BULLETIN OF STOMATOLOGY AND MAXILLO-FACIAL SURGERY OF
Volume 19, № 3

DOI: 10.58240/1829006X-2023.19.3-16

ORIGINAL ARTICLE

CLINICAL ASSESSMENT OF THE EFFECTIVENESS OF ESTHETIC RESTORATION OF ANTERIOR TEETH

Lyudmila Tatintsyan,[1*] Minas Poghosyan,[2] Armen Shaginyan,[3] Hovhannes Gevorgyan,[3] Biayna Hoveyan,[3] Tatevik Margaryan,[3] Arsen Kupelyan[4]

[1] Associat Professor, Department of Therapeutic Stomatology Yerevan State Medical University after M. Heratsi, Yerevan Armenia
[2] Associat Professor, Department of Therapeutic Stomatology Yerevan State Medical University after M. Heratsi, Yerevan, Armenia
[3] Lecutuer, Department of Therapeutic Stomatology Yerevan State Medical University after M. Heratsi, Yerevan, Armenia
[4] Lecutuer, Department of Oral and Maxillofacial Surgery, Yerevan State Medical University after M. Heratsi, Armenia

** Corresponding author: Associat Professor Lyudmila Tatintsyan, Department of Oral and Maxillofacial Surgery, Yerevan State Medical University after M. Heratsi, Armenia;*
e-mail: l_tatintsyan@yahoo.com

Received: *Jul. 26, 2023;* ***Accepted:*** *Aug. 27, 2023;* ***Published:*** *Sep. 5, 2023*

Abstract

Purpose: Clinical evaluation of the effectiveness of the aesthetic restoration of the anterior teeth.

Materials and Methods: The study included 128 adult patients in need of aesthetic restoration of the anterior teeth. Digital information about the patient's teeth surrounding the soft tissues was captured by a digital camera and scanner. Aesthetic analysis and design were performed using 3shape software and demonstrated to patients. Through communication with patients, an optimized treatment plan was provided. After the aesthetic restoration, the design, color of the restoration, and patient satisfaction were evaluated. Aesthetic evaluation was performed according to the form of anterior aesthetic evaluation. Patient satisfaction scores were recorded on a questionnaire containing six items of aesthetic index and doctor-patient communication. Patients were interviewed and reviewed at 1, 3, 6 and 12 months, respectively, and the clinical effects of the restorations were assessed.

Results: All 128 patients had satisfactory clinical results. Aesthetic defects of patients were effectively eliminated using a minimally invasive approach to the restoration protocol for the restoration of anterior teeth with a composite material using adhesive systems. All procedures met the requirements of preoperative digital design.

Conclusions: Results data indicate that the functional and aesthetic restoration of anterior teeth defects can be restored without the removal of healthy tooth tissue Proper choice of indications, accurate design of the restoration, contributes to a satisfactory aesthetic restoration of the anterior teeth. For patients with anterior aesthetic defect, digital design plays an important role in optimizing the treatment plan and guiding the entire treatment process. This design can help clinicians achieve predictable, satisfactory esthetic results.

Keywords: *defect of anterior teeth, aesthetic restoration of anterior teeth, digital tooth design*

Introduction

Aesthetics and biting are one of the most important functions performed by the anterior teeth. Caries or defects of the anterior teeth caused by trauma will significantly affect the aesthetics, bite function, and bring some psychological trauma to the patient. Therefore, patients have higher and more urgent needs for the restoration of defects in the anterior teeth.[1-3]

The term aesthetic zone (also known as the smile zone) is often used in the dental literature and is used to refer to all of the hard and soft tissues that are visible when a patient smiles broadly.[4,5]

When restoring anterior teeth, the color and shape of the restoration seriously affect the aesthetics of the anterior teeth. Therefore, when restoring anterior teeth, higher requirements are placed on restorative materials.[6-8]

For example, whether this material has excellent bionic ability, whether the adhesive ability of the restorative material is sufficient, whether the restorative material has high economic performance and more convenient operation.

Digital technologies in dentistry are advancing rapidly, helping clinicians deliver improved patient care.[9-11] However, it is important that clinical validation and evaluation of digital algorithms be part of the dentist's workflow. In complex cases, careful diagnosis and accurate risk assessment are essential to obtain an optimal outcome.

Recently, digital dentistry has been increasingly used in restorative and prosthodontics due to advances in technology such as intraoral scanners (IOS) and software.[12]

The use of such technologies has also allowed dentists to work more efficiently and accurately reduce working hours using their own computerized methods. In addition, the introduction of digital technologies in clinical dentistry has increased success.[13,14]

Technological advances have revolutionized restorative dentistry. Digital Smile Design (DSD) is a newly invented digital tool that enables aesthetic rehabilitation planning, improving treatment outcomes.[15]

DSD can be performed in 2D or 3D digital processes across the entire digital stream. [16-17] Thanks to DSD, the doctor has the opportunity to discuss all aspects of the treatment with the patient even before the intervention, then explain the clinical possibilities of the treatment and the wishes of the patient and discuss with the technicians who are directly involved in the treatment process. The important planning is that which is carried out in 3D software. The tools that are necessary to work with the DSD Planning Center are: good pictures and video, STL scans and X-rays.

