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Use of High Viscosity Glass-ionomer Cement as a Restorative Material in Patients with Sjögren's Syndrome: a Case Report

Barbara Bruno Fagundes Marques,[1] Guilherme Goulart Cabral-Oliveira,[2,4] Antônio Fernando Monnerat,[3] Fernanda Brito[3,4]

[1]Postgraduate Program in Dentistry, School of Dentistry, State University of Rio de Janeiro (UERJ), Rio de Janeiro, RJ, Brazil

[2]Postgraduate Program in Microbiology, School of Medical Sciences, State University of Rio de Janeiro (UERJ), Rio de Janeiro, RJ, Brazil

[3]Department of Integrated Clinical Procedures, School of Dentistry, State University of Rio de Janeiro (UERJ), Rio de Janeiro, RJ, Brazil

[4]School of Dentistry, Veiga de Almeida University (UVA), Rio de Janeiro, RJ, Brazil

• Conflicts of interest: none declared.

Abstract

Objective: this article describes the use of a high viscosity glass ionomer cement as restorative dental treatment in a patient with Sjögren's syndrome with multiple carious lesions in a university dental clinic in southeastern Brazil. **Case Report:** a 39-year-old woman, non-smoker, with secondary Sjögren's syndrome attended an extension clinic called Dental Care for Patients with Chronic Diseases (COPAC) at the School of Dentistry of the Rio de Janeiro State University for dental treatment. The patient was completely dissatisfied with the aesthetics of her smile and was ashamed to show her teeth. During the clinical examination, a large number of carious lesions, defective restorations and missing teeth were observed**. Conclusion:** although there is no an established protocol for the treatment of carious lesions in patients with Sjögren's syndrome, restorative treatment with a high viscosity glass ionomer cement (GIC) serves as a favorable option due to fluoride ion release and improved mechanical strength.

Keywords: Sjögren's syndrome; Glass ionomer cement; Restorative dental treatment.

Introduction

Sjögren's syndrome (SS) is an autoimmune rheumatic disorder characterized by lymphocytic infiltration of the exocrine glands, being more prevalent in middle-aged women.[1,2] This condition can be divided into primary (SS-1), when it is not associated with another comorbidity, or secondary (SS-2), when it comes together with another rheumatic or autoimmune disease.[3]

Patients with SS have glandular and extra-glandular manifestations, with xerostomia being the most common finding in the oral cavity. Changes in salivary flow lead to an increase in microorganisms,[4] making the patient more susceptible to the development of oral lesions, caries, periodontal disease and candidiasis.[1,2,4,5]

Dental care is a critical factor in the prevention and treatment of changes in dental and oral tissues, especially those resulting from reduced salivary flow. It involves pharmacological, non-pharmacological and/or surgical-restorative strategies to restore a compromised oral health.[3,6]

The selection of restorative material for decayed teeth may require different characteristics such as flexural strength, dimensional stability, biocompatibility, moisture sensitivity, marginal integrity and matching color.[7] In these conditions, GICs are a favorable option due to their anti-carcinogenic properties, ease of handling, reasonable aesthetics and adequate function. Furthermore, they prevent the need for more extensive or invasive treatments.[8,9]

Although the literature offers a considerable number of articles showing treatments with substances with oral topical action to attenuate symptoms resulting from the reduction of salivary flow,[3,10,11] protocols for restorative and preventive treatments for carious lesions in patients with Sjögren's syndrome are little investigated. Therefore, this study reports the case of dental treatment of a patient with secondary Sjögren's syndrome and proposes the use of high- viscosity GIC as the material of choice for these procedures.

Case Report

A 39 years old woman, non-smoker, with secondary Sjögren's syndrome, attended the extension project Dental Clinic for Patients with Chronic Diseases (COPAC), at the School of Dentistry of the Rio de Janeiro State University in search of dental treatment. The patient was completely dissatisfied with the aesthetics of her smile and felt ashamed when smiling (Figure 1).

In her past medical history, she declared having rheumatoid arthritis, fibromyalgia, hypothyroidism, otosclerosis and diagnosis of Sjögren's syndrome six years ago. Thereafter, she has been undergoing medical monitoring at the Hospital Federal Clementino Fraga Filho, located in the city of Rio de Janeiro. In the dental history, she stated that even in dental care for more than six years, she believes

that the treatment was not evolving.

During intraoral examination, missing teeth were # 17, 36, 45 and 46 in addition to the four third molars (# 18, 28, 38 and 48). A large number of decayed teeth (# 11, 12, 15, 22, 25, 31, 32, 37, 41, 42 and 47) and unsatisfactory restorations (# 21, 23, 33 and 43) were present. After a complete periodontal examination (six sites per tooth on all present teeth), the patient was diagnosed with dental-plaque induced gingivitis in an intact periodontium, according to the 2018 classification.[12] In addition to dental and periodontal findings, the oral mucosa was dry and the lips were peeling.

