

Oral and Dental Aspects of Scleroderma

Systemic sclerosis (or scleroderma) is a rare condition which can affect most organs in the body that cause problems due to abnormal blood vessel function (e.g. Raynaud's phenomenon), scar tissue formation (e.g. in the skin causing skin tightening) and inflammation (activation of the immune system against the body's own tissues).

The mouth, oral cavity and teeth can be affected in systemic sclerosis leading to difficulties with speech, feeding and reduced quality of life. This education booklet will explain how the mouth can be affected and what you can do to manage these problems.

Reduced mouth opening (microstomia)

Reduced mouth opening in systemic sclerosis is caused by tightening of the facial skin around the mouth. Many patients don't notice this particular problem as it emerges slowly over many years and they adapt over time without any loss of function or quality of life.

If the mouth opening becomes very small it can have an impact on feeding, dental hygiene and speech. It never progresses to a point where patients are unable to feed or speak. No drug treatments can prevent or treat microstomia. We think exposure to cold may be an important driver of skin tightening of the face and we encourage patients to keep warm and cover the face during cold spells e.g. use of a scarf or neck gaiter/tube.

Facial Exercises

Mouth stretching exercises are probably the best treatment for microstomia and have been shown to improve mouth opening and help with eating, dental hygiene and speaking. **"For best effects it is recommended that you perform these exercises once or twice a day (perhaps at the same time as you brush your teeth to make it easy to remember)"**

Try performing the exercises in front of a mirror so that you can check you are performing them well. Don't undertake these exercises if you have sores around your mouth until you have sought medical advice. You may notice some aching of the muscles around your mouth for a few days after starting the routine. The exercises themselves shouldn't be painful and listen to your body when undertaking the exercises, lessening the pressure should you experience any significant discomfort.

The following page contains instructions on how to perform a number of facial exercises. The exercises should not take longer than 5-10 minutes to perform.

WARM UP SECTION

Before exercising, it is always wise to warm up the area you plan to exercise. You can warm up the facial muscles by massaging the skin around your mouth with your fingers or using a warm flannel/compress over your mouth for 30 seconds before starting your exercises.

FACIAL EXERCISE TECHNIQUES

- 1**
Step 1 Put the right thumb in the corner of left side of the mouth and stretch
Step 2 Put the left thumb in the corner of right side of the mouth and stretch
- 2**
Step 1 Open the mouth as wide as possible
Step 2 Open the mouth as wide as possible keeping the lips over the teeth
- 3**
Step 1 Pull the jaw down
Step 2 Purse the lips
- 4**
Step 1 Puff out the cheeks
Step 2 Make an exaggerated smile
- 5**
Step 1 Move the jaw to the left
Step 2 Move the jaw to the right
- 6**
Step 1 Move the jaw forwards
Step 2 Open the mouth, look upwards, and then keeping the head in the same position, bring the jaw up
- 7**
Step 1 Stretch with both thumbs at the same time
- 8**
Step 1 Insert a number of soft wood sticks ('tongue depressors') between the teeth from the premolars of one side towards the molars on the other side. Aim to increase the number of sticks used.

DRYNESS OF THE MOUTH (XEROSTOMIA)

Dryness of the mouth is common in systemic sclerosis and is caused by reduced formation of saliva, possibly due to inflammation and/or scar tissue formation within the salivary glands. We often refer to this as secondary Sjogren's syndrome (or sicca syndrome). Saliva performs several protective functions in the mouth. Lack of saliva can lead to soreness of the mouth and increases the liability to dental caries, gingivitis, fungal infections of the mouth and bacterial infections of the salivary glands. A lack of saliva can affect taste quality, lessen the retention of dentures and interfere with sleep quality due to oral dryness causing the tongue to stick to the roof of the mouth.

Patients are also advised to avoid smoking and excessive alcohol which can also worsen oral dryness. No drug treatments have been shown to prevent damage to the salivary glands and many of the treatments we use are primarily for symptom control. Regularly sipping water can help to keep the mouth moist but water quickly evaporates and this approach can be impractical and the benefits short-lived. Chewing sugar-free gum or using salivary stimulation tablets are a useful way of encouraging the salivary glands to produce more saliva. At least two chewing gums have been developed specifically for the management of dry mouth (Biotène® dry mouth gum and BioXtra® chewing gum).

Salivary substitutes are products that copy the consistency of saliva and form the mainstay of treatment. These products can be sprayed or rubbed into the mouth when required. A number of salivary substitutes are available such as Glandosane®, Saliva Orthana®, Biotene Oral Balance® and Bio Xtra® Gel. The gels tend to offer longer benefit than the sprays and can be particularly useful at night. A non-sucrose based pastille (Salivex®) is also available. We encourage patients to try different brands and identify a product that is most suitable for their needs.