Video documentation simplifies and facilitates the documentation procedure, facial analysis, smile design, treatment planning, communication and patient education. DSD can be performed both in conventional and virtual models, followed by the manufacture of prostheses, i.e., computer-aided design and computer-aided (CAD-CAM) restorations.[18]

The use of digital technologies in dentistry is rapidly evolving, but clinical thinking and evaluation of digital processes are critical elements to include in the treatment process.[19,20] Careful diagnosis and risk assessment will help clinicians ensure the best treatment outcomes.

When viewed in the frontal direction, a person's face can be divided into three zones; “upper”, “middle”, and “lower third”, respectively.[21,22] This is the lower third region (which includes the area between the interwing line and the tip of the chin) that not only seems to be the most significant in determining the overall appearance of the face, but can also become unfavorable in the result of severe tooth wear, sometimes accompanied by a loss of occlusal vertical dimension (OVD). The lower third is the only part of the face that the dentist has a significant impact on. Loss of OVD can also affect patient function, comfort, and esthetics.[23] Therefore, it is prudent to determine the magnitude of OVD loss. The latter is traditionally done with a set of calipers or a Willis gauge; alternative methods have been described that may provide a higher level of accuracy for this estimate.

Modern dentistry offers two ways to restore frontal teeth.

Direct restoration of anterior teeth

This method involves the use of composite materials that are placed in the cavity until the desired shape of the crown is obtained. The procedure is carried out in one session, the recovery takes a minimum of time, but the result largely depends on the

right materials and the professionalism of the dentist.[24-29]

Indirect recovery

In modern dentistry, different methods of crown restoration are used, so the material and methods for the restoration of the front teeth are selected individually. Crowns, veneers or inlays are used as material for indirect restoration. The choice depends on the condition of the teeth and individual preferences. Each of the methods has its pros and cons, the choice of the type of restoration depends on the individual parameters of the patient.[30-32]

Adhesive dentistry has undergone major changes over the past 20 years. The evolution of adhesive dentistry has increased the number of indications for aesthetic restorative procedures, and various techniques and materials are described as alternatives to anterior tooth rehabilitation.[33-36]

The main requirement for the effectiveness of aesthetic restoration of the anterior teeth;

- Restoration of shape, occlusal stability and adequate points of contact with neighboring teeth
- Restore function
- Maintaining the health of marginal periodontal tissues
- Optimal aesthetics.

The main indications for the procedure:

- chips, cracks and other defects of bone structures;
- thinning, change in the shade of enamel (darkening, yellowness);
- slight curvature and interdental gaps;
- wear / loss of previously installed fillings, darkening between the material and the tooth;
- partial or complete destruction of the crown part.

When it comes to restoring anterior teeth, several factors can influence the result achieved, such as the experience of the clinician, the size of the cavity, the method of isolation, and the choice of restorative material. The result and the average survival time of restorations in the anterior teeth are directly related to the quality with the quality of the marginal adaptation.

It is logical to start examining the aesthetic area of a patient with an assessment of extraoral features (including facial features).

The exact choice of tooth color is one of the most important criteria for the quality of aesthetic restoration for the patient and the key to a successful result for the dentist.

Determining the color of teeth is often a complex process and at the same time an important problem in aesthetic and restorative dentistry.[37]

In most cases, the desired shade of the restoration will not be achieved due to errors in determining the original shade or errors in its reproduction in the dental laboratory.[38,39]

Direct adhesive strategies are the most commonly used treatment methods for the conservative repair of the anterior teeth defect.[40,41]

Despite numerous scientific publications on the topic of aesthetic restoration of anterior teeth, the issues of choosing the optimal restoration method are relevant and require a comprehensive long-term study.

Based on the above, the purpose of the study; assessment of the clinical effectiveness of aesthetic restoration of anterior anterior teeth.

Materials and methods

The study included 128 adult patients in need of aesthetic restoration of the anterior teeth. Digital information about the patient's dentition, surrounding soft tissues and face was taken with a digital camera and scanner. Aesthetic analysis and design were performed using the 3shape software and were demonstrated and discussed with patients. Through communication with patients, an optimized treatment plan was provided. Factors such as the shape and size of adjacent teeth, smile line, face shape, occlusion, etc. are of great importance for subjective aesthetic evaluation.

The clinical management plan was developed after careful examination of the patient and selection of both method and materials. It consisted of the following steps: (1) determining the color of the restoration; (2) tooth color and outline pattern; (3) ultraconservative drug; (4) adhesive treatment of tooth surfaces; (5) restoration (6) processing and polishing.

Color selection

The choice of color and shade remains an important step in the restoration process. The exact choice of the main color and sub-colors determines the aesthetics of the restored area. It is not enough to set only the hue, value, and chromaticity of the corresponding area; the surface tissue must also be described in detail. With the use of digital technology, subjective color selection was eliminated, making accurate color matching possible. Aesthetic analysis and design were performed using 3shape software and demonstrated to patients (figure 1).

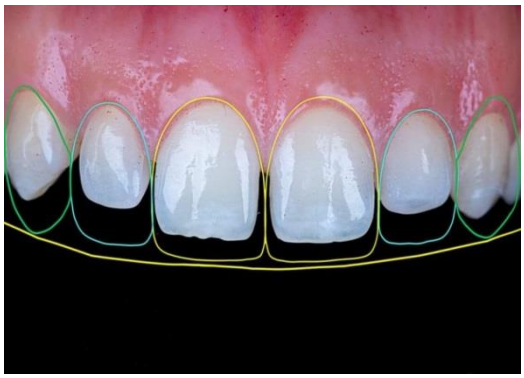

Figure 1. *Aesthetic analysis and design using 3shape software*

Any features of the tooth surface, such as hypoplastic spots, recessions, color effects, etc., must be reproduced. That is why they must be applied to the color and contour drawing. This makes it easier to determine the palette of required colors and the type of restorative materials used. In this case, based on the results of the digital color file regarding the sum of the colors and the specific facts relating to the light-cured composite material used, a color and outline design was prepared.

