

# Dental Care for Patients with Sjögren's Syndrome: Guidelines and Updates for Dentistry

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## Dear Editor,

Sjögren's Syndrome (SS) is a chronic inflammatory systemic disease, with probable autoimmune etiology, that presents worldwide distribution. The lacrimal and salivary glands are the main organs affected by lymphoplasmacytic infiltration, causing dysfunctions that trigger a classical picture of xerophthalmia (dry eyes) and xerostomia (dry mouth). Other exocrine glands can also be affected such as pancreas, sweat glands, mucous glands of the respiratory, gastrointestinal and urogenital tracts.<sup>1,2</sup>

SS may exist primarily as a disease of exocrine glands (primary SS) or be associated with other autoimmune diseases such as rheumatoid arthritis, systemic lupus erythematosus, progressive systemic sclerosis, scleroderma, Graves' disease, among others, being thus called secondary SS.<sup>3</sup> Patients with SS have a high incidence of malignant non-Hodgkin's B-cell lymphoma when compared to that of the healthy population.<sup>4</sup> Thus, the appropriate diagnosis of the condition is important not only to relieve the patient's symptoms,<sup>5</sup> but also for a clinical follow-up of their possible complications, since these occur late in the course of the syndrome.<sup>6</sup>

Environmental factors, such as previous viral (Epstein-Barr virus, cytomegalovirus, human herpes virus, hepatitis C virus among others) or bacterial (*Helicobacter pylori*) infections, have already been linked as potential triggers of the glandular tissue's immune response, due to frequent concomitance in patients with SS.<sup>7,8</sup> About nine women are affected for each man, therefore hormonal dysfunctions seem to be part of the pathophysiology in the development of SS, especially androgen, estrogen and progesterone deficiencies.<sup>9,10</sup>

The average age of onset symptoms is around 45 years old, being rare in children. Its prevalence is difficult to establish due to the difficulty of diagnosis, but it is estimated to be 1% to 3% of the population.<sup>11,14</sup>

Over the years, many different diagnostic criteria have

been proposed, however, in 2012, the American College of Rheumatology (ACR) / Sjögren's International Collaborative Clinical Alliance (SICCA) proposed new SS classification criteria.<sup>15,16</sup>

Confirmatory assays of glandular dysfunction are useful in diagnosis and to scale the impact of the disease. The most widespread and easy-to-perform tests, without the need of a specialist, are the Schirmer I test (done to assess whether the eye produces a sufficient amount of tear to remain lubricated, indicated for patients with suspected dry eyes and as auxiliary examination in the diagnosis of some rheumatologic diseases);<sup>17</sup> sialometry (total salivary flow measurement, stimulated or not);<sup>18</sup> sialography to aid in the evaluation of salivary duct alterations, which is an uncomfortable procedure and little-used today; salivary gland scintigraphy<sup>19</sup> and histopathological analysis of minor salivary glands through labial mucosa biopsy.<sup>20</sup>

## Oral Manifestations

SS usually has a variable course and a broad spectrum of clinical manifestations, as shown in Table 1, however, among oral symptoms, xerostomia is the main one. Patients present a constant need to moisten their mouth, difficulty and pain in swallowing solid foods, besides ulcers in the labial mucosa, all of which comes from oral dryness.<sup>21</sup> Affected individuals also frequently develop cavities, periodontal disease, fissured tongue, papillary atrophy, oral infections (mainly candidiasis), angular cheilitis, halitosis, altered palate, and a reddish and sensitive oral mucosa.<sup>22,23</sup>

Saliva plays an important role in lubrication, preventing traumatic lesions or abrasions on the tongue, lips and oral mucosa. About 33% to 50% of patients develop diffuse and bilateral tumefaction of salivary glands, more common in parotid glands and more frequent in primary SS, which increases in the course of the disease.<sup>24</sup> This increase may

**Table 1.** Oral manifestations in Sjögren's Syndrome

Xerostomia / Hyposalivation	Candidiasis
Aphtha	Angular cheilitis
Ulcers	Halitosis
Cervical caries	Dysgeusia
Periodontal disease	Diffuse and bilateral tumefaction of salivary glands
Fissured tongue	Retrograde bacterial sialadenitis
Papillary atrophy	

