there was a highly developed glass and glassblowing industry. But later this art is transferred to France, where the manufacture of prostheses reached such perfection that they were famous throughout the world.

At the end of the XVIII century in Paris appeared many specialists-prosthetists. However, at that time the use of prostheses was limited due to their high cost.

Since the middle of the XIX century and in Germany began production of eye prostheses. In the second half of the XIX century, German prostheses became widely known and universally recognized.

The firm "Muller" at the suggestion of G. Snellen in 1898 began to make double-walled prostheses. When wearing such a prosthesis, no discharge accumulated in the conjunctival cavity.

In the times of the Soviet Union the eye prosthetics service was controlled by two departments. The first was the Ministry of Health of the USSR - All-Union Scientific and Methodological Center for Eye Prosthetics at the Moscow Helmholtz Eye Diseases Research Institute. Helmholtz - 15 laboratories of individual eye prosthetics (LIGP) and more than 160 offices of eye prosthetics (OAP) and points of selection of eye prostheses.

The second - Ministry of Instrumentation, Automation and Control Systems - Moscow factory of eye prostheses with a branch in Odessa.

In the Republic of Uzbekistan until 1990s the main method of prosthetics was the selection of standard eye prostheses. If there were indications, the patient was sent for individual eye prosthetics or plastic surgery in the orbital area to Moscow or Odessa at the expense of the state. Since individual eye prosthetics is more effective, much attention was paid to the development of a network of laboratories for individual eye prosthetics (LIGP). But it concerned only regional centers of RSFSR.

After the collapse of the USSR on the territory of the Republic of Uzbekistan the quality of the eye prosthetics service (EPS) significantly decreased. Since the enterprises producing standard or individual eye prostheses were located on the territory of the Russian Federation, patients from Uzbekistan had to travel abroad at their own expense.

In the territory of the Republic of Uzbekistan, during the next few years, it was possible to provide patients with eye prostheses on the basis of remnants of standard sets. But since they were not replenished, the quality of prosthetics was very low. But their stocks soon ran out, too, and the situation became catastrophic.

Due to the absence of registered synthetic liners on the territory of Uzbekistan or the lack of doctors' skill in working with autotissue, the question of the necessity to form a musculoskeletal residual limb (MSL) was not discussed. After enucleation of the eyeball these patients were no longer of interest to the ophthalmologist.

According to the data of the State Statistics Committee of the Republic of Uzbekistan, the number of permanent population of Uzbekistan in 2023 amounted to 35.6 million people. The intensive indicator of anophthalmos detection among the population is 22.3 persons per 10,000 people (Gundorova R.A. Vestnik Ophthalmologii. 2003). According to this indicator, the number of patients in need of eye prosthetics in the Republic of Uzbekistan should be 78,320 people. Annually their number increases by more than 0.5 thousand. At the same time, there is no systematic treatment, monitoring and accounting of these patients.

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The situation is different in Europe and the USA, where after removal of an eyeball a patient is referred to an ocularist. Ocularist is a specialist, as a rule, without medical education, who has his own office, where privately makes an eye prosthesis, makes a calculation of labor costs and materials used. With this conclusion, the patient applies to the social security authorities, where all financial costs are reimbursed. Subsequently, a patient with anophthalmos contacts an ophthalmologist only if the ocularist discovers any problems associated with pronounced cosmetic defects.

A close relationship between ophthalmologists and manufacturers of eye prostheses helps to ensure optimal conditions for preventing the development of various complications in the early and distant periods after eye removal, since the formation of the conjunctival cavity and the musculoskeletal stump must meet certain requirements.

Due to the improvement of technological processes for the production of eye prostheses, nowadays the most common is the production of prostheses from polymethylmethacrylate.

Eye prosthesis has not only cosmetic, but also therapeutic and preventive value, protecting the eye cavity from the irritating effect of environmental factors. Prolonged absence of the prosthesis in the conjunctival cavity causes its shrinkage and chronic inflammatory process, and the absence of the prosthesis in children or its irregular replacement leads to stunted growth of the eye cavity and the corresponding half of the face [1,3,5].

To achieve a good cosmetic result, it is necessary to form a voluminous and well-movable residual limb. This can be achieved by insertion of an implant. Enucleation without implantation of an inlay leads to the insufficiency of the supporting-moving residual limb and a large volume of the conjunctival cavity, which requires the use of large, heavy eye prostheses during prosthetics, which do not lead to the elimination of the cosmetic defect, but, on the contrary, emphasize this defect.