Composite restoration of the anterior teeth was performed in stages according to the following protocol:

- The enamel was cleaned from plaque and stone in the cervical area.
- Subsequent steps used data from the patient's computerized color file.
- The composite material was selected according to the natural shade of the tooth surface.
- After treating the teeth with antiseptic agents, the working field was isolated with a rubber dam (figure 1).

Figure 2. *Working field was isolated with a rubber dam, applied composite material*

- Self-etch adhesive system was used to bond the composite to dentin and enamel, combining the etching and primer steps.
- Composite material was applied in layers to obtain the main shades and transparency of the enamel (figure 2).
- Initially, the finished restoration was polymerized on the lingual side for 10 seconds, then on the front side for 60 seconds.
- Prior to the removal of the rubber dam, excess composite resin was removed with a diamond burr to prevent fracture due to involuntary closure of the mouth. The restorations were then shaped and finished with a diamond grinder.
- After checking the occlusion, the restored tooth is ground and polished (figure 3).

Figure 3. *Restorations were then shaped and finished*

Aesthetic evaluation was performed according to the form of anterior aesthetic evaluation (figure 4, 5).

After the aesthetic restoration, the design, color of the restoration, and patient satisfaction were evaluated.

a b

Figure 4. *Before and after aesthetic restoration*

a b

Figure 5. *Before and after aesthetic restoration*

Evaluation of the retention of the restoration

A. Fully in situ restoration
B. No visible signs of cleft restoration
C. Restoration partially lost
D. Restoration broken or lost

Shade evaluation of the restoration

A. No color changes
B. Slight discoloration
C. Discoloration present at the tooth-restoration interface
D. Significant discoloration over the entire area of the restoration

Anatomical shape of the restoration

A. Restoration is continuous with existing anatomy
B. Restoration with moderate discontinuity (subcontour or subcontour) with existing anatomy
C. Restoration is abruptly interrupted with the existing anatomical shape
D. Restoration slightly out of alignment with existing anatom

Occlusion of the restoration

A. No signs of stress occlusal contacts
B. Minor signs of stressful occlusal contacts
C. Significant signs of stressful occlusal contacts

Periodontal conditions due to restoration

A. Periodontal conditions due to restoration healthy
B. Slight change in the condition of the periodontium due to restoration
C. Significant change in the condition of the periodontium due to restoration

Patient satisfaction scores were recorded on a questionnaire containing six items of aesthetic index and doctor-patient communication. Patients were interviewed and reviewed at 1, 3, 6 and 12 months, respectively, and the clinical effects of the restorations were assessed.

Results

All 128 patients had satisfactory clinical results. Aesthetic defects of patients were effectively eliminated. Results of the retention of the restoration A - 89%, B - 6%, C - 3.5%, D - 1.5% (figure 6).

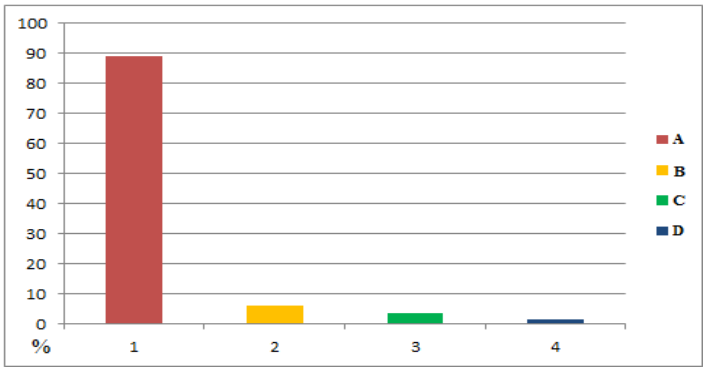

***Figure 6**. Retention of the restoration*

Results shade of the restoration A - 86%, B - 10%, C - 3%, D - 1% (figure 7).

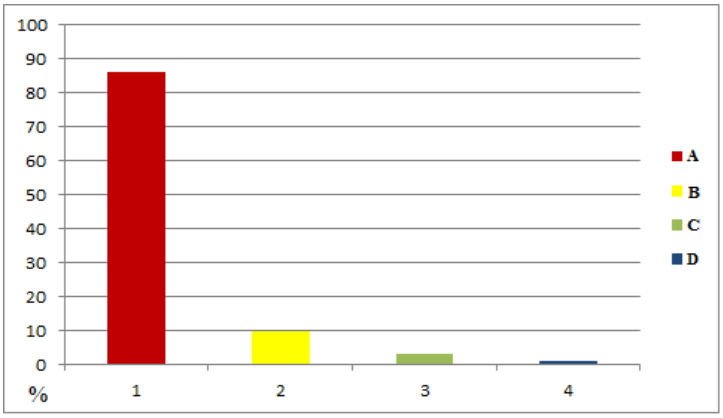

***Figure 7.** Shade of the restoration*

Results anatomical shape of the restoration A - 91%, B - 6%, C - 1%, D - 3% (figure 8).