Source: Vitali and Bombardieri, 1990.<sup>19</sup>

be temporary, persistent, or become chronic. The decrease in salivary flow increases the risk of retrograde bacterial sialadenitis.<sup>25</sup>

### Diagnostics

Physical examination often shows a dry and erythematous oral mucosa, cervical cavities and atrophy of filiform papillae on the back of the tongue and lip angle, fissures, gingivitis, and desquamation of the lips.<sup>2,26</sup>

Given these manifestations, dentists are frequently the first health professionals to identify signs and symptoms of SS, being their responsibility the early diagnosis and instruction for suitable treatment. Thus, the diagnosis of the syndrome must be made through the sum of clinical and laboratory findings.<sup>2,27</sup>

The search for autoantibodies is an important complementary test for the diagnosis of the syndrome, having as its main immunological markers the Rheumatoid Factor (RF), Antinuclear Antibody (ANA), anti-Ro (SS-A) and anti-La (SS-B).<sup>16,19,28</sup> Patients anti-SSA and anti-SSB positive have a higher prevalence of SS extra-glandular manifestations.<sup>19,28,29</sup>

A safe method for diagnosis, although not definitive if evaluated alone, is incisional biopsy of the minor salivary gland for further histopathological evaluation, which consists on the removal of 5 to 7 minor salivary glands, after horizontal incision of the inner mucosa of the lower lip.<sup>20</sup> The histopathological report will reveal focal lymphocytic sialadenitis, with focus score  $\geq 1$  per 4 mm<sup>2</sup> of glandular tissue.<sup>16</sup>

There is also sialometry, characterized as the simplest method for saliva collection, used to quantify salivary flow (volume), as well as its coloration, viscosity and turbidity. Resting or stimulated sialometry helps in determining hyposalivation, which will indicate the syndrome's severity, as well as verify the efficacy of salivary stimulation therapy.<sup>19,28</sup>

Sialography is a medical imaging technique, indicated for detailed exploration of salivary duct anatomy in the search for abnormalities, being extremely useful when verifying the condition of glandular ducts in patients with SS. The result will show abnormal afforestation of the ductal system, point-like sialectasis and acinar parenchyma absent areas.<sup>29</sup>

To evaluate the dysfunctions of the salivary glands and their ducts, scintigraphy will reveal the degree of functioning of the patient's salivary glands. The positive result for SS will

show delayed capture and reduced tracer excretion.<sup>29</sup>

Other laboratory findings commonly found in SS include anemia, leukopenia, eosinophilia, high erythrocytes sedimentation rate, and increased serum immunoglobulin levels.<sup>17,19,30</sup>

Resonance imaging and ultrasound offer a great view of the state of the glandular parenchyma and are useful for identifying cysts.<sup>28,29</sup>

### Differential Diagnosis

For a correct diagnosis of SS, several factors that may lead to hyposalivation must be excluded. Habits such as smoking, alcoholism and intake of caffeinated beverages can reduce salivary flow.<sup>26</sup> However, the most common cause is the use of drugs that are considerably xerogenic, such as diuretics, laxatives, antacids, anorectics, antihypertensives, antidepressants, antipsychotics, sedatives, antihistamines, anticholinergics, antiparkinsonians.<sup>2,29</sup> On the other hand, stress situations and systemic conditions, such as rheumatoid arthritis, menopause, diabetes mellitus, can also reduce salivary flow.<sup>9,14</sup>

Due to the broad and inconclusive clinical picture, differential diagnosis must be applied to other diseases such as: salivary calculi, sarcoidosis, graft versus host disease, HIV infection, hyposalivation induced by head and neck radiotherapy, amyloidosis, diabetes, use of salivation-inhibiting medication, hepatitis C virus infection, lymphoma and Hyper IgG4 Syndrome, because of some clinical similarities.<sup>25,26</sup>

### Diagnostic Criteria

The diagnosis of the SS remains controversial, in view of the wide possibility of clinical manifestations. Therefore, the use of the *American College of Rheumatology Criteria* (2012) criteria is recommended. The confirmation is given when two of the three possible findings presented by these criteria are shown by the patient,<sup>16</sup> according to Table 2.

