Systemic diseases of concern in prosthodontic

Various systemic diseases play a pivotal role in deciding treatment options in dentistry. Prosthodontic procedures need to be carefully judged and planned according the systemic status of the patient.

CARDIO VASICULAR DISEASE:

Hypertension

A condition in which the force of the blood against the artery walls is too high.

*Oral manifestation of antihypertensive drugs*

1. xerostomia (Diuretics)
2. Lichenoid reaction
3. Burning mouth sensation
4. Loss of taste sensation
5. Gingival hyperplasia

PROSTHETIC MANAGEMENT

1. Accurate measurement of blood is mandatory.
2. Stress reducing protocol (diazepam 5 to 10mg, night before procedure)
3. It is preferable for the visit to be brief and in the morning
4. The antihypertensive effect of diuretics, beta-blockers, alpha blockers, vasodilator, ACE inhibitor may be antagonized by the long term use of NSAID (ibuprofen, indomethacin or naproxen) so should not be prescribed for longer than 5 days period.

5. Hypertensive patient are at a higher risk of developing septicemia following prosthodontics treatment.

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6-the sharp edges of the removable partial denture should be trimmed off.

7-fabricating a complete denture demands utmost care to avoid causing soft tissue abrasion.

8-during treatment, sudden changes in body position should be avoided, as they can cause orthostatic hypotension as side effect of the blood pressure lowering drugs.

9-artificial saliva should be recommended with patient suffering from xerostomia

<table>
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<tr>
<th>Implant procedure</th>
<th>Impression</th>
<th>Diastolic</th>
<th>Systolic</th>
<th>Risk</th>
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<tbody>
<tr>
<td>Sedation</td>
<td>+</td>
<td>85-89</td>
<td>130-139</td>
<td>Normal</td>
</tr>
<tr>
<td>Sedation</td>
<td>+</td>
<td>90-99</td>
<td>140-159</td>
<td>Stage I</td>
</tr>
<tr>
<td>Postponement of procedure</td>
<td>+</td>
<td>100-109</td>
<td>160-179</td>
<td>Stage II</td>
</tr>
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Refer and postpone all procedures. 110-119 180-209 Stage III

Refer and postpone all procedures. ³ 120 ³ 210 Stage IV

**Endocrine diseases:**

Most endocrine diseases

1-osteoporosis

2-diabetes mellitus

3-hyper/hypothyroidism

4-hyper/hypoparathyroidism

**Osteoporosis**

Shows a decrease in skeletal mass without alteration in the chemical composition of bone

**Prosthetic implication**

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1-loss and /or mobility of teeth
2-partial edentulism
3-complete edentulism
4-excessive R.R.R.
5-denture requiring repeated revision or remakes

**PROSTHETIC MANGEMENT**

1-mucostatic and open mouth impression techniques
2-use of acrylic non-or semi anatomic teeth rather than porcelain ones.
3-narrowing the occlusal table and /or decreasing number of posterior teeth
4-periods of extended tissue rest (by keeping dentures out of the mouth for 10-12hr daily)
5.optional use of soft liners and shorter recall intervals to facilitate early intervention could be incorporated.

**Diabetes Mellitus:**

It is a complicated metabolic disease characterized by hypo-function or lack of function of the beta cells of the islets of Langerhans in the pancreas, leading to high blood glucose levels and excretion of sugar in the urine.

Problems associated in a diabetic patient can be periodontal breakdown, abscess formation, xerostomia leading to mucosal abrasion and ulceration, and progression of bone resorption over time. Some studies have shown an increased incidence of oral candidiasis.

Poorly controlled diabetic patients respond much less favorably, and short-term improvements in periodontal health are frequently followed by regression and by recurrence of disease. It is generally best to plan dental treatment to occur

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either before or after periods of peak insulin activity. The clinician should also be aware of the risk of a hypoglycemic attack. In case of a xerostomia, patient should be encouraged to sip water throughout the day, an ethanol free rinse containing aloe or lanoline, any water-soluble jelly or a saliva substitute containing carboxymethyl cellulose or mammalian mucin can also be given.

**Prosthetic Modifications**: Mucostatic technique for the primary impression, wax spacer to cover complete tissue in special trays, use of rubber base material for border molding should be considered. Prosthetic factors such as broad area of tissue coverage, decrease buccolingual width of teeth, setting of the teeth above the ridge, using semi-anatomic or cusp-less teeth, avoidance of incline planes, centralizing the occlusal contacts to increase stability of dentures and providing adequate inter-occlusal distance should be considered. The patient is also instructed to frequently massage the oral tissues and come for frequent check ups as frequent relining can also necessitate the tolerance of the denture.

**HYPERTHYROIDISM**

**ORAL MANIFESTATION**

1. enlargement of extra glandular thyroid tissue (mainly in the lateral posterior tongue)
2. accelerated dental eruption
3. burning mouth syndrome
4. increased susceptibility to caries and periodontal disease.

**Dental management:**

Before dental treatment is planned, we must carry out a detailed general clinical history

and a consultation with the specialist is recommended, to discuss the overall

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condition of the patient. At the time of the treatment we must consider several aspects:

1. In controlled patients, we will carry out the same dental management as in healthy patients. We must avoid severe stress situations and the spread of infectious foci.