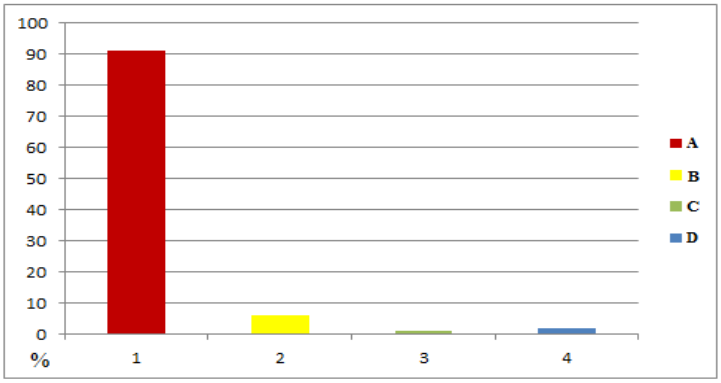

***Figure 8.** Anatomical shape of the restoration*

Results Occlusion of the restoration A - 97%, B - 2.7%, C - 0.3% (figure 9).

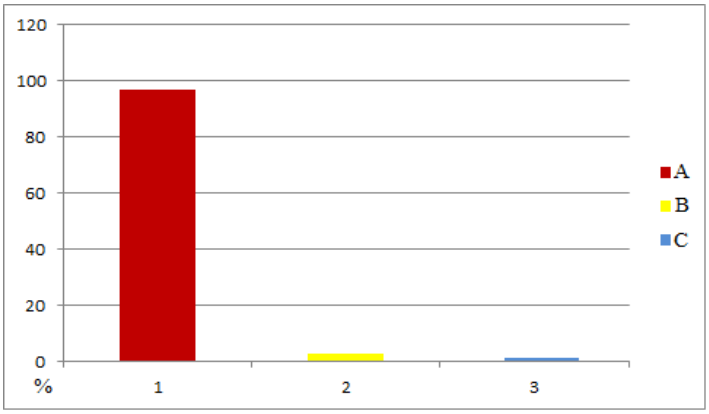

***Figure 9.** Occlusion of the restoration*

Results Periodontal conditions of the restoration A - 96%, B - 2.8%, C - 1.2% (figure 10).

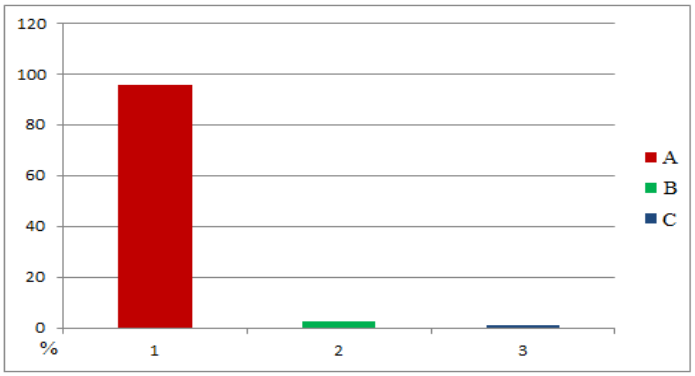

***Figure 10.** Periodontal conditions of the restoration*

All procedures met the requirements of preoperative digital design. All patients scored more than 94 points on the satisfaction scale.

Discussion

Aesthetic or cosmetic dentistry is one of the main areas of dental practice. The increasing demands of patients for aesthetics have led to the development of several methods for restoring anterior teeth.

The conservative dental esthetic reestablishment treatments have been improved and evaluated with the development of adhesive materials. The adhesive dentistry allowed minimally invasive preparation through direct treatments with composite resin and indirect ceramic laminates veneer.[42-44]

The introduction of adhesive technology is a major achievement in the development of aesthetic dentistry. Composite restorations have become an integral part of modern restorative dentistry and can be called the "star of minimal intervention" due to their conservative concept. Direct composite restorationa allows natural restoration of the tooth and maintains healthy tooth structure compared to indirect restorations.

To achieve optimal aesthetic and functional results, the dentist must have a comprehensive knowledge of the possibilities of modern composites, allowing him or her to propose a new direct restoration with the optical and functional properties of a natural tooth. Preservation of Healthy Teeth Tissue and pulp viability is a significant advantage of direct fabrication methods.[45,46]

Currently, light-curing composites are commonly used for the aesthetic restoration of anterior teeth. It has excellent bionic ability, strong adhesion, simple processing and high cost; however, direct filling with a light-cured composite has such disadvantages as micro-leaks and low wear resistance.[47,48]

Restoration of fractured anterior teeth presents a challenge to dental clinicians owing to its esthetic requirements and, more importantly, because of the young age of the patients.[49]

The esthetic result and durability of such restorations are directly related to the quality of the marginal adaptation. Improvement in the clinical performance and durability of direct adhesive restorations has been the subject of several studies. However, there are still doubts about how to prepare the cavity surface angle before adhesive reconstruction in order to optimize the clinical performance of the procedure.[50-52]

In this regard, the most recommended technique was the mechanical preparation of the chamfer before restorative treatment.[53] However, given that anterior tooth fractures are very common in young patients, it is important to assess the actual need for bevel preparation when restoring broken anterior teeth.

Thus, it is important to follow the most conservative protocol. Minimally invasive composite restorations are considered an adequate alternative to indirect restorations because they are durable and can accurately mimic natural tooth structure.