**Table 2.** Classification criteria for Sjögren Syndrome (Sjögren Syndrome Classification Criteria proposed by the American College of Rheumatology in 2012)

Patients who have at least 2 out of the following 3 objective criteria are classified as Sjögren's Syndrome:

1. Presence of anti-SSA-Ro and/or anti-SSB-La or (positive rheumatoid factor and ANA title  $\geq 1:320$ ).
2. Focal lymphocytic sialadenitis with presence of focus/score  $\geq 1$  focus/ 4 mm<sup>2</sup>.
3. Keratoconjunctivitis Sicca with eye color score (OSS)  $\geq 3$  (valid for patients who are not using eye drops for glaucoma and have not undergone corneal surgery or eyelid aesthetics in the last 5 years).

Source: Shiboski *et al.*, 2012.<sup>19</sup>

## Treatment

So far there is no treatment capable of modifying the evolution of SS, which is a debilitating condition that can significantly compromise the patient's social and professional life.<sup>12,25</sup>

The patient's adequate treatment requires multidisciplinary attention of the dentist, rheumatologist, otorhinolaryngologist and ophthalmologist.<sup>2,28</sup>

Therapy is based on symptom relief and stimulation of glands, using topical and/or oral medication through taste and chewing stimuli (such as sugar-free candies and gums). Salivary stimulants and substitutes are used as alternatives to control hyposalivation. When salivary function is null, substitutes of saliva should be used to moisten the mouth.<sup>18</sup> Pharmacological secretagogues such as Pilocarpine and Cevimeline are used for treatment when the patient does not have minimal salivary production capacity.<sup>29</sup>

Anti-inflammatory drugs are indicated for joint problems. For the treatment of dry eyes, eye drops or eye gels are used as artificial tears.<sup>28,29</sup>

Thus, the need for regular monitoring and use of fluoride-rich substances for oral hygiene are vital for oral health maintenance.<sup>18,29</sup> Local or systemic antifungal medication is indicated for the treatment or prevention of *Candida albicans* infections.<sup>18</sup>

Physiological stimulation can be performed by chewing and taste stimuli. Patients should be encouraged to use artificial saliva and increase fluid intake. For pharmacological treatment, salivary secretion stimulators are used, as well as for relief of xerostomia symptoms.<sup>28,29,30</sup> When possible, antisecretory medications such as diuretics,  $\beta$ -blockers, antihistamines, tricyclic antidepressants should be discontinued.<sup>3</sup>

Considering that the diagnosis of the disease is usually difficult and late, early recognition can avoid many complications related to gland hypofunction, oral and systemic health of the patient. The dentist plays an important role in early diagnosis and in the treatment of possible oral complications of Sjögren's Syndrome.<sup>16,17</sup>

Next, we will present a protocol aimed at dental treatment for patients with SS in order to improve their oral health. This protocol was based on a literature review conducted through bibliographic searches on the Virtual Health Library, which includes the following databases: Medical Literature Analysis and Retrieval System Online (MEDLINE), Latin American and Caribbean Health Sciences Literature (LILACS), Scientific Electronic Library Online (SciELO) and others. The following descriptors were used to develop the search strategy: Sjögren's syndrome; minor salivary gland; saliva; sialometry; oral health. Studies published between 1952 and 2019 were eligible for bibliography according to their relevance, topicality and publication in indexed journals with

editorial board. Publications without adequate methodology or outside the area of interest were excluded after reading.

## Guidelines for Dental Care of Patients with Sjögren's Syndrome

### Medical Evaluation

After detailed anamnesis, physical examination and precise diagnosis, we should establish the therapeutic schedule according to the patient's clinical conditions.

Chart 1 shows the basic order of priorities that standardizes the development of integrated therapeutic schedules.

