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How to Improve Quality of Life in Oncologic Patients

Management of Oral Mucositis:

A Dental view

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Oral Mucositis

Common complication of cancer therapy

Most troubling side effect

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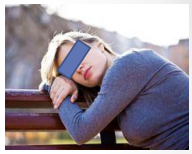
Goal of Dental Clinician

- ***Minimize*** both "during" and "post-radiation" morbidities associated with ***oral function*** that affect the patient's quality of life



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Pre-treatment Oral Care

- **Provides an opportunity for patient education about oral hygiene during cancer therapy**
- **Maintain or Improves oral health**
- **Pre-treatment oral care achieves the following:**
  - Reduces the risk and severity of oral complications
  - the patient successfully complete cancer treatment as planned

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Patient Education

- Patients should be informed about:
  - Risk for developing oral mucositis
  - Potential signs and symptoms
  - Patients should alert their provider at the earliest onset of oral discomfort
- Patients should also be **educated** about the importance of maintaining good oral hygiene throughout the course of their cancer therapy

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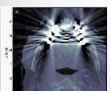
Dentist Role in SAFE Radiotherapy

- Custom-made, intraoral devices to provide shielding of tissues within the treatment area

- Stents to exclude the palate mucosa during treatment of the tongue or floor of the mouth



- Packing gauze between metallic dental restorations and mucosa of the lateral tongue and buccal area appears to be very beneficial in minimizing the dose from scattered radiation

Irradiation of existing implants

- Results in backscatter.
- Dose is increased about 15% at 1mm from the implant
- It is recommended that all abutments and superstructures be removed prior to radiation.

Skin/mucosa closed over implant till healing is complete

Clinical management of oral mucositis

1. ***Basic oral care***
2. ***Nutritional support***
3. ***Oral decontamination***
4. ***Palliation of dry mouth***
5. ***Pain control***
6. ***Management of oral bleeding***
7. ***Therapeutic interventions***

MUCOSITIS PRACTICE GUIDELINES

- The Mucositis Study Group of the Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology (MASCC/ISOO)

"Recommendation"
"Suggestion"
"No guideline possible"
"Against"

Recent updated "2014"

Basic oral care

- Evidence was not strong enough to support a recommendation
- A suggestion in favor of using oral care protocols for the **PREVENTION** of ***oral mucositis across all cancer treatment modalities***

GOOD oral hygiene control is the mainstay of treatment

Patients are encouraged to clean their mouth every 4 hours and at bedtime

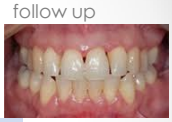
Basic oral care

Dental assessment

during treatment

follow up

pre-treatment



Successful

Failure

Basic oral care

- Protocols : a combination of tooth-brushing, flossing, and mouth rinses to maintain oral hygiene

- ***Ultrasoft toothbrush***
- ***Bland rinses***
- ***Promote mucosal moisturization and protection***
- ***Check for Bacterial, fungal and viral infection***

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Mouthrinses

Recommendation

- Saline
- Sodium bicarbonate
- Mixed medication mouthwashes
- Calcium phosphate
- Chlorhexidine in patients receiving chemotherapy

Against

Chlorhexidine mouthwash in H&NRT.

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Nutritional Support

- A soft diet or liquid diet was more easily tolerated than a normal diet when oral mucositis is present
- Gastrostomy tube is more beneficial, when there is severe mucositis

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SELECTIVE ORAL DECONTAMINATION

- Microbial colonization exacerbates the severity of oral mucositis
- Oral cavity contains a high amount of Gram-negative bacilli and considering its etiological role in mucositis
- **Lozenges** composed of polymyxin E, tobramycin, and amphotericin B is effective in mucositis prevention in patients with H&N RT
- Addition of ciprofloxacin or ampicillin with clotrimazole to Sucralfate has shown reduction in mucositis

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Palliation of Dry Mouth

- Transient or permanent xerostomia and hyposalivation
- Hyposalivation :
  - aggravate inflamed tissues
  - Increase risk for local infection
  - make mastication difficult
  - thickening of salivary secretions, because of a decrease in the serous component of saliva