With respect to the beveled alternative, the need for which stems from the need for optimal esthetics, the advantages are: a) a defined marginal closure to ensure adequate adaptation or marginal integrity of the composite; and b) ease of finishing with less risk of resin binding and white lines at the margins of the restoration.

Currently, this last statement is the most commonly used justification for enamel bevel restoration. Some professionals have recommended a 60° bevel to remove unsupported prisms as well as to acid-treat them.

This article presents cases of aesthetic rehabilitation of anterior teeth using direct modern composites, with a 5-year follow-up with an acceptable result.

To achieve high aesthetic and functional results when restoring anterior teeth with a composite, several important factors must be observed. One such factor is the accurate reproduction of the natural morphology of the teeth, which has a decisive influence on aesthetics and function. In addition, success is determined by the selection of the right shades of high-quality composite resin and their targeted combination using the right layering technique.

Undoubtedly, the aesthetic demands of patients will continue to grow progressively. Our goal is to reliably mimic the natural dentition to meet these expectations. Dentists must be both artists and sculptors of natural teeth in order to achieve the best that modern adhesive dentistry has to offer.

For patients with anterior aesthetic defect, digital design plays an important role in optimizing the treatment plan and guiding the entire treatment process. This design can help clinicians achieve predictable; patients satisfied with the aesthetic restoration of the anterior teeth.

Conclusions

Results data indicate that the functional and aesthetic restoration of anterior teeth defects can be restored without the removal of healthy tooth tissue Proper choice of indications, accurate design of the restoration, contributes to a satisfactory aesthetic restoration of the anterior teeth.

Declarations

Conflicts of interest and financial disclosures

The author declares that he has no conflict percent and there was no external source of funding for present research.

Source of funding

The work was not funded.

Ethical approval

The study was approved by the University ethics committee and was conducted in accordance with the Declaration of the World Medical Association. Informed consent Patients were informed verbally and in writing about the study and gave written informed consent.

Informed consent

Informed consent was obtained from all individual participants inclincluded in the study.

REFERENCES

1. Gugnani N, Pandit IK, Gupta M, Nagpal J. Esthetic Rehabilitation of Primary Anterior Teeth using Temporization Material: A Novel Approach. *Int J Clin Pediatr Dent.* 2017;10(1):111-114. doi:10.5005/jp-journals-10005-1418
2. Zhao X, Han J, Song Y, Shen X, Xiao J, Feng X. The use of nanocomposite resin in aesthetic restoration of anterior tooth defect in digital medical environment. *Sustainable Computing: Informatics and Systems.* 2022;35:100762. doi:10.1016/j.suscom.2022.100762
3. Wang Y, Li J, Chen D, Li L. Analysis of Cosmetic Effect of Nanocomposite Resin on Anterior Teeth. *Comput Math Methods Med.* 2021;202(30):7367320. doi:10.1155/2021/7367320
4. Machado AW. 10 commandments of smile esthetics. *Dental Press J Orthod.* 2014;19(4):136-57. doi:10.1590/2176-9451.19.4.136-157.sar
5. Bhuvaneswaran M. Principles of smile design. *J Conserv Dent.* 2010;13(4):225-32. doi:10.4103/0972-0707.73387
6. Armalaite J, Jarutiene M, Vasiliauskas A. et al. Smile aesthetics as perceived by dental students: a cross-sectional study. *BMC Oral Health.* 2018;18:225. doi:10.1186/s12903-018-0673-5
7. Heymann HO. The artistry of conservative esthetic dentistry. *Journal of the American Dental Association.* 1987.115,14-23
8. Fahl N Jr. Single-shaded direct anterior composite restorations: A simplified technique for enhanced results. *Compendium of Continuing Education in Dentistry.* 2012;33(2) 150-154
9. Alhaidry HM, Fatani B, Alrayes JO, Almana AM, Alfhaed NK. ChatGPT in Dentistry: A Comprehensive Review. *Cureus.* 2023;15(4):e38317. doi:10.7759/cureus.38317
10. Tallarico M. Computerization and Digital Workflow in Medicine: Focus on Digital Dentistry. *Materials (Basel).* 2020;13(9):2172. doi:10.3390/ma13092172
11. Spagnuolo G, Sorrentino R. The Role of Digital Devices in Dentistry: Clinical Trends and Scientific Evidences. *J Clin Med.* 2020;9(6):1692. doi:10.3390/jcm9061692
12. Schmalzl J, Róth I, Borbély J, Hermann P, Vecsei B. The impact of software updates on accuracy of intraoral scanners. *BMC Oral Health.* 2023;15;23(1):219. doi:10.1186/s12903-023-02926-y
13. Mangano F, Gandolfi A, Luongo G, Logozzo S. Intraoral scanners in dentistry: a review of the

current literature. *BMC Oral Health.* 2017;17(1):149. doi:10.1186/s12903-017-0442-x

14. Ural Ç, Kaleli N. Direct digitalization devices in today's dental practice: Intra oral scanners. *J Exp Clin Med.* 2021;38(2):136-142 doi: 10.52142/omujecm.38.si.dent.10

15. Jafri Z, Ahmad N, Sawai M, Sultan N, Bhardwaj A. Digital Smile Design-An innovative tool in aesthetic dentistry. *J Oral Biol Craniofac Res.* 2020;10(2):194-198. doi:10.1016/j.jobcr.2020.04.010