Panoramic radiography and intraoral periapical radiography were requested as complementary exams. Imaging exams showed radiolucent regions suggestive of caries in the following teeth and surface # 11 (mesial), 12 (mesial), 15 (mesial and distal), 16 (mesial), 22 (distal), 24 (occlusal and distal), 25 (distal), 31 (mesial, distal and incisal), 32 (mesial, distal and incisal), 37 (distal), 41 (mesial, distal and incisal), 42 (mesial, distal and incisal). Teeth # 21 (distal), 23 (mesial), 33 (mesial), 43 (distal) and 47 (mesial and occlusal) had an image suggestive of unsatisfactory restorations. Tooth # 26 presented an image compatible with satisfactory endodontic treatment (Figures 2 and 3).

Figure 1. Patient's smile at the beginning of dental treatment.

Figure 2. Panoramic X-ray

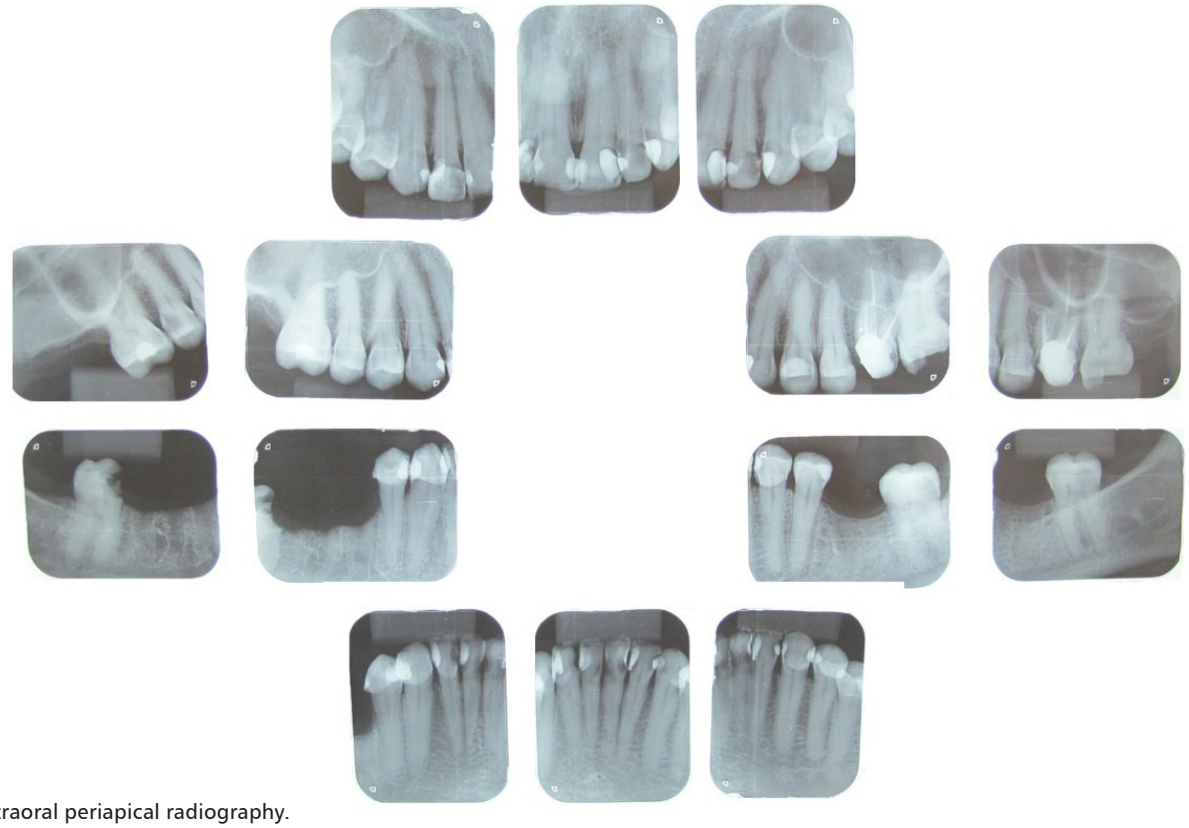

Figure 3. Intraoral periapical radiography.

The dental treatment plan was based on reestablishment of the patient's oral health, function and aesthetics, starting with the less complex to the most complex procedures. Sialometry was performed to assess salivary flow, basic periodontal therapy and restoration of dental elements that had cavitated caries lesions.