Medications that stimulate the salivary glands to produce more saliva e.g. pilocarpine (Salagen®) can be effective and can occasionally help with other scleroderma complications such as constipation. They can have unwanted gastrointestinal and cardiovascular side-effects in systemic sclerosis and a decision to try such medications should be made with your Rheumatologist. If dryness at night is a particular problem, then using a teaspoonful of olive oil or natural yoghurt as a mouthwash before retiring to bed can be helpful, as can efforts to ensure your bedroom is not too warm.

"Some medicines may cause dryness of the mouth as a side effect and it is helpful for your doctor to review your medications with this in mind."

Tooth decay, gum disease and periodontal disease

Patients with systemic sclerosis should visit their dentist twice yearly for assessment. As outlined above, a lack of saliva can increase the risk of dental decay (caries) and gum disease (gingivitis). Recent work suggests the disease process itself can affect the health of the gums and roots in scleroderma. In addition to keeping the mouth moist, we recommend avoidance of factors which affect dental hygiene such as cigarette smoking and high intake of dietary sugar.

Toothpaste aids the removal of plaque and tartar, freshens the breath and can provide fluoride (strengthens the outer surface of teeth), antimicrobials and desensitising agents. Fluoride mouthwashes (e.g. Fluorigard®) are available and recommended for patients with dry mouth (xerostomia) to reduce the risk of dental decay. Fluoride mouth rinses can be used on a daily or weekly basis and may be given in addition to fluoride-containing toothpastes. Fluoride mouth rinses should not be swallowed.

Some patients with dry mouth report local irritation with fluoride containing products and can not tolerate them. Modern toothpastes contain a foaming agent - Sodium Laurel Sulphate or Sodium Laureth Sulphate (SLS), which can irritate mouth ulcers and may cause them to take longer to heal. There are a number of toothpastes that do not contain this ingredient (e.g. Corsodyl®, greenpeople) and may be better for gum health. These products may be better for people who experience frequent mouth ulcers. Difflam mouthwash may also be helpful in oral ulceration, and is available over the counter.

The ideal toothbrush should have nylon bristles of an even length and be of medium hardness. A toothbrush should be small enough to be easily placed in the mouth and yet be suitably designed to effectively remove all the dental plaque - a toothbrush head of about 1cm length is usually sufficient.

A variety of toothbrushes are available:

- **Angled brushes:** To help access to areas of the mouth that are difficult to reach. These often have small heads and flexible handles and are therefore ideal for people with systemic sclerosis.
- **Altered filament length brushes:** The middle row of filaments are shorter than the outer rows. These brushes clean above and below the tooth without causing overbrushing. These are excellent for people with generally healthy mouths.
- **Easy-Grip brushes:** These are particularly useful for people who do not have the strength to grip closely or firmly. A toothbrush handle can be enlarged by fixing a ball of sponge rubber, nail brush or bicycle handle grip to the brush handle.
- **Extended-handle brushes:** These are particularly effective for people who cannot raise their arms. Two toothbrush handles can be glued or taped together or a tongue depressor can be taped to the brush handle.
- **Electric toothbrushes:** These are increasingly popular and are often more effective than ordinary brushes in removing plaque. They are ideal for people with systemic sclerosis who have limited movement. Electric toothbrushes are often light and easy to hold.

The ideal tooth brushing technique should remove the plaque but not cause any damage to the teeth or gums. The roll technique is particularly useful for patients with healthy gums. The brush is placed with bristles on the gum tissue, the bristles are then pressed onto the gums making them blanch (whiten); maintaining the same pressure the bristles are moved across the gums onto the tooth surface. Behind the front teeth, the brush is held vertically and gently moved upwards and downwards.

THE BASS METHOD

- Position the filaments up toward the root at a 45 degree angle to the teeth.
- Place and brush with the filament tips directed into the gingival sulcus.
- Using a vibratory stroke brush back and forth with very short strokes for the count of ten.
- Reposition the brush to the next group of teeth.

Interdental cleaning devices are designed to remove plaque not cleaned from between the teeth during tooth brushing. Dental floss and dental tape are the most frequently used interdental cleaning aids. The floss or tape needs to be threaded between the teeth and gently curled around the side of the tooth, slid down to the gums and gently brought back up to the top of the tooth.

A suitable floss holder can make these easier to use for patients with hand/joint problems e.g. flexion contractures of the fingers. Interdental brushes are a good alternative to floss, particularly for people with problems with hand function as they require less manual dexterity.

THE ROLLING STROKE

- Direct the filaments toward the root of the tooth.
- Place side of the brush on the gingiva and have the plastic part of the brush even with the tooth.
- When the plastic portion is even with the tooth press the filaments against the gingiva and roll the brush over the teeth.
- The wrist is turned slightly and the filaments follow the contours of the teeth.