16. Thomas PA, Krishnamoorthi D, Mohan J, Raju R, Rajajayam S, Venkatesan S. Digital Smile Design. *J Pharm Bioallied Sci.* 2022;14(1):S43-S49. doi:10.4103/jpbs.jpbs_164_22

17. Do Vale Voigt M, Espíndola-Castro LF, de Melo Monteiro GQ, et al. Dapp use for multidisciplinary esthetic planning. *Estheteic and restorative dentistry*. 2020;32;738-746. doi:10.1111/jerd.12637

18. Topper AK, Fernie GR. Computer-aided design and computer-aided manufacturing (CAD/CAM) in prosthetics. *Clin Orthop Relat Res.* 1990;(256):39-43. PMID: 2364620

19. Lin WS, Zandinejad A, Dean Morton, Metz MJ, Harris BT. Predictable Restorative Work Flow for Computer-Aided Design/Computer-Aided Manufacture–Fabricated Ceramic Veneers Utilizing a Virtual Smile Design Principle. *Operative Dentistry*. 2015;40(4):357-363 doi: 10.2341/13-295-S

20. Li Y, Yu Y, Feng Y, Liu W. Predictable digital restorative workflow for minimally invasive esthetic rehabilitation utilizing a virtual patient model with global diagnosis principle. *Estheteic and restorative dentistry.* 2022;34(5):733-740

21. Charrier JB. Orthognathic surgery of adults and facial aesthetics. *Dentofacial Anom Orthod.* 2012; 15(3):302. doi: 10.1051/odfen/2012202

22. de Silvia Goulart M, Capelozza L, de Castro Ferreira Conti AC, de Almeida Pedrin RR. Evaluation of facial esthetics in long-faced white Brazilian middle school students. *Am J Orthod Dentofacial Orthop.* 2019;155(6):812-818. doi:10.1016/j.ajodo.2018.06.017

23. Constantinescu FE, Savastano F, Perlea P, Constantinescu MV. Complete morphofunctional oral rehabilitation by physiological increase of occlusal vertical dimension according to computerized mandibular scanner. *Rom J Morphol Embryol.* 2022;63(1):245-251. doi:10.47162/RJME.63.1.28

24. Urkande NK, Mankar N, Nikhade PP, Chandak M, Ikhar A, Patel A. Anterior Matrix Systems for Composite Restorations: A Review. *Cureus.* 2023;15(4):e37145. doi:10.7759/cureus.37145. PMID: 37168162

25. Francci C, Loguercio AD, Reis A, Carrilho MR. A novel filling technique for packable composite resin in Class II restorations. *J Esthet Restor Dent.* 2002;14(3):149-57. doi:10.1111/j.1708-8240.2002.tb00515.x

26. Denehy GE. A direct approach to restore anterior teeth. *Am J Dent.* 2000;13(Spec No):55D-59D. PMID: 11763919

27. Barrantes JCR, Araujo JE, Baratieri LN. Clinical Evaluation of Direct Composite Resin Restorations in Fractured Anterior Teeth. *Odovtos-International Journal of Dental Sciences.* 2014;16:47-61

28. Buonocore MG, Davila J. Restoration of fractured anterior teeth with ultraviolet- light-polymerized bonding materials: a new technique. J *Am Dent Assoc.* 1973;86(6):1349-54

29. Gondo R, Marson FC, Alvares I. Restaurações diretas de resina composta em dentes anteriores: alguns fundamentos para a obtenção de resultados estéticos satisfatórios. *Clín Int J Braz Dent.* 2005;1(2):137-45

30. Brunton PA, Ratnayake J, Loch C, Veerasamy A, Cathro P, Lee R. Indirect Restorations and Fixed Prosthodontics: Materials and Techniques Used by General Dentists of New Zealand. *Int J Dent.* 2019;2019:5210162. doi:10.1155/2019/5210162

31. Jum'ah AA, Creanor S, Wilson NHF, Burke FJT, Brunton PA. Dental practice in the UK in 2015/2016. Part 3: aspects of indirect restorations and fixed prosthodontics. *Br Dent J.* 2019;226(3):192-196. doi:10.1038/sj.bdj.2019.95

32. Hickel R, Mesinger S, Opdam N, et al. Revised FDI criteria for evaluating direct and indirect dental restorations—recommendations for its clinical use, interpretation, and reporting. *Clin Oral Invest*. 2023;27:2573–2592 doi:10.1007/s00784-022-04814-1

33. Krump M, Krumpova Z. Esthetic Rehabilitation of Anterior Dentition with Different Types of Ceramic Restorations: Two Case Reports. *Eur J Dent.* 2022;16(1):234-239. doi:10.1055/s-0041-1732805

34. Perdigão J. Current perspectives on dental adhesion: (1) Dentin adhesion - not there yet. *Jpn Dent Sci Rev.* 2020;56(1):190-207. doi:10.1016/j.jdsr.2020.08.004

35. Cardoso MV, de Almeida Neves A, Mine A, Coutinho E, Van Landuyt K, De Munck J, Van Meerbeek B. Current aspects on bonding effectiveness and stability in adhesive dentistry. *Aust Dent J*. 2011;56:31-44. doi:10.1111/j.1834-7819.2011.01294.x

36. Ramírez Barrantes JC, Araujo JE, Narciso Baratieri L. Clinical evaluation of direct composite resin restorations in fractured anterior teeth. *Odovtos - International Journal of Dental Sciences*. 2015;16:47-62. doi:10.15517/ijds.v0i16.20326