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- The following measures can be taken for palliation of a dry mouth:
  - Plenty of Water consumption
  - Sip water as needed to alleviate mouth dryness
  - Artificial saliva
  - Rinse with a solution of half a teaspoon of baking soda half in one cup warm water several times a day to clean and lubricate the oral tissues and to buffer the oral environment
  - Chew sugarless gum or sugar free lemon drops
  - Oral lubrication : Water-soluble jellies can be used to lubricate the mouth
  - Use cholinergic agents as necessary

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Before radiation

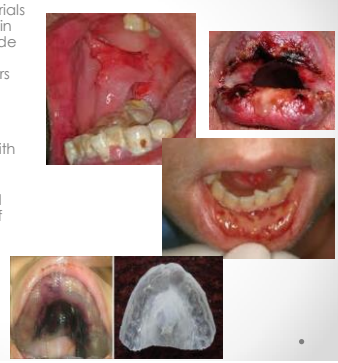
1 year after radiation

Pain control

- *Short-term relief*
  - Topical anesthetic mouthrinse such as "Magic moutwash" 2% viscous lidocaine mixed with equal volumes of diphenhydramine and a soothing covering agent in equal volumes for rinsing
  - Saline mouth rinses
  - Ice chips
- Coating agents
  - Sucralfate: commonly used , no significant decrease in the pain control
  - Topical agents, most patients with severe mucositis require systemic analgesics, often including opioids, for satisfactory pain relief
- Use of narcotic drug:
  - Transdermal fentanyl
  - Morphine mouth rinse
  - Doxepin mouth rinse

Control of Oral Bleeding

- Commonly available materials in the dental clinic to assist in stopping of bleeding episode include pressure pack, ice application, vasoconstrictors and suturing
- The stent was fabricated with a thermoplastic silicone rubber under vacuum
- The hemostatic agent used was one 500 mg capsule of tranxemic acid that was crushed and applied as a paste every 6 hourly



Therapeutic Interventions

1. Growth factors and cytokines
2. Anti-inflammatory agents
3. Antimicrobials, coating agents, anesthetics, and analgesics
4. Laser and other light therapy
5. Natural and miscellaneous agents

GROWTH FACTORS

- Rationale: various growth factors that enhance epithelial cell proliferation differentiation, and migration
- IV rhuman KGF-1, **Palifermin** reduced incidence of grades 3 and 4 oral mucositis in patients with hematologic malignancies receiving high-dose chemotherapy and total body irradiation before autologous hematopoietic cell transplantation
- One recent study found no significant difference in survival between subjects with colorectal cancer receiving Palifermin or placebo at a median follow-up duration of 14.5 months
- Further ongoing studies to confirm the safety of epithelial growth factors in the solid tumor setting, including patients receiving radiation therapy for H&N cancer

CYTOKINES

- Preclinical models demonstrate that IL-1, IL-2, EGF, IL-11, and TGF-β have direct effect on intestinal or oral mucosa.
- IL-1 increases thymidine labeling, and protects oral and intestinal mucosa
- when given to mice before radiation IL-11 can *decrease mucositis*, when given to hamster models

Anti-inflammatory agents

- Benzydamine hydrochloride is a non-steroidal anti-inflammatory drug
- Inhibit the production of pro-inflammatory cytokines such as tumor necrosis factor-α and interleukin-1β
- Recommendation
  - ***PREVENT oral mucositis*** in patients with H&N cancer who were receiving moderate-dose RT up to 50 grays in patients *not receiving concomitant chemotherapy*

Anti-inflammatory agents

- **RK- 0202**
  - Antioxidant, *N-acetylcysteine*
  - Topical application in the oral cavity
  - A placebo-controlled phase II trial in patients with H&N cancer significantly *reduced the incidence of severe oral mucositis* up to doses of 50-Gy radiation therapy
- **β- carotene**
  - a scavenger of singlet oxygen
  - supplemental dietary β-carotene lead to a mild decrease in the severity of chemotherapy and radiotherapy-induced oral mucositis

