ORAL CANCER PRE AND POST OPERATIVE MANAGEMENT OF COMPLICATING ORAL MUCOSITIS

Dr. R.C.Kakkar, Dr. Annil Dhingra

India has the highest rate of oral cancer in the worldthere is 60% increase in last three decades.India reports 92,000 new cancer cases every year.80% of these are in the last stages (stage iii and iv).

Of all cancers, oral cancer constitutes 12% in men and 8 %in women. SIX person die every day from cancer.Survival rate at advanced stage is 5 years ,i.e.,30%.Prevalence of oral cancer is common below 40 years of age.50%of patients diagnosed with oral can¬cer die within 5 years.If detected early ,90%of case are curable.

Oral cancer has highest mortality rate as compared to other malignancies.It is the 6th most common malignancy worldwide-Oral cancer is curable if diagnosis, detec¬tion,and treatment are carried out early.

Early stage of oral cancer patients have 75% survival rate.Computer- assisted oral Brush Biopsy helps in evaluation of oral spots.Early Screening, Diagnosis and Treatment Planning will save lives.

Oral health professionals have key role in diagnosis and management of oral cancer therapy and can be involved in multidisciplinarymanagement with oral cancers. Most people have heard of cancer affecting parts of the body such as the lungs or breast. However, cancer can occur in the mouth, where the disease can affect the lips, tongue, and throat.

TABLE 1: Effects of radiation therapy

Mucositis	Epithelial atrophy
Altered saliva	Mucosa Telangiectasis
Increased risk for fungi	Xerostomia
Altered taste	Increased risk for fungi
Trismus	Delayed healing
	Decreased bone remodeling
	Increased risk for *ORN
	Decreased pulpal response
	Inability to wear dental prosthesis

[*ORN= Osteoradionecrosis]

WHAT CAN CAUSE MOUTH CANCER?

Most cases of oral cancer (mouth cancer) are linked to tobacco and alcohol. Cigarette, cigar and pipe smoking are the main forms of tobacco use .However, the traditional ethnic habits of chewing tobacco, betel quid, gutkha and paan are particularly dangerous.Alcohol increases the risk of mouth cancer, and if tobacco and alcohol are consumed together the risk is even greater. Over-exposure to sunlight can also increase the risk of cancer of the lips.Many recent reports have linked mouth cancer to the human papillomavirus (HPV). HPV is the major cause of cervical cancer and affects the skin that lines the moist areas of the body.

HPV can be spread through oral sex, and research now suggests that it could soon rival smoking and drinking as one of the main causes of mouth cancer.Practicing safe sex and limiting the number of partners you have may help reduce your chances of contracting HPV.

ORAL CANCER: CURRENT ROLE OF RADIOTHERAPY AND CHEMOTHERAPY

The term oral cavity cancer constitutes cancers of the mucosal surfaces of the lips, floor of mouth, oral tongue, buccal mucosa, lower and upper gingiva, hard palate and retromolar trigone. Treatment approaches for cases include single management with surgery, radiotherapy [external beam radiotherapy (EBRT) and/or brachytherapy], as well as adjuvant systemic therapy (chemotherapy and/or target agents); various combinations of these modalities may also be used depending on the disease presentation and pathological findings. The selection of sole or combined modality is based on various considerations that include disease control probability, the anticipated functional and cosmetic outcomes, tumor resectability, patient general condition, and availability of resources and expertise. For resectable the mainstay of treatment is surgery, though same practitionersmay advocate for the use of radiotherapy alone in selected "early" disease presentations or combined with chemotherapy in more locally advanced stage disease. In general, the latter is more commonly reserved for cases where surgery may be problematic. Thus, primary radiotherapy ± chemotherapy is usually reserved for patients unable to tolerate or who are otherwise unsuited for surgery. On the other hand, brachytherapy may be considered as a sole modality for early small primary tumor. It also has a role as an adjuvant to surgery in the setting of inadequate pathologically assessed resection margins, as does postoperative external beam radiotherapy ± chemotherapy, which is usually reserved for those with unfavorable pathological features. Brachytherapy can also be especially useful in the re-irradiation setting for persistent or recurrent disease or for a second primary arising within a previous radiation field. Biological agents targeting the epithelial growth factor receptor (EGFR) have emerged as a potential modality in combination with radiotherapy or chemoradiotherpy and are currently under evaluation in clinical trials.

TREATMENT FOR ORAL CANCER

There are three main methods for treating oral cancer; surgery, radiotherapy and chemotherapy either used alone or in com-

bination, depending on the type of cancer, location, extent of spread, patient's age and general state of health.

Surgery is the usual treatment of choice for head and neck cancers. This involves the local excision of the malignant tumor with a clear oncologic margin, usually at least 2cm, plus the selective dissection of cervical lymph nodes in the neck, immediate reconstruction to replace excised tissue is commonly performed at the time of primary surgery. A side effect of surgery includes aesthetic and functional tissue loss requiring post-surgicalrehabilitation.

Radiotherapy treatment includes high-energy radiation which is used to destroy cancer cells and to stop them from multiplying. The treatment is delivered by an external beam or occasionally by implanting radio isotopes directly in the cancer area. Radiation therapy may result in both acute and long-term consequences to the oral mucosa, salivary glands, teeth and bone. Short and long term side effects of radiotherapy are listed in **Table 1.**

Chemotherapy is the use of cytotoxic drugs that are administered orally or intravenously to selectively destroy cancer cells. Chemotherapy is usually not used alone to treat oral cancers but as an adjunct to surgery or radiotherapy or both. Side effects of Chemotherapy vary from patient to patient but can include tiredness, nausea, vomiting, diarrhea and constipation, hair loss, gastrointestinal mucositis as well as increase susceptibility to infections. Existing dental problems can result in serious complications that may be prevented by dental intervention prior to cancer therapy. It is important that every patient who is having treatment for oral cancer undergo a pre-cancer therapy dental examination before initiation of cancer treatment.

Following referral from the patients' oncologist, a thorough medical history, extra and intra-oral soft tissue exam, periodontal probing, caries evaluation, and full mouth radiographic assessment should be done. Outlined in **Table 2** is a list of strategies that are recommended for pre-cancer therapy dental evaluation.

It is critically important that particular attention is paid to