37. Sikri VK. Color: Implications in dentistry. *J Conserv Dent.* 2010;13(4):249-55. doi:10.4103/0972-0707.73381

38. Pecho OE, Pérez MM, Ghinea R, Della Bona A. Lightness, chroma and hue differences on visual shade matching. *Dent Mater*. 2016;32(11):1362-1373. doi:10.1016/j.dental.2016.08.218

39. Ginzburg M, Gilboa I. Tooth color matching systems and communication with dental laboratory in indirect restorations: 2011 update. *Refuat Hapeh Vehashinayim (1993).* 2012;29(1):28-34, 64. PMID: 22991874

40. Araujo Jr. E. M., et al. Direct adhesive restoration of anterior teeth: Part 1. Fundamentals of excellence. *Pract Proced Aesthet Dent., New York.* 2003;15(3):233-240

41. Ramírez J. Esthetic Anterior Resin Restorations: To Bevel Enamel or Not? *ODOVTOS-Int. J. Dental Sc.* 2021;23:13-17

42. Korkut B, Yanikoglu F, Tagtekin D. Direct Midline Diastema Closure with Composite Layering Technique: A One-Year Follow-Up. *Case Rep Dent.* 2016:6810984.

43. Layton DM, Clarke M. A systematic review and meta-analysis of the survival of non-feldspathic porcelain veneers over 5 and 10 years. *Int J Prosthodont*. 2013;26:111-124

44. Sakai VT, Anzai A, Silva SM, Santos CF, Machado MA. Predictable esthetic treatment of fractured anterior teeth: aclinical report. *Dent Traumatol.* 2007;23: 371-375.

45. Regish KM, Sharma D, Prithviraj DR. Techniques of fabrication of provisional restoration: an overview. *Int J Dent.* 2011;2011:134659. doi:10.1155/2011/134659.

46. Cho K, Rajan G, Farrar P, Prentice LB. Prust G. Dental resin composites: A review on materials to product realizations. *Composites Part B: Engineering*. 2022;230:109495

47. Gordan VV. In vitro evaluation of margins of replaced resin-based composite restorations. *J Esthet Dent.* 2000;12(4):209-15

48. Jadhav S, Hegde V, Aher G, Fajandar N. Influence of light curing units on failure of directcomposite restorations. *J Conserv Dent.* 2011;14(3):225-7. doi:10.4103/0972-0707.85793

49. Dietschi D. Layering concepts in anterior composite restorations. *J Adhes Dent.* 2001;3(1):71-80

50. Fahl JN. Predictable aesthetic reconstruction of fractured anterior teeth with composite resins: a

case report. *Pract Periodontics Aesthet Dent.* 1996;8(1):17-31

51. Watts DC. Light-curing dental resin-based composites: How it works and how you can make it work Front. *Dent. Med*. 2023;4. doi:10.3389/fdmed.2023.1108316

52. Ismail HS, Ali AI, Mehesen RE, Juloski J, Garcia-Godoy F, Mahmoud SH. Deep proximal margin rebuilding with direct esthetic restorations: a systematic review of marginal adaptation and bond strength. *Restor Dent Endod.* 2022;47(2):e15. doi:10.5395/rde.2022.47.e15

53. Santos MJMC, Rêgo HMC, Siddique I, Jessani A. Five-Year Clinical Performance of Complex Class II Resin Composite and Amalgam Restorations — A Retrospective Study. *Dent. J.* 2023;11(4);88. doi:10.3390/dj11040088

54. Ramírez-Barrantes JC. Esthetic Anterior Resin Restorations: To Bevel Enamel or Not? *Odovtos International Journal of Dental Sciences.* 2021;23:1. doi:10.15517/ijds.2020.39546

ԱՌՋԵՎԻ ԱՏԱՄՆԵՐԻ ԷՍԹԵՏԻԿ ՎԵՐԱԿԱՆԳՆՄԱՆ ԱՐԴՅՈՒՆԱՎԵՏՈՒԹՅԱՆ ԿԼԻՆԻԿԱԿԱՆ ԳՆԱՀԱՏՈՒՄ

Լյուդմիլա Տատինցյան,[1] Մինաս Պողոսյան,[2] Արմեն Շահինյան,[3] Հովհաննես Գևորգյան,[3] Բիայնա Հովեյան,[3] Տաթևիկ Մարգարյան,[3] Արսեն Կուպելյան[4]

1 Երևանի Մ. Հերացու անվան պետական բժշկական համալսարանի թերապևտիկ ստոմատոլոգիայի ամբիոնի դոցենտ, Երևան, Հայաստան
2 Երևանի Մ. Հերացու անվան պետական բժշկական համալսարանի թերապևտիկ ստոմատոլոգիայի ամբիոնի դոցենտ, Երևան, Հայաստան
3 Երևանի Մ. Հերացու անվան պետական բժշկական համալսարանի թերապևտիկ ստոմատոլոգիայի ամբիոնի դասախոս, Երևան, Հայաստան
4 Երևանի Մ. Հերացու անվան պետական բժշկական համալսարանի վիրաբուժական ստոմատոլոգիայի և դիմածնոտային վիրաբուժության ամբիոնի դասախոս, Երևան, Հայաստան

Ամփոփում

Նպատակը. Գնահատել առջևի ատամների էսթետիկ վերականգնման արդյունավետությունը:

Նյութեր և մեթոդներ. Հետազոտությունը ներառել է 128 չափահաս հիվանդների, ովքեր կարիք ունեին առջևի ատամների էսթետիկ վերականգնման: Թվային տեղեկատվությունը հիվանդի փափուկ հյուսվածքները շրջապատող ատամնաշարի մասին ֆիքսվել է թվային տեսախցիկով և սկաների միջոցով: Էսթետիկ վերլուծությունը և դիզայնը կատարվել են 3shape ծրագրաշարի միջոցով և ցուցադրվել հիվանդներին: Հիվանդների հետ շփման միջոցով ապահովվել է բուժման օպտիմալացված ծրագիր: Էսթետիկ վերականգնումից հետո գնահատվել է վերականգնման դիզայնը, գույնը և հիվանդի գոհունակությունը: Էսթետիկ գնահատումը կատարվել է ըստ նախնական էսթետիկ գնահատման ձևի: Հիվանդի գոհունակության միավորները գրանցվել են հարցաթերթիկի վրա, որը պարունակում էր էսթետիկ ցուցիչի և բժիշկ-հիվանդ հաղորդակցության վեց միավոր համապատասխանաբար 1, 3, 6 և 12 ամիսների ընթացքում, և գնահատվել են վերականգնումների կլինիկական ազդեցությունները:

Արդյունքներ. Բոլոր 128 հիվանդներն ունեցել են բավարար կլինիկական արդյունքներ: Հիվանդների էսթետիկ թերությունները արդյունավետորեն վերացվել են՝ օգտագործելով առջևի ատամների վերականգնման արձանագրության վերականգնման պրոտոկոլի նվազագույն ինվազիվ մոտեցումը: Բոլոր ընթացակարգերը համապատասխանում էին նախավիրահատական թվային դիզայնի պահանջներին:

Եզրակացություններ. Արդյունքների տվյալները ցույց են տալիս, որ առջևի ատամների արատների ֆունկցիոնալ և էսթետիկ վերականգնումը հնարավոր է առանց առողջ ատամի հյուսվածքի հեռացման. Ցուցումների ճիշտ ընտրությունը, վերականգնման ճշգրիտ ձևավորումը նպաստում է առջևի ատամների էսթետիկ վերականգնմանը: Առջևի էսթետիկ արատ ունեցող հիվանդների համար թվային դիզայնը կարևոր դեր է խաղում բուժման պլանի օպտիմալացման և բուժման ողջ գործընթացն ուղղորդելու գործում: Այս դիզայնը կարող է օգնել կլինիկաներին հասնել կանխատեսելի, գոհացուցիչ էսթետիկ արդյունքների:

КЛИНИЧЕСКАЯ ОЦЕНКА ЭФФЕКТИВНОСТИ ЭСТЕТИЧЕСКОЙ РЕСТАВРАЦИИ ПЕРЕДНИХ ЗУБОВ

Людмила Татинцян,[1] Минас Погосян,[2] Армен Шагинян,[3] Оганес Геворкян,[3] Биайна Овеян,[3] Татевик Маргарян,[3] Арсен Купелян[4]

[1] Доцент, Кафедра терапевтической стоматологии, Государственный медицинский университет имени Гераци, Ереван, Армения
[2] Доцент, кафедра терапевтической стоматологии, Государственный медицинский университет имени Гераци, Ереван, Армения
[3] Преподаватель, кафедра терапевтической стоматологии, Государственный медицинский университет имени Гераци, Ереван, Армения
[4] Преподаватель, кафедра хирургической стоматологии и челюстно-лицевой хирургии Государственного медицинского университета имени Гераци, Ереван, Армения

Цель: Оценить эффективность эстетической реставрации передних зубов.
Материалы и методы: В исследование включено 128 взрослых пациентов, нуждающихся в эстетической реставрации передних зубов. Цифровая информация о зубных рядах пациента, окружающих мягкие ткани, была получена с помощью цифровой камеры и сканера. Эстетический анализ и дизайн были выполнены с использованием программного обеспечения 3shape и продемонстрированы пациентам. Благодаря общению с пациентами был предоставлен оптимизированный план лечения. После эстетической реставрации оценивались дизайн, цвет реставрации и удовлетворенность пациента.
Эстетическая оценка проводилась в соответствии с формой передней эстетической оценки. Оценки удовлетворенности пациентов были записаны в анкету, содержащую шесть пунктов эстетического индекса и общение между врачом и пациентом. Пациентов опрашивали и осматривали через 1, 3, 6 и 12 месяцев соответственно, а также оценивали клинические эффекты реставраций.
Результаты: У всех 128 пациентов клинические результаты были удовлетворительными. Эстетические дефекты пациентов были эффективно устранены с помощью малоинвазивного подхода к протоколу реставрации передних зубов композитным материалом с применением адгезивных систем. Все процедуры соответствовали требованиям предоперационного цифрового дизайна. Все пациенты набрали более 90 баллов по шкале удовлетворенности.
Выводы: Данные результатов свидетельствуют о том, что функционально-эстетическая реставрация дефектов передних зубов может быть восстановлена без удаления здоровых тканей зуба.Правильный выбор показаний, точный дизайн реставрации способствует удовлетворительному эстетическому восстановлению передних зубов. Для пациентов с передним эстетическим дефектом цифровой дизайн играет важную роль в оптимизации плана лечения и управлении всем процессом лечения. Этот дизайн может помочь клиницистам достичь предсказуемых, удовлетворительных эстетических результатов.