The Bass technique is useful for patients with pre-existing gum disease. The bristles of the toothbrush are placed on the gum margins such that they point away from the crown of the tooth at an angle of 45°. The brush is vibrated backwards and forwards with a horizontal movement to gently dislodge the plaque. This can be a time-consuming method and is difficult to master. It may cause mild trauma to the gums if not carried out appropriately, with the correct brush.

DENTURE PROBLEMS IN SCLERODERMA

Scleroderma can give rise to a number of denture problems. Patients with microstomia can have difficulties in inserting and removing their dentures from the mouth. In addition the microstomia can make it difficult for impressions to be taken during the construction of dentures. Poor retention of the upper denture due to a dry mouth can occur causing rubbing and ulceration of the adjacent mouth lining (oral mucosa). This can be minimised by applying salivary substitutes to the fitting surface of the denture, and having the denture regularly checked and/or modified. Denture associated candida infection can occur as a result of infrequent cleaning of the denture or wearing the denture during sleep. To minimise this, dentures should be regularly cleaned using soap and water and a denture brush.

It is best to clean dentures after each meal or at least once daily. Toothpastes should not be used to clean dentures as these are too abrasive. In addition, dentures should not be worn while asleep. Antifungal cream (e.g. miconazole) can be applied to the fitting surface of the denture. Poorly fitting dentures and dry mouth may cause the development of red patches or ulcers at the corners of the mouth (angular stomatitis). This can be avoided by the dentures being regularly checked by your dentist.

Osseo-integrated implants are a means of ensuring the retention of dentures. These are titanium screws that are placed within the jaw bones, the bone eventually uniting with the titanium of the implant. It is then possible to construct either dentures that clip onto the implant, or bridges that firmly attached to implants. There are no major medical reasons to withhold the placement of implants in patients with scleroderma.

OTHER ORAL MANIFESTATIONS AND HEALTH PROBLEMS IN SCLERODERMA

Oral ulceration can be a feature of autoimmune rheumatic diseases and can occur as a common side-effect of immunosuppressing drugs (such as mycophenolate mofetil (MMF), methotrexate or cyclophosphamide) sometimes taken by people with systemic sclerosis. Recurrent oral ulceration can sometimes require a change in immunosuppressive drug treatment. Maintaining good oral hygiene can help prevent mouth ulceration.

The best treatment for active mouth ulceration are those which contain a small amount of steroid such as hydrocortisone oromucosal tablets or Adcortyl in Orabase[®]. These are available over the counter as well as on prescription. Steroid inhalers (as used in asthma) can be sprayed onto active ulcers to promote healing. Preparations containing local anaesthetic such as Anbesol[®] and Rinstead pastilles[®] are useful for pain relief. Salicylate gels such as Bonjela[®] and Teejel[®] can also help with pain but not with healing of mouth ulceration. Mouthwashes such as Difflam or Corsodyl may also aid discomfort as part of treatment.

Conclusion

Scleroderma can affect the mouth in many ways. Research is being undertaken to identify the cause of oral problems in scleroderma and develop new treatments for preventing these problems. Until such treatments are available, much of the advice we give patients for managing these problems is either preventative or symptom control. Thankfully, many patients find the treatments outlined above effective at lessening the impact and severity of oral problems that can occur in scleroderma. We encourage all patients with scleroderma experiencing problems relating to oral health to seek advice from their doctors, dentists and other relevant health professionals.

Information and advice on registering with an NHS dentist can be found on the NHS website: (www.nhs.uk/NHSEngland/AboutNHSservices/dentists/Pages/find-an-NHS-dentist.aspx)

Specialists in Oral Medicine can undertake the investigation and treatment of rare oral complications of scleroderma. Details of specialists can be obtained from The British Society for Oral Medicine (www.bsom.org.uk) or The Dental Council List of Specialists (www.gdc-uk.org).

“Patients should report any active ulceration that fails to heal within 3 weeks to their doctor/dentist.”

Immunosuppressive drugs can also cause oral thrush (candida infection). This often presents with white spots on the tongue or mouth. It can be uncomfortable and requires treatment with antifungal medication.

Intermittent salivary gland enlargement (usually under the chin bone) can occur in scleroderma. Painful swelling of the salivary glands can indicate bacterial infection (sialadenitis) and sometimes requires the use of antibiotics. Persistent swelling of salivary glands (more than one month) warrants further investigation to identify a cause and should be reported to your doctor/dentist.

Other oral manifestations can occur with scleroderma but are generally considered harmless. For example, scleroderma can affect the mobility of the tongue due to shortening and thickening of the sublingual frenulum (the small band visible under the tongue which holds the tongue in position).

