Managing Dental Patients Who Are Undergoing Chemotherapy

A Clinical Reference for Dental Practitioners

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Chemotherapy exerts systemic effects that significantly impact the oral environment. As a result, dental practitioners play a critical role at every stage of a patient's oncologic journey; from pre-treatment optimization to long-term maintenance. This document outlines clinical responsibilities and patient management strategies across three phases of care.

Audience: This guide is intended for dentists, dental hygienists, and other oral health professionals involved in the care of oncology patients.

SECTION 1 — PRE-CHEMOTHERAPY

Dental Assessment and Clearance Before Treatment Begins

A comprehensive oral evaluation should be completed as early as possible before chemotherapy. This window allows adequate healing time for any necessary dental interventions before immunosuppression takes effect.

Clinical Examination

- Perform a full oral examination including hard and soft tissue assessment.
- Take full-mouth radiographs to identify periapical pathology, bone loss, caries, and impacted teeth.
- Assess periodontal status; probe depths and record bleeding on probing.
- Evaluate existing restorations for integrity; identify failing crowns, defective margins, or fractured teeth.
- Document the presence of any mucosal lesions, ulcerations, or suspicious tissue changes.

Pre-Treatment Interventions

Address all **active disease and sources of potential infection** before chemotherapy begins. The goal is to eliminate oral foci of infection and reduce the risk of oral complications during the immunocompromised period.

- Extract teeth with a poor or guarded prognosis, including non-restorable teeth, severe periodontitis, and symptomatic partially erupted third molars.
- Complete any necessary endodontic treatment or, if time does not permit, extract the tooth.
- Perform thorough scaling and root planing to resolve active periodontal disease.

- Restore or temporize large carious lesions to eliminate bacterial load.
- Remove or smooth sharp cusps, broken restorations, or ill-fitting prostheses that could traumatize soft tissues.
- Adjust or discontinue the use of removable prostheses if significant tissue irritation is present.

Patient Education Prior to Chemotherapy

Patients should leave the pre-treatment appointment with a clear understanding of what to expect and what is expected of them throughout treatment.

- Review the oral side effects associated with chemotherapy, including mucositis, xerostomia, infection risk, and taste changes.
- Instruct patients on an appropriate oral hygiene regimen (see Section 2 for detail).
- Advise patients to avoid elective dental procedures once chemotherapy begins unless cleared by their oncologist.
- Discuss nutritional considerations and the role of hydration in maintaining oral health.
- Provide written instructions patients can refer to at home.

Clinical Note: Coordinate with the patient's oncology team to understand the proposed chemotherapy regimen, expected degree of immunosuppression, and anticipated nadir timing. This informs the urgency and scope of pre-treatment dental work.

SECTION 2 — DURING CHEMOTHERAPY

Monitoring and Managing Oral Complications During Active Treatment

Chemotherapy damages rapidly dividing cells, including those of the oral mucosa and salivary glands. Patients are also often immunocompromised, placing them at elevated risk for oral infections. Dental involvement during this phase should be conservative and coordinated with the oncology team.

Understanding the Impact of Chemotherapy on the Oral Cavity

- Oral mucositis typically begins within one to two weeks of starting chemotherapy and may persist several weeks after the cycle ends.
- Xerostomia (dry mouth) results from reduced salivary output and alters the oral microbiome, increasing caries and candidiasis risk.
- Immunosuppression reduces the patient's ability to respond to bacterial, fungal, and viral pathogens in the mouth.
- Thrombocytopenia may increase the risk of spontaneous oral bleeding or prolonged bleeding following trauma.
- Taste disturbances (dysgeusia) are common and may affect nutritional intake.

Daily Oral Hygiene During Chemotherapy

Maintaining oral hygiene during chemotherapy is essential, even when the mouth is sore. Patients should be encouraged to continue cleaning their mouth as best they can, with modifications as needed.

Toothbrushing

- Use an extra-soft or ultra-soft bristle toothbrush. Soak new brushes in warm water before use to further soften bristles.
- Brush gently after every meal and before bed.
- Use a non-irritating toothpaste. Avoid formulations containing sodium lauryl sulfate (SLS) or strong mint flavouring, both of which can aggravate sensitive mucosa.
- Suitable options include Sensodyne® or paediatric fruit-flavoured toothpastes.

Interdental Cleaning

- Continue flossing if tolerated. Instruct patients to floss carefully to avoid inducing gingival bleeding.
- Recommend soft interdental brushes or dental soft picks as alternatives when flossing causes discomfort or bleeding.
- Suspend interdental cleaning if platelet counts fall below safe thresholds, per oncologist guidance.
- Continue using water flosser if tolerated on low pressure as not to lacerate tissues from pressure.

Tongue Cleaning

- Gently brush the dorsal surface of the tongue with a soft toothbrush twice daily to reduce bacterial load and improve taste perception.

Therapeutic Mouth Rinses

Patients should avoid all commercial mouthwashes containing alcohol, which desiccate and irritate compromised mucosa. The following rinses are appropriate for use during chemotherapy:

- Saline rinse: 1 teaspoon of salt dissolved in 500 ml warm water.
- Sodium bicarbonate rinse: 1 teaspoon of baking soda dissolved in 500 ml water. Helps neutralize oral pH and loosen mucus.
- Combined saline-bicarbonate rinse: ½ teaspoon salt and ½ teaspoon baking soda in 500 ml water.
- Flat (degassed) club soda: an accessible, low-irritation option.

Instruct patients to rinse every one to two hours while awake, and to carry their rinse with them throughout the day. Rinse before and after meals, upon waking, and before sleeping. Frequency should increase if mucus thickens or soreness worsens.

Managing Oral Mucositis

Mucositis is one of the most debilitating oral complications of chemotherapy. It manifests as erythema, ulceration, and pain affecting the mucosa, tongue, and oropharynx.