### Outpatient care

**Chart 1.** Basic order to be followed for sequence and formulation of therapeutic schedule

1. Urgences
2. Control of disease activity / health education
3. Periodontal and surgical procedures (sources of infection)
4. Endodontic intervention
5. Restorative / rehabilitating treatment
6. Patient reassessment
7. Medical check-up (defined by the professional)

Source: Elaborated by the author.

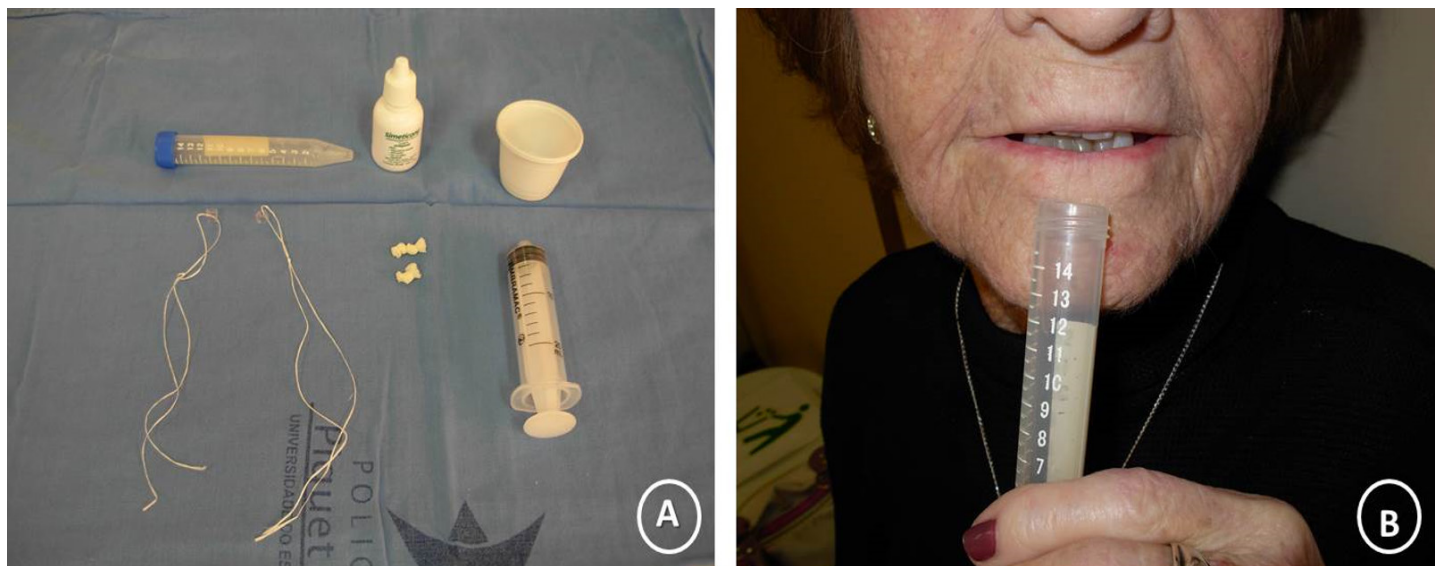
Anamnesis is performed to evaluate the oral health behavior of patients. For the qualitative analysis of oral health behavior, the ideal is that the parameters described in the current and previous personal dental history be evaluated.

Procedures must go from the simplest to the more complex, beginning by adapting the oral cavity and control of disease activity before starting restorative clinical treatment. Performing a thorough stomatological examination associated with the prescription of complementary tests such as periapical and panoramic X-rays, as well as laboratory tests for general evaluation of the patient's health (Blood count, Fasting Glycemia, Hepatogram, Sodium, Urea, Creatinine and Uric Acid, HCV, C3, C4 and PCR) is important in this case.

## Management for specific evaluation of the most common complaints of patients with Sjögren's syndrome.

### • Sialometry

Unstimulated sialometry is performed by collecting saliva at rest. Patients are instructed to swallow all the saliva in the oral cavity, before remaining for 5 minutes depositing all saliva produced in an 80 ml universal collector vial. Subsequently, the vial is collected, and the volumetry of saliva produced is performed with a graduated syringe (Figure 1). The values are noted and converted into ml/minute.