Anti-inflammatory agents

- **Saforis** Oral suspension of L-glutamine
  - Enhances the uptake of this amino acid into epithelial cells
  - Reducing the production of pro-inflammatory cytokines and cytokine-related apoptosis
  - Promote healing
  - Reduce the incidence of chemotherapy-induced oral mucositis
  - MASCC/ISOO guidelines recommend that systemically administered glutamine ***NOT be used for the prevention of GI mucositis*** because of lack of efficacy
- **Amifostine**
  - Recommended for the **prevention** of esophagitis in patients receiving chemo-radiation for non small-cell lung cancer

New approach in management

Laser therapy

- *Cochrane review*
- *assess the* ***effectiveness of interventions for treating*** *oral mucositis in patients receiving radiotherapy*
- *Only low-level laser treatment was found to be effective in reducing the severity of mucositis*

Low -Level Laser Therapy

- Reducing the symptoms related to oral mucositis
- LLLT may reduce levels of ROS and/or pro-inflammatory cytokines that contribute to the pathogenesis of mucositis
- Guidelines ***suggest*** the use of LLLT for reducing the severity of chemotherapy and radiotherapy-induced oral mucositis

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MASCC/ISOO for Low -Level Laser Therapy

- Recommendation in favor of LLLT for the prevention of oral mucositis in patients receiving high-dose chemotherapy for HSCT w or w/o total body irradiation
- Suggestion for LLLT in the prevention of oral mucositis in patients receiving H&NRT w/o concomitant chemotherapy
- (based on 24 studies)

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Pilocarpine

- Pilocarpine is a cholinergic agonist that stimulates salivary secretion
- The present systematic review supported 2 new suggestions **against**
  - the use of systemic pilocarpine specifically for the prevention of oral mucositis: during H&NRT
  - patients receiving high-dose chemotherapy, with or without total body irradiation, before HSCT
- Pilocarpine can be beneficial to increase salivary flow, particularly in patients treated with H&NRT who are experiencing hyposalivation

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Natural and miscellaneous agents

- Zinc is an essential trace element
  - required for some tissue repair processes
  - antioxidant effect
- Zinc supplementation in patients receiving H&NRT, was found a positive effect (50 mg tid during radiation period)
- A new suggestion was developed in favor of zinc in patients with oral cancer undergoing RT or chemo-radiation

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Natural and miscellaneous agents

- MASCC/ISOO --NOT recommend:
  No guideline was possible
  - Glutamine
  - Antioxidants vitamin A and E
  - Honey
  - Aloe vera, chamomile, Kamillosan, Chinese herbals, indigowood root, manuka and kanuka oils, oral gel wafers, Rhodiola algida, traumeel S, Wobe-Mugos

MASCC &ISOO Guideline 2014

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New products

Barrier protection

- agents such as concentrated oral gel products (Gelclair)

Neutrasal

FDA-cleared calcium phosphate mouth rinse shown to prevent and reduce the severity of oral mucositis caused by radiation and high-dose chemotherapy

In a trial, 56% of the radiotherapy patients reported no mucositis

Caphasol

a mouthrinse which shown to prevent & treat oral mucositis caused by RT and high-dose CT

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New products

- **MuGard**
- FDA-cleared mucoadhesive oral protectant, form a protective hydrogel coating
- Efficacy for the prevention or treatment of mucositis (43%)

- **Episil**
- oral liquid for the management and relief of pain by creating a lipid membrane that mechanically bonds to the oral cavity mucosa to ***coat and soothe*** inflammation and ulcerations, and **blanket painful lesions**


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TEAM


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Forgotten !!!
• Most patients tend to be more careful about their dental hygiene at the beginning of and during their therapy
• Their dental regimen ***slips over time*** as follow-ups become fewer and as fewer people press them to keep up the dental care
• ***Fluoride*** tray alone cannot work the magic
• The MAGIC is "a continuous practice of good oral hygiene"


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Thank you for your Kind Attention