The optimal type is individual eye prosthetics, when the prosthesis is made with careful consideration of the specific features of a particular patient [5].

Eye prostheses are of two types: glass and plastic. It is recommended to change a glass prosthesis once a year, a plastic prosthesis - after 2 years.

For disabled and privileged categories of patients eye prosthetics should be carried out at the expense of regional social insurance funds.

Eye Prosthetics Service:
Should provide assistance to patients with anophthalmic orbit and aims to improve the quality of their medical and social rehabilitation;

This system should consist of two parts:

1. The first is the provision of therapeutic and methodological assistance by a highly qualified specialist in ophthalmoplastic surgery
2. Second - provision of patients with standard or customized eye prostheses

The tasks of an ophthalmic plastic surgeon are:

1. Timely diagnosis of ophthalmopathology suggesting the need for enucleation of the eyeball.
2. To master all types of modern operations of eyeball removal (enucleation, evisceration, exenteration) and stump formation to replenish the volume of orbital tissue, as well as to ensure maximum mobility of the prosthesis. 3.
3. Be able to identify pathologic conditions of the conjunctival cavity of the anophthalmic orbit that deteriorate the quality of eye prosthetics and eliminate them using modern surgical manipulations and grafting materials.
4. To be able to provide psychological assistance to patients who are going to undergo eyeball removal or patients with anophthalmic syndrome facing the problem of social adaptation.

Ocularist Tasks

To be proficient in modern technologies of fabrication of eye prostheses made of acrylic or glass

To be able to identify frequently occurring pathological conditions of conjunctival cavity and orbital tissues, deteriorating the quality of eye prosthetics, for timely referral of the patient to the attending physician.

To be able to provide psychological assistance to patients with anophthalmic syndrome facing the problem of social adaptation.

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There should be a close interaction between these two specialists for timely and quality solution of all problems arising in patients in the process of prosthetics and in the period of further wearing of the eye prosthesis

OBJECTIVES OF THIS STUDY

On the basis of studying own and foreign experience of organizing work with patients with anophthalmic orbit to determine the most effective system of eye prosthetic care

By the method of questionnaire distribution to specialized medical institutions of the Republic to find out the degree of their availability of necessary personnel and equipment for rendering assistance to patients with anophthalmic orbit.

MATERIALS AND METHODS

We developed a questionnaire with the questions determining the state of eye care and sent it to the heads of the branches of the Republican Specialized Scientific and Practical Medical Center for Eye Microsurgery (RSNPMCEM) and ophthalmology departments of multidisciplinary clinics.
The main issues were the following:

1. Does the medical institution have an ophthalmoplastic surgery department or a specialist in this field?
2. Is there an opportunity to provide eye prostheses to patients in need?
3. What types of operations related to surgical treatment of anophthalmic orbit are performed in the medical institution?

Statistical processing of data. Statistical processing of the studied patients' data was performed using Microsoft Office Excel 2019 (Microsoft Corp., USA) and STATISTICA 13 (StatSoft Inc., USA) software package. When comparing two independent samples with normal distribution of indicators, Student's criterion was used. Differences were accepted as statistically significant at $p < 0.05$.

RESULTS AND DISCUSSION

The following results were obtained from the questionnaire:
A total of 22 letters were sent. All the letters were answered.

Analysis of the received responses showed that 15 (68%) of the 22 clinics were treating patients with anophthalmic orbit. In 7 (32%) clinics the work in this direction is not carried out.

Specialized departments work only in two (9%) medical institutions with availability of specialists of the corresponding profile.

In 13 clinics there are ophthalmic surgeons skilled in basic surgical manipulations. These are operations of enucleation, evisceration of the eyeball with or without formation of a musculoskeletal stump (MSK).

Reconstructive surgeries to eliminate defects of the anophthalmic orbit (delayed formation of the RCC, formation of a cavity for an eye prosthesis, correction of the shape of the conjunctival cavity of the anophthalmic orbit, elimination of scarring changes of the cavity and eyelids) are performed in RSNPMCMG.
Of the surveyed clinics, only the LIGP functions at the RSNPMCMH (Tashkent city). In addition, there are two private LIGPs (Tashkent city).