**Figure 1.** Resting sialometry examination. In (A) materials used for collection and measurement. In (B) the collection itself with graduated tube.

**Evaluated Parameters (Figure 2):**

Volume:

- Normal: higher or equal = 0.3 mL/min
- Hyposalivation: lower = 0.3 mL/min

Turbidity:

- Excess of epithelial cells suspended in saliva.

Viscosity:

- Foam = > viscosity (mucin excess)

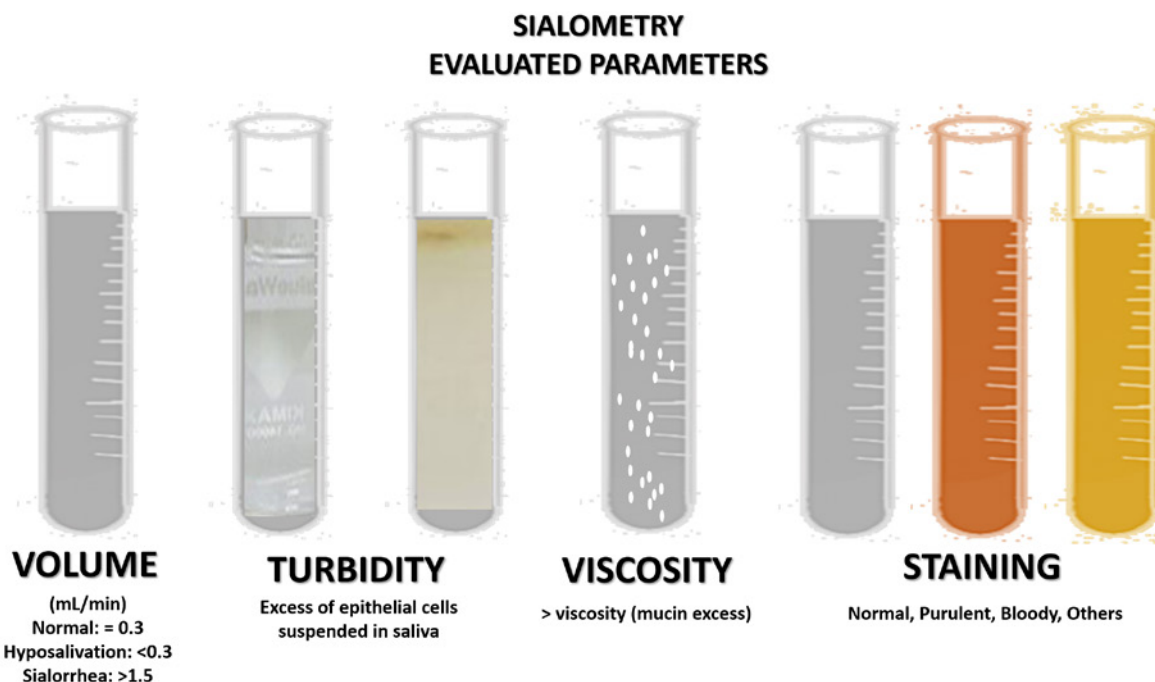
Staining:

- Normal
- Purulent
- Bloody
- Others

Note 1: For salivary foam elimination, use Dimethicone defoamer (5 drops = 0.25ml).

Note 2: In cases of hyposalivation, stimulated sialometry should be performed, following the same procedure as unstimulated sialometry. However, a silicone device made with floss, which the patient should chew during the 5 minutes of saliva collection, will be used. (Parameters: Normal: greater than or equal = 0.5 mL/min; Hyposalivation: lower = 0.5 mL/min; Sialorrhea: >1.5).

Note 3: For patients who complain of hyposalivation or dry mouth sensation, make daily use of artificial saliva.