Sialometry was performed with the stimulated salivation technique, where the patient was instructed to swallow all the saliva that was in the oral cavity and chew on a silicone device to stimulate saliva production by the salivary glands, for 5 minutes. During this period, the saliva produced was deposited in a collection pot. Subsequently, the pot was collected and the volume of the saliva produced in the discriminated interval was measured in a graduated syringe. The assessment of salivary flow showed a result of 0.1 mL/min, which confirmed hyposalivation, since the normality parameter is > 1.0 mL/min.[13]

Dental treatment was started with basic periodontal therapy with scaling, professional teeth cleaning and oral hygiene instructions. Restorative treatment were performed on teeth and surface # 23, 31 (incisal), 32 (incisal), 33, 41 (incisal), 42 (incisal) and 43 that were restored with composite resin (Figure 4). Teeth # 11, 15, 16, 21, 22, 24, 25, 31 (mesial and distal surfaces), 32 (mesial and distal surfaces) 37, 41 (mesial and distal surfaces), 42 (mesial and distal surfaces) and 47 were restored with a high viscosity GIC (Equia Forte®, GC, Tokyo, Japan) (Figure 5). Endodontic treatment was performed on tooth # 12 and a provisional restauration was fabricated and cemented (Figure 6).

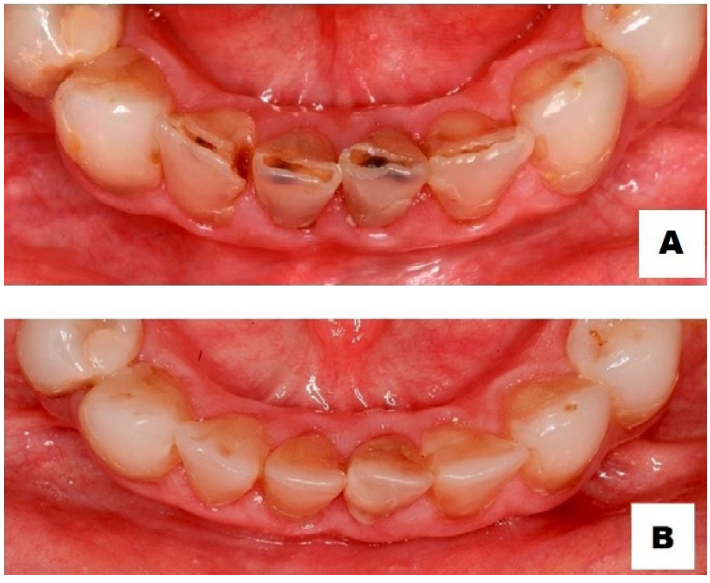

Figure 4. A: Intra-oral condition of the lower teeth at the beginning of the treatment. B: Intra-oral condition of the lower teeth after restorative treatment with composite resin and GIC.

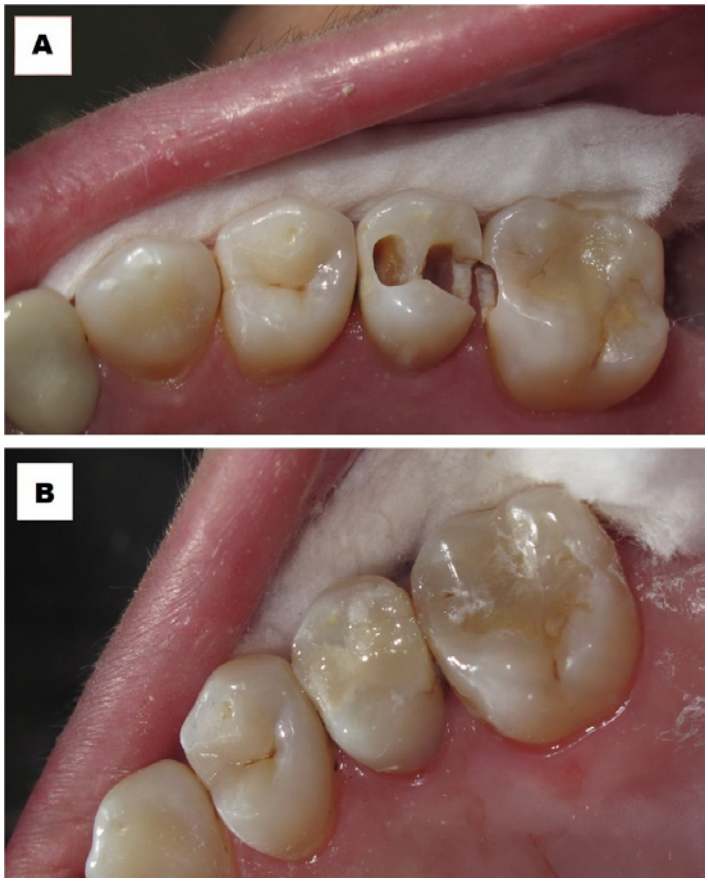

Figure 5. A: Teeth 15 and 16 prepared to receive GIC restoration. B: Teeth 15 and 16 restored with GIC.