Prostheses are made of medical acrylic.
Prosthetics are provided at the expense of patients' own funds and funds provided by sponsors. Funding through social services is not provided.

Work is under way at the Republican Specialized Scientific and Practical Medical Centre for Eye Microsurgery (Tashkent) to organize a course on ophthalmoplastic surgery, which will include materials on conservative and surgical treatment of patients with anophthalmic syndrome.

Close cooperation has been established with the Department of Ophthalmology of the Center for Development of Professional Qualifications of Medical Workers. Cadets are provided with up-to-date information on surgical and conservative treatment of patients with anophthalmic syndrome based on the data of modern literature and our own developments.

Each regional ophthalmology clinic should have a specialized department or specialists in ophthalmoplastic surgery
Create an opportunity for an ophthalmologist to specialize in ophthalmoplastic surgery through on-the-job training.
Ophthalmoplastic surgery specialists should be organized into regional societies and are an important platform for specialist training.

Ocularists should be trained in specialized educational institutions where they are given knowledge of orbital anatomy, sculpture and drawing

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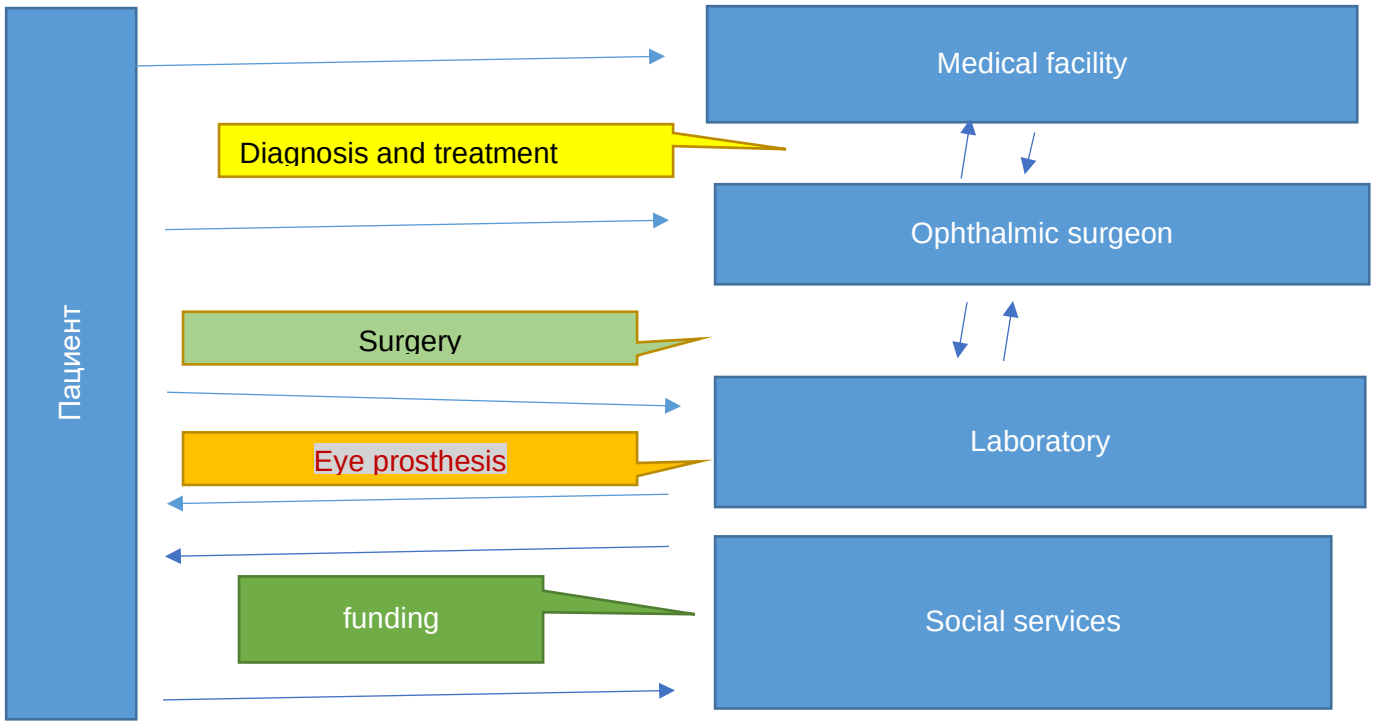

CONCLUSIONS

It is necessary to develop educational and methodological materials for training ophthalmologists in methods of surgical and conservative treatment of patients with anophthalmic orbit.

