

Dental Treatment Considerations

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Common questions people ask about
Dental Treatment Considerations

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MYASTHENIA GRAVIS
FOUNDATION OF AMERICA, INC.®

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Myasthenia gravis (MG) is an autoimmune neuromuscular disorder that presents challenges for both the dental practitioner and the patient. Facial and masticatory (chewing) muscles may be involved and complicate dental care and treatment. Exacerbation of muscle weakness and fatigability that characterize this disorder can be precipitated by certain medications used in dentistry. The dental team should be cognizant of the medication precautions in this population, modify dental care to accommodate existing neuromuscular weakness and drug therapy, and be prepared to manage emergent complications occurring in the dental office.

Dental care provision for patients with MG requires special management considerations. These include identifying and managing myasthenic weakness or crisis, avoiding the potential of harmful drug interactions, monitoring oral side effects of drugs and therapies used to treat MG, and modifying dental treatment to accommodate altered muscle strength.

Appointment Scheduling

It is important to realize that oral infections and the psychological stress of anticipating or undergoing dental treatment may precipitate or worsen myasthenic weakness. Short-duration morning appointments will minimize fatigue and take advantage of the typically greater muscle strength during the morning hours. Appointments are best scheduled approximately one to two hours following oral anticholinesterase medication so as to benefit from maximum therapeutic effect and decrease the risk of myasthenic weakness or crisis.

Private Office or Hospital

The stable MG patient with limited or mild neuromuscular involvement may be safely treated in the private dental office setting in most instances. However, the patient with frequent exacerbations or significant or pharyngeal, respiratory, or generalized weakness may receive dental care most safely in a hospital dental clinic or other facility with emergency intubation and respiratory support capabilities.

Preoperative Plasma Exchange

Preoperative plasma exchange may be indicated in the patient with frequent severe myasthenic exacerbations or crises who is anticipating significant oral surgery. If an exacerbation is precipitated by the dental care, the patient should be evaluated for severity of neuromuscular involvement by the patient's neurologist.

Dentures

The patient's ability to manage complete dentures may be compromised by the inability of the weak muscles to assist in retaining the lower denture and to maintain a peripheral seal for the upper denture. Over extended and over contoured maxillary dentures with thick flanges that impinge upon muscle and frenal attachments can lead to muscle fatigue and altered salivation. Improperly fitting dentures may exacerbate symptoms of difficulty in closing the mouth, tongue fatigue, a tight upper lip, dry mouth, impaired phonation, dysphagia, and masticatory problems.

Respiratory Collapse

If respiratory collapse occurs, an open airway and adequate respiratory exchange must be established. Dental staff should be trained in and prepared to do basic life support (CPR) until an ambulance arrives, if needed. Dental suction devices can be used to suction secretions and debris from the oropharynx to prevent aspiration and mechanical blockage of the airway. Manual retraction of the weakened tongue may prevent obstruction of the airway.

Oral Findings

Tongue: Lipomatous atrophy of the tongue may result in a furrowed and flaccid clinical appearance. In severe cases, it can result in a triple longitudinal furrowing of the tongue.

Mouth Drop: Lack of muscle strength in the masseter muscle, especially following a sustained chewing effort, may cause the mouth to hang open, unless the mandible (lower jaw) is held shut by hand.

Chewing/Swallowing: Lack of strength of the muscles of mastication can inhibit proper chewing of food. Eating can be further inhibited by dysphagia (difficulty swallowing), when the tongue and other muscles used for swallowing are involved, and by aberrant passage of food or liquids from the nasopharynx into the nasal cavity, when the palatal and pharyngeal muscles are affected. The consequences of this may include poor nutrition, dehydration and hypokalemia (reduced potassium levels).

To prevent or improve these complications one should instruct the patient to

- Take anticholinesterase medication (Mestinon[®], Prostigmin[®]) 1 hour before meals.
- Allow a half-hour rest period before meals and frequent rests while eating.

- Eat the main meal of the day in the morning when muscles are stronger.

Dental Treatment Considerations for the Patient

- Good preventative dental care at home and regular dental follow up office visits for teeth cleaning and inspection will help prevent dental problems, gum infections, and the need for emergency dental care. Open communication with the dentist can reduce the risk of complications during dental treatments.
- Helpful dental care hints include using an electric toothbrush or a manual toothbrush with modified handle that is easy to grasp. This will reduce muscle fatigue.
- Make short duration, morning appointments to reduce stress, minimize fatigue and take advantage of typically greater muscle strength in the morning.
- Schedule appointment approximately 1-2 hours following Mestinon® intake or, if your physician allows, modify your Mestinon® schedule to allow drug intake approximately 1 hour prior to your dental appointment to maximize benefit from the drug's peak effect.
- Mouth props for use during dental treatment may prevent muscle strain of having to hold the mouth open during treatment.
- Dental treatment is usually done in a reclining position. Let your dentist know if you are so far back that you feel like your throat is closing off or you are having difficulty with breathing or handling your secretions.
- Let your dentist know if you will need frequent rest breaks during treatment.
- Tell your dentist how frequently you have weakness and what muscles are usually involved.
- If your MG is stable with limited or mild neuromuscular involvement, you probably can be treated safely in a private dental office.
- If you have frequent exacerbations or significant oropharyngeal, respiratory, or generalized weakness you may receive dental care most safely in a facility with emergency and respiratory support capabilities, such as a hospital or oral surgeon's office. Ask your dentist about his/her emergency equipment.