2. In uncontrolled cases, we must take the same precautionary measures as in controlled patients.

   We must avoid surgical procedures because surgery, presence of acute oral infection and sever stress may precipitate thyroid storm crisis.

If an emergency dental treatment is required, consultation with the patient’s endocrinologist is advisable because a conservative treatment is often preferable. Treatment should be discontinued if signs or symptoms of a thyrotoxic crisis develop, and access to emergency medical services should be available. These symptoms include tachycardia, irregular pulse, sweating, hypertension, tremor, nausea, vomiting, abdominal pain and coma.

3. In these patients, proper analgesia is indicated and nonsteroidal anti-inflammatory drugs (NSAIDs) and aspirin should be used with caution.

**HYPOTHYROIDISM**

**ORAL MANIFESTATION**

1. delayed dental eruption
2. salivary gland enlargement
3. macroglossia

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4-glossitis (swollen tongue)
5-compromised periodontal health -delayed bone formation
6-dysgeusia (distortion of taste )
7-delayed wound healing

**Dental management**

Consulting the patients’ physician and carrying out a detailed general clinical history before performing dental treatment is indicated.

- Uncontrolled patients we must avoid oral infection. In uncontrolled patients, oral infection, central nervous depressants such as narcotics and barbiturates should be avoided because they may cause an exaggerated response. In controlled patients, these drugs should be used sparingly, with a reduced dosage.

Patients are susceptible to cardiovascular disease, therefore they may be on anticoagulation therapy. Before dental treatment is carried out, a complete blood count is required to evaluate coagulation factors. We must avoid the use of epinephrine in local anesthetics or retraction cords. Antibiotic prophylaxis must be assessed in valvular pathology and atrial fibrillation.

**Bone Diseases:**

Rheumatoid arthritis

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A chronic inflammatory disorder affecting many joint, including those in the hands and feet. In rheumatoid arthritis, the body's immune system attacks its own tissue, including joints.

The difficulty in recording an acceptable jaw relationship because of the destruction of joint tissues.

Large distance between centric relation and centric occlusion.

**Microstomia**

Is defined as an acquired or congenital condition involving a reduction of the oral aperture severe enough to compromise esthetics, nutrition and quality of life.

**PROSTHETIC MANAGEMENT**

1-screw connected sectional impression tray

2-hinged complete dentures prosthesis with swing lock

3-sectional or collapsible denture

[Image of dental impressions and prosthesis]

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Neurological disease (Parkinson’s disease)

Neurological disorder characterized by tremors, rigidity, bradykinesia and postural instability.

Due to loss of manual dexterity oral hygiene is poor. Due to poor oral hygiene the extent of dental caries and edentulism increase

PROSTHODONTIC CONSIDERATION

1- tremor, rigidity and drooling of saliva may cause problems with patient ability to cooperate. Denture retention, stability and support are compromised due to these problems

2- should be seen at a time of day when their medication produce their maximum effect

3- the dental chair should be raised slowly so that the patient is adjusted to the upright sitting position to prevent orthostatic hypotension.

4- positioned in a semi reclined position to avoid pooling of saliva, airway obstruction and aspiration.

PROSTHODONTIC MANAGEMENT

1- Impression should be recorded with quick setting impression material
2-neutral zone technique, flange technique and selective grinding of the occlusion (to remove the interferences) to obtain the maximum stability and retention of the dentures are useful technique.

3-moisture based denture adhesives or artificial salivary substitutes can be prescribed depending on the patient’s manual disability and xerostomia

4-overdenture can provide better masticatory efficiency as compared to patient wearing conventional complete denture

5-when dentist is providing replacement complete denture, duplication technique should be used to maintain the learned muscle control of familiar denture.

**SALIVARY DYSFUNCTION**

1-salivary changes, may induce oral alteration and discomfort with the removable prosthesis.

2-the normal salivary function is an important factor for the maintenance of health, with positive consequences on the functionality and tolerance of the removable denture.

3-xerostomia, a subjective symptom consisting in dry mouth sensation, is frequently associated with quantitative and qualitative changes of the salivary flow.

**Causes of xerostomia**

1-medications

2-primary and secondary Sjogren’s syndrome

3-radiotherapy

4-vasculitis

5-HIV infection

6-renal dialysis

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Consequences of xerostomia in denture wearer

1-caries of abutment
2-discomfort and burning sensation
3-poor retention of denture
4-soreness of denture bearing tissue
5-difficulty in chewing and speech

MANAGEMENT

1-sialogogues
2-dry mouth spray
3-sugar free gums
4-salivary substitutes
5-maxillary and mandibular salivary reservoir denture

TRANSMISSIBLE DISEASES

Hepatitis, tuberculosis, influenza and other transmissible disease pose a particular hazard for the dentist, patients and dental auxiliaries. These diseases may be transmitted by contact with the patient's blood or saliva, contaminated dental instrument and aerosol from the handpiece. Contaminated impression tray, materials, polishing wheels, pumice as well as grindings from the patient's prosthesis may cause aerosol contamination of both the laboratory and the dental office.