To oblige the management of specialized ophthalmological clinics to have at least one ophthalmologist in the specialization of ophthalmoplastic surgery and to train one member of the junior medical staff in the methods of care of patients with eye prosthesis

Development of teaching aids for patients with anophthalmic syndrome in the Uzbek language.

Establishment of close interaction between ophthalmologist and ocularist for the benefit of an anophthalmic patient according to the following scheme

Medical Efficiency. Due to staged prosthetics, dynamic examinations of ophthalmologists correcting the size and shape of eye prostheses, good cosmetic results of prosthetics are achieved and the terms of medical and social rehabilitation of patients are reduced [5].

Social Efficiency. Social efficiency of the proposed system of eye prosthetic care for patients with anophthalmic syndrome is that it allows to improve the quality of eye prosthetics, which makes it possible to improve the quality of its psychological, and hence social adaptation in society.

Economic Efficiency. The economic efficiency of the proposed measures for the organization of eye prosthetic care for the patient is that by increasing the level of self-esteem of the patient with anophthalmic syndrome we increase the probability of his quicker employment.

LITERATURE

1. *Gundorova R.A., Neroev V.V., Kashnikov V.V. Traumas of the eye. Moscow: GEOTAR-Media; 2009.*
2. *Gundorova R.A., Bykov V.P., Kataev M.G., Filatova I.A. New achievements in orbital implantology and eye prosthetics. Ros. med. zhurnal. 2000; 6: 27-30.*
3. *Filatova I.A. Anophthalmos. Pathology and treatment. M. 2007, IP Stepanov, 213 p.*
4. *Filatova I.A., Verigo E.N., Pryakhina I.A., Sadovskaya E.P. Role of anatomo-clinical manifestations of trauma in the choice of the method of eye removal. Ros. ophthalmol. zhurnal. 2014; 7(4): 52-3.*
5. *Choung H.K., Han S.K., Khwarg S.I. Retroscleral implantation technique for porous polyethylene orbital implant after evisceration. Ophthalmic Surg. Lasers Imaging. 2005; 36: 436-40.*
6. *Dortzbach R.K., Woog J.J.. Choice of procedure. Enucleation, evisceration or prosthetic fitting over globes. Ophthalmolog. 1985, 92: 1249-55.*
7. *Hansen A.B., Petersen C., Heegaard S., et al. Review of 1028 bulbar evisceration and enucleation. Acta Ophthalmol. Scand. 1999; 77: 331-5.*
8. *Jordan, David R.M.D.; Stoica, Bazil M.D. Evisceration With Implant Placement Posterior to Posterior Sclera. Ophthalmic Plastic & Reconstructive Surgery May/June 2016; 32(3): 178-182.*
9. *Moshfeghi D.M., MoshfeghiA.A., Finger P.T.. Enucleation. Surv. Ophthalmol. 2000; 44: 277-301.*
10. *McCord C.D., Jr, Tanenbaum M., Nunery W.R., Pai-Dei Chen W. Enucleation, evisceration and exenteration. In Oculoplastic surgery. eds McCord C.D., Jr., Tanenbaum M., Nunery W.R. (Raven Press, New York), 1995 3rd ed.: Chapter 19.*
11. *Nakra T., Simon G.J., Douglas R.S., Schwarcz R.M., McCann J.D., Goldberg R.A. Comparing outcomes of enucleation and evisceration. Ophthalmology. 2006; 113(12): 2270-5. Epub 2006 Sep 25.*

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12. *Stephenson C.M. Evisceration. In: Hornblass A., ed. Oculoplas tic, Orbital and Reconstructive Surgery. Vol. 2. Baltimore, MD: Williams & Wilkins, 1990: 1194-9.*
13. *Shah-Desai S.D., Tyers A.G., Manners R.M. Painful blind eye: efficacy of enucleation and evisceration in resolving ocular pain. Br. J. Ophthalmol. 2000; 84: 437-8.*
14. *Yousuf S.J., Jones L.S., Kidwel E.D. Jt. Enucleation and evisceration: 20 years of experience. Orbit. 2012, 31(4): 211-5. doi: 10.3109/01676830.2011.639477.*