- If you are anticipating significant oral surgery (wisdom tooth extractions, multiple tooth extractions) and you have frequent severe exacerbations of your weakness, your physician may recommend additional myasthenic therapy (such as plasma exchange) before your oral surgery.
- If an exacerbation is precipitated, your treating physician should evaluate you for severity of neuromuscular involvement.
- If respiratory collapse occurs, an open airway and adequate respiratory exchange must be established. Ask your dentist if the staff are trained in and prepared to do basic life support (CPR) until the ambulance arrives, if needed.

Compromised Ability to Manage Complete Dentures

- Your ability to manage complete dentures may be compromised by the inability of the weak muscles to assist in retaining the lower denture and to maintain a peripheral seal for the upper denture.
- Overextended and over contoured maxillary dentures with thick flanges that impinge upon muscle and frenal attachments can lead to muscle fatigue and altered salivation.
- Ill-fitting dentures may exacerbate symptoms of difficulty in closing the mouth, tongue fatigue, a tight upper lip, dry mouth, impaired phonation, dysphagia, and masticatory problems.

Drug Interactions

Many common drugs used in dentistry may have potential complications for MG patients by exacerbating their muscle weakness or interfering with breathing. The following table may be of help to the myasthenic patient and the treating dentist. Please remember that this list can not cover all potentially dangerous medications and patients should consult with their treating physicians if there are any questions.

Relatively Contraindicated	Use with Caution	Safe
Procaine (novocaine) ¹	Lidocaine ¹ Mepivacaine ¹ Bupivacaine ¹ Prilocaine ¹	
	Morphine & derivatives ²	Acetaminophin

Relatively Contraindicated	Use with Caution	Safe
	Narcotics ²	NSAIDS ⁴ Aspirin
	Benzodiazepines ²	Nitrous Oxide sedation
	Hypnotics ² Barbiturates ²	
Erythromycin ¹	Metronidazole	Penicillin & derivatives
Gentamicin ¹	Tetracycline	
Neomycin ¹	Vancomycin	
Polymyxin B ¹		
Bacitracin ¹		
Clindamycin ¹	Corticosteroids ³	

Key: 1 = drugs which may acutely potentiate myasthenic weakness
2 = use with caution in patients with respiratory difficulty or depression
3 = may induce an exacerbation of MG
4 = significant drug interaction with cyclosporine

Monitoring for Oral Side Effects or Drug Interactions of Therapies Used to Treat MG

I. Cyclosporine

- May cause gingival hyperplasia (fibrous gum overgrowth). This may begin as early as the first month of drug use and seems to be dependent upon the presence of dental plaque or other local irritants, individual susceptibility, and the dose of cyclosporine used.
- May cause interactions with medications your dentist might prescribe. These include enhanced kidney toxicity or elevated drug levels of cyclosporine:
 - Nephrotoxic interaction: gentamicin, vancomycin, ketoconazole, and the nonsteroidal anti-inflammatory drugs (NSAIDS e.g. ibuprofen, Advil, Aleve, Motrin).
 - Cyclosporine levels increase to possibly toxic levels: erythromycin, ketoconazole, fluconazole, and itraconazole.

2. Azathioprine (Imuran®)

- Suppresses immune system.
- May predispose to oral/wound infection.
- May delay wound healing.
- Consider need for antibiotic treatment after oral surgery.

3. Prednisone

- Suppresses immune system.
- May predispose to oral/wound infection.
- May delay wound healing.
- Consider need for antibiotic after oral surgery.

- May cause adrenal gland suppression, depending on dose taken.
- Patient should discuss with physician and dentist whether there is a need to increase steroid dose before stressful or complicated dental procedures (e.g. multiple extractions or general anesthesia) particularly if the patient has been on daily prednisone of medium to high dose.

4. **Mestinon®/Prostigmine®**

- May cause your saliva flow to increase.
- Dentist can use a low speed saliva ejector to collect the saliva during dental treatment.
- Dentist can use high-speed evacuation, suction to collect debris and saliva in patient's mouth during treatment.
- When having restorations (fillings) done, a rubber dam can be used to isolate teeth and keep the dentist's water and restorative materials from getting near the throat. If an impression for a crown or bridge prosthesis is being done, the patient may need to ask for an appointment at a time when they have not been having these symptoms or a physician may suggest other medications to dry up secretions temporarily.

5. **Plasma Exchange (Plasmapheresis)**

- If the patient's exchange protocol involves the use of anticoagulants (blood thinners), including heparin or acid-citrate-dextrose solutions, dental treatment should be arranged for a non-exchange day in the treatment sequence.

Local Anesthetics

General comments concerning local anesthetics:

- Amide type rather than ester type local anesthetics should be used.
- Care should be observed in avoiding intravascular injection of local anesthetic.
- Use of a vasoconstrictor, such as 1:100,000 epinephrine in combination with lidocaine is beneficial in maximizing anesthesia efficacy at the oral site, while minimizing total anesthetic dose.
- The periodontal ligament injection and intrapulpal injection techniques should be considered if the dental procedure warrants their use.
- Nitrous oxide sedation may be helpful in allaying apprehension.
- Intravenous sedation techniques and narcotic analgesics should be used with caution to avoid respiratory depression.

The MGFA mission is to facilitate the timely diagnosis and optimal care of individuals affected by myasthenia gravis and closely related disorders and to improve their lives through programs of patient services, public information, medical research, professional education, advocacy and patient care.

This publication is intended to provide the reader with general information to be used solely for educational purposes. As such, it does not address individual patient needs, and should not be used as a basis for decision making concerning diagnosis, care, or treatment of any condition. Instead, such decisions should be based upon the advice of a physician or health care professional who is directly familiar with the patient. The information contained in this publication reflects the views of the authors, but not necessarily those of the Myasthenia Gravis Foundation of America (MGFA). Any reference to a particular product, source, or use does not constitute an endorsement.

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