**Figure 2.** Parameters evaluated in Sialometry.

**• Instructions for stimulation of salivary flow**

For patients who obtained unstimulated sialometry values below normal and normal stimulated sialometry, the following prescription should be carried out:

- Drink two liters of water a day. Always keep a bottle of water nearby;
- Ingest foods that require vigorous chewing: raw carrot, apple, peanut;
- Ingest foods that contain liquid: melon, watermelon, sugar-free ice cream;
- Chew sugar-free gum;
- Eat sugar-free candy;
- Chew crystals or ginger root three times a day;
- Eat pieces of apple covered with lemon drops three times a day. Cut the apple into cubes, drizzle lemon drops, store in the refrigerator and ingest it throughout the day;
- Eat plum “umebochi” (salted plum) three times a day;
- Mix: juice of two lemons + a tablespoon of salt + two fingers of water, then store in the refrigerator in a bottle with dropper. Drip three drops on the tongue three times a day;
- Avoid ingesting more than two cups/small cups of coffee, mate tea, black tea, green tea or Coca-Cola per day;
- Use lip balm: vaseline; Nivea Lip Care Repair;
- For lip hydration, make a compress with gauze soaked in cold saline for five minutes, several times a day.

**• White spots and caries treatment**

Due to the high frequency of white spots and caries caused by the absence of saliva, patients with the syndrome should be evaluated and follow the protocol below:

White Spots Treatment:

- Prophylaxis (apply NaF 0.2%, diamino silver fluoride/ fluoride varnish in anterior and posterior teeth in 04 sessions);
- Topical fluoride application (4 weeks);
- Mouthwash with a mixture of artificial saliva, Chlorhexidine at 0.12% and Sodium Fluoride at 0.05%.
- Return after 30 days to evaluate.

Cavities Treatment:

Follows conventional restorative treatment of carious lesions, however, what should be observed is the risk of disease outbreak. Therefore, the methodology for identifying the risk of caries should be followed according to Figure 3.

**• Endodontic Treatment**

Can be performed in all patients unless there is no access to the teeth due to the limitation of mouth opening. To determine the working length of the root canal in patients with SS, the best is to use electronic apex locators (periapical X-rays are often difficult to perform). Prioritize the use of chlorhexidine gel as a substitute for sodium hypochlorite and perform total isolation cautiously.

**• Surgeries and Dental extraction**

Plan surgical extractions, especially if multiple extractions are required. It is advisable to consult the patient’s doctor, since deep anemia may complicate dental surgery. Anesthesia should be injected deeply, avoiding mucosal displacement. The peripheral nerve block is ideal.

A non-traumatic technique should be used, making firm and safe incisions on the mucous membranes to prevent the formation of blisters and ulcerations. Hemostasis can be