- Recommend or prescribe barrier-forming rinses (e.g., Mucositis Mouthwash) five minutes before meals and at bedtime. (Ingredients: xylocaine 2% viscous with nystatin +/- dexamethasone - speak with your local *compounding* pharmacist for suspensions they have in their pharmacy)
- Ensure effective systemic analgesic coverage; liaise with the oncologist if pain is inadequately controlled.

- Advise patients to avoid hot, spicy, rough-textured, and acidic foods, all of which exacerbate mucosal irritation.
- Recommend a soft or liquid diet during severe mucositis episodes.
- Emphasize hydration: target 1.5 to 2 litres of fluid daily to maintain mucosal moisture and saliva consistency.

Managing Xerostomia

- Recommend saliva substitutes or water-based oral gels (e.g., BioXtra®, Biotene®) for symptomatic relief.
- Suggest Xylitol-containing products (e.g., XyliMelts®, Xyligum®) to stimulate salivary flow and reduce caries risk.
- Advise patients to sip water regularly throughout the day rather than consuming large volumes infrequently.
- A cool-mist humidifier at the bedside can reduce nighttime oral dryness.
- Applying a small amount of vegetable oil, coconut oil or olive oil to the oral mucosa at night can temporarily relieve dryness (patient preference for oil).
- Avoid alcohol and tobacco, both of which exacerbate xerostomia.
- Use a non-lanolin lip balm or water-based lubricant to protect dry, cracked lips.

Managing Oral Infections

Immunocompromised patients are highly susceptible to opportunistic oral infections, particularly fungal and viral in origin.

- **Oral candidiasis (thrush):** appears as white or cream-coloured removable plaques on the mucosa or tongue. Treat with antifungal therapy (e.g., nystatin oral suspension or fluconazole). Assess and treat dentures concurrently to prevent reinfection.
- **Herpes simplex reactivation:** may present as perioral or intraoral ulcerations. Coordinate with the oncologist regarding antiviral prophylaxis or treatment.
- A sudden increase in pain should always prompt evaluation for infection.

Emergency Dental Treatment During Chemotherapy

Elective dental care should be deferred until the patient is between chemotherapy cycles and blood counts have recovered. When emergency treatment is unavoidable:

- Obtain current complete blood count (CBC) from the oncologist or haematology team before proceeding.
- Consult with the oncologist regarding the safety of any planned intervention.
- Avoid invasive procedures when absolute neutrophil count (ANC) is below 1,000/mm³ or platelet count is below 50,000/mm³ (thresholds may vary by institution and patient depending on oncologist and diagnosis).
- Use antibiotic prophylaxis as directed by the oncologist for any procedure with a risk of bacteraemia or when neutrophil count is below 2,000/mm³
- Plan appointments around the nadir period, typically 7 to 14 days post-chemotherapy, when myelosuppression is most profound.

Clinical Note: When in doubt, contact the oncology team. A phone call before proceeding can prevent a serious complication.

SECTION 3 — POST-CHEMOTHERAPY

Long-Term Dental Management and Oral Health Maintenance

Once chemotherapy is complete and the patient's haematologic parameters have normalized, the patient is ready to return to clinic as any other patient. Some oral effects of chemotherapy resolve within weeks of treatment ending, while others, particularly xerostomia-related sequelae, may persist or become permanent.

Ongoing Caries Prevention

Patients who experienced xerostomia during chemotherapy have a significantly elevated lifetime caries risk, even after salivary function improves. Aggressive preventive protocols are warranted.

- Prescribe high-concentration fluoride toothpaste (5,000 ppm) or custom fluoride trays with neutral-pH fluoride gel for daily home use.
- Apply in-office fluoride varnish at every recall appointment.
- Reinforce strict dietary counselling, particularly limiting fermentable carbohydrates and acidic beverages.
- Recommend Xylitol-containing products to help reduce Streptococcus mutans levels and stimulate salivary flow.
- Increase recall frequency to every three to four months until caries risk stabilizes.
- Reassess even years later. Patients may become high caries overtime or remain low caries and only need regular recall visits.

Continuing Management of Xerostomia

Salivary gland function may recover partially or fully after chemotherapy ends, but for some patients, chronic dry mouth persists. Long-term management includes:

- Continue saliva substitutes, oral moisturizing gels, and Xylitol products as needed.
- Reinforce daily fluoride use, which must be continued indefinitely in patients with chronic xerostomia.

Resuming Routine Dental Care

Once blood counts have normalized, all indicated dental treatment can be completed.

- Prioritize treatment of any caries or periodontal disease that developed or progressed during chemotherapy.
- Schedule patient for regular hygiene recall at new or routine hygiene intervals.
- Confirm medical clearance from the oncologist before performing invasive procedures, particularly in patients who received agents associated with prolonged immunosuppression or myelotoxicity.
- Re-evaluate denture fit and consider new impressions if significant tissue changes occurred during treatment.

Patient Oral Hygiene Reinforcement

Many patients experience a lapse in oral hygiene compliance during active treatment due to fatigue, pain, and nausea. The post-treatment appointment is an opportunity to reset and reinforce good habits.

- Review and reinforce a comprehensive twice-daily oral hygiene routine: brushing, interdental cleaning, and tongue cleaning.
- Reinforce the importance of daily fluoride application.
- Encourage the patient to maintain a journal of any ongoing oral symptoms to facilitate communication at future appointments.
- Emphasize that excellent long-term oral health supports overall health and quality of life following cancer treatment.

Long-Term Recall: Patients who have undergone chemotherapy should be maintained on a three- to four-month recall schedule indefinitely, or until risk assessment supports extending the interval. Coordination with the oncology team should continue for any patient on maintenance therapy.