Telangiectases (small dilated blood vessels) are sometimes evident around the mouth, lips or gums but do not cause any problems at this site (concealants such as lipstick/make-up can be helpful if considered unsightly) . Enlargement of the gums can be a side-effect of nifedipine (and other calcium channel blocker) therapy. The enlargement is painless and usually subsides following a switch in vasodilator therapy.

GLOSSARY OF KEY TERMS:

Angular Stomatitis

Inflammation of the angles (corners) of the lips. See also Stomatitis.

Antimicrobials

An agent that kills microorganisms or inhibits their growth. For example, antibacterials are used against bacteria and antifungals are used against fungi.

Candida (or Oral Candidosis)

See Oral Thrush.

Dental Caries

Also known as tooth decay or a cavity, is an infection, bacterial in origin that causes destruction of the hard tissues of the teeth.

Desensitising Agents

Substances such as strontium and potassium chloride, often used in toothpastes, to reduce the sensitivity of teeth to temperature changes, sweet foods and to touch.

Flexion Contractures

Stiffness or constriction in muscles, joints, tendons, ligaments, or skin that restricts normal movement.

Fluoride

A naturally occurring mineral found in water in varying amounts, depending on where you live. Also found in certain foods, including tea and fish. Fluoride's main benefit is in helping reduce the risk of tooth decay, which is why it's added to many brands of toothpaste and, in some areas, to the water supply through a process called fluoridation.

Gingivitis

Inflammation of the gum tissue. The most common form of gingivitis, and the most common form of periodontal disease overall, is in response to plaque. Gingivitis is reversible with good oral hygiene. However if not controlled, can progress to periodontitis- where the inflammation results in tissue

destruction which can ultimately lead to tooth loss. Gingival sulcus refers to the potential space between the tooth and gum.

Immunosuppressive Drugs

A class of drugs that suppress or reduce the strength of the body's immune system. They are also called anti-rejection drugs. Immunosuppressant drugs also are used to treat autoimmune diseases such as scleroderma as the condition attacks its own tissue. By suppressing this reaction, immunosuppressant drugs can help control the impact of the condition on the body.

Miconazole

An antifungal agent commonly applied to the skin or to mucous membranes to cure fungal infections. It includes some antibacterial properties.

Microstomia

Reduced mouth opening. Micro translates to small and stomia translates to mouth.

Mouth Ulcers

Mouth ulcers are painful round or oval sores that form in the mouth, most often on the inside of the cheeks or lips. They're usually white, red, yellow or grey in colour and are inflamed (red and swollen) around the edge. Mouth ulcers can be uncomfortable, especially when you eat, drink or brush your teeth, but are usually harmless.

Nifedipine

Given to treat hypertension (high blood pressure), or to help prevent chest pain. Also prescribed in the treatment of Raynaud's phenomenon - a condition caused by poor circulation to the hands and feet.

Oral Mucosa

The membrane lining the inside of the mouth. Changes indicative of disease are seen as alterations in the oral mucosa lining the mouth, which can reveal systemic conditions, such as diabetes or vitamin deficiency, or chronic

tobacco or alcohol use.

Oral Thrush (or Fungal Infections)

Oral thrush is a fungal infection of the mouth. It is not contagious and usually successfully treated with antifungal medication. It is also called oral candidosis (or candidiasis) because it is caused by a group of yeasts called Candida.

Oral Ulceration

See Mouth Ulcers.

Pilocarpine

A drug used to treat dry mouth and glaucoma. It is on the World Health Organization's List of Essential Medicines, a list of the most important medication needed in a basic health system.

Salicylate Gels

It is used to relieve pain and discomfort associated with common mouth ulcers. It also helps to relieve pain and inflammation in the mouth caused by dentures and braces.

Sjogren's Syndrome (or Sicca Syndrome)

The body's white blood cells destroy the exocrine glands, specifically the salivary and lacrimal glands that produce saliva and tears. See also the British Sjögren's Syndrome Association (BSSA) - www.bssa.uk.net.

Stomatitis

Inflammation of the mouth and lips. It refers to any inflammatory process affecting the mucous membranes of the mouth and lips, with or without oral ulceration.

Vasodilator Therapy

Medications that dilate (open) blood vessels. They work directly on the muscles in the walls of your arteries, preventing the muscles from tightening and the walls from narrowing. As a result, blood flows more easily through your arteries, your heart doesn't have to pump as hard and your blood pressure is reduced.

“I found the tips useful and the exercises simple to do.”

Marie Gray,
Diagnosed 2003,
Scleroderma and MCTD

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This publication is endorsed by the Information Standard.

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Useful Resources

The British Society for Oral Medicine (www.bsom.org.uk)

The Dental Council List of Specialists (www.gdc-uk.org / +44 (0)20 7167 6000)

References & Feedback

For a detailed list of references or to give us feedback on the information contained within this publication please email info@sruk.co.uk

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