Figure 6. Intra-oral condition of the patient after performing the described dental treatments.

Discussion

The diagnosis of lesions that affect patients with Sjögren's syndrome is a step of great importance. The main complications that these patients have are carious lesions, periodontal disease and candidiasis.[4] The patient in question had no clinical manifestations of candidiasis or severe periodontal disease. The most relevant findings are the large number of carious lesions and the presence of unsatisfactory restorations.

The hyposalivation confirmed by sialometry proved to be the main cause of the increased susceptibility to the

development of carious lesions, which corroborates the importance of the presence of saliva as a protective agent for the prevention of complications and necessary for oral health.[14]

Although there is no protocol for the treatment of carious lesions in patients with Sjögren's syndrome, restoration with a high viscosity GIC proved to be an interesting option due to its characteristics such as adhesion to dental tissues, gradual release of fluoride ion, biocompatibility, effects anticariogenic, cariostatic, potential mineralizing action in contact areas, adequate resistance to masticatory forces and durability in the oral cavity.[8,9,15–18]

The GIC is advantageous due to the gradual release of fluoride ion that can help in the prevention of caries injuries. The released fluoride ion from the restorative material into the oral environment is in the form of CaF_2, which serves as a fluoride reservoir when the pH decreases [18]. This release is greater in the first days and decreases over time. However, it can undergo a recharge with fluorides for topical application.[15] This was a characteristic of fundamental importance in the presented case, since the patient had a large amount of decayed dental elements.

The durability of the restoration performed with a high viscosity GIC, which is characterized as a GIC with higher concentration of particles and shorter setting time, was another important factor in the treatment of the patient. For this reason, the glass ionomer cement Equia Forte® (GC America) was selected, as it has loads of different sizes regarding the hybrid restorative system. Its capsule presentation and handling, together with the aid of a mixer, reduces the chances of failures by incorrect proportion and handling of the material. This hybrid system increases the availability of ions and enables the improvement of physical properties, wear resistance and fluoride release,[8,19] in addition to presenting satisfactory aesthetics results for medium and long-term restorations.[8]

Despite the excellent characteristics of GIC, there are limitations for its application, such as: in class IV cavity, in class III transfixing cavity, in teeth treated endodontically, in class II with proximal expulsive cavity, in teeth with total loss of one or more cusps, or the loss of all internal aspect of the functional cusp.[9] In the lower incisors, the compromised incisal faces were restored with composite resin and the mesial and distal faces were restored with the GIC.

At the end of this first phase of treatment, the patient was already satisfied with the procedures performed and with the smile aesthetics obtained (Figure 7). The patient will remain in the maintenance phase and, later, will begin the rehabilitation phase.

Figure 7. Patient's smile after dental treatments.

Conclusion

Sjögren's syndrome causes a series of negative and uncomfortable oral symptoms to its patients, thus requiring intervention to improve the quality of life of these individuals.

Dental therapy involved the control of carious lesions, through oral hygiene instructions and restorative treatment using most of the GIC. A high viscosity GIC was the material of choice for the case, since it offers a gradual release of fluoride ion, which helps prevent caries disease, has good wear resistance and satisfactory aesthetics.

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Mini Curriculum and Author's Contribution

1. Barbara Bruno Fagundes Marques – DDS; MsC student. Contribution: Study design; technical procedures; writing of the case report; preparation and outline of the manuscript; critical review and final approval. ORCID: 0000-0003-0876-8607.
2. Guilherme Goulart Cabral-Oliveira – DDS; MsC student. Contribution: Intellectual, scientific and effective participation in the study; technical procedures; preparation and outline of the manuscript; critical review and final approval. ORCID: 0000-0001-9762-4669.
3. Antônio Fernando Monnerat – DDS; PhD. Contribution: Intellectual, scientific and effective participation in the study; technical procedures; preparation and outline of the manuscript; critical review and final approval. ORCID: 0000-0002-5298-0157.
4. Fernanda Brito – DDS; PhD. Contribution: Study design; intellectual, scientific and effective participation in the study; technical procedures; preparation and outline of the manuscript; critical review and final approval. ORCID: 0000-0003-4067-9372.

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Corresponding author:
Fernanda Brito
E-mail: fernanda.brito.s@hotmail.com