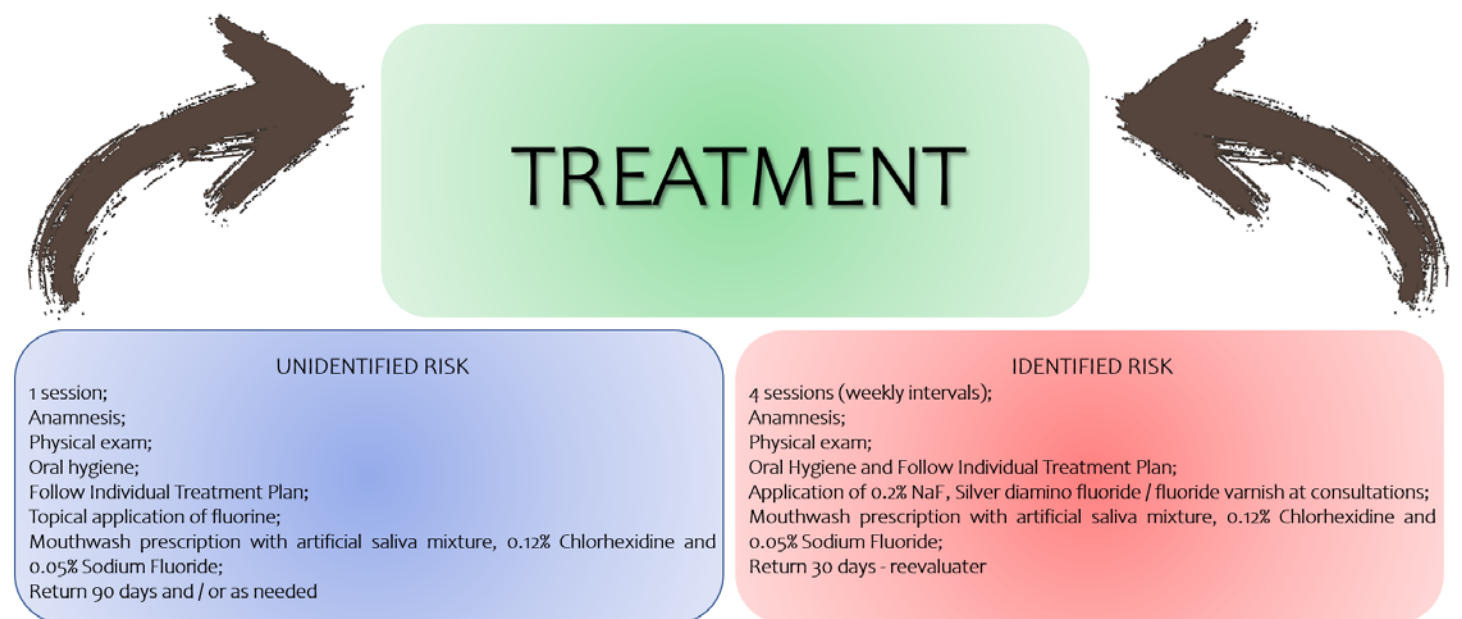


Figure 3. Methodology for identifying caries risk.



achieved with a gentle pressure, using moistened gauze to avoid adhesion to the tissues.

#### • Dental implant

There are no absolute contraindications in dental implant. The process of integrating the implant to the bone is based on the same principle of healing after a surgical extraction. However, there are situations where a thorough evaluation will be required to choose the best time to make the implant and establish whether the patient will have to temporarily suspend any medication that may be in use. Thus, the multidisciplinary evaluation is necessary.

We must remember a group of clinical conditions in which it is important to clarify the risk/benefit ratio (osteomalacia, vitamin D dependent rickets, rheumatoid arthritis, HIV positive, psychic or psychiatric diseases, neuropsychiatric diseases such as Parkinson's disease, ectodermal dysplasia, scleroderma, systemic lupus erythematosus, lichen planus, Crohn's disease, transplant patients, Papillon-Lefèvre syndrome, Paget disease, patients irradiated in the jaw, patients undergoing chemotherapy, osteoporosis, imperfect osteogenesis, uncontrolled diabetes, severe cardiovascular or respiratory disease, bleeding diseases, periodontal disease, alcohol or drug dependence, smoking, immunosuppressed patients, hypocoagulated patients, and bisphosphonate medication). If a patient needs rehabilitation with implants and presents any of these diseases or is being medicated with any of the medications mentioned, the surgeon should evaluate the case with caution. No disease or medication is permanently contraindicated, but the patient's health conditions should be evaluated, if possible, in collaboration with the attending physician, and decide under what conditions the implants will be placed.

In some cases, the therapy instituted may be temporarily suspended, in others it will be prudent to leave the implant, during healing, protected by the gums, or it may be more advantageous to wait some time, so that, for example, the patient ends a treatment, and only then proceeds with the placement of the implants.

#### • Orthodontic treatment

The movement of the teeth, in order to correct a cross bite of a tooth, small diastemata and align the anterior teeth, is possible using fixed orthodontics. Removable appliances can also be used, for example, the anterior bite plate. To avoid soft tissue injuries, orthodontics wax/relief wax can be applied to the supports.

### Conclusions

The dentist plays an important role in early diagnosis and treatment of possible oral complications of SS, being hyposalivation the one with greater interest for Dentistry. The proper management reduces or prevents the emergence of other complications such as white spots, cavities and even tooth loss. In addition, problems such as dysgeusia, dysphagia and the development of more severe extra-glandular manifestations are minimized, thus providing greater comfort and better quality of life to the patient.

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## Mini Curriculum and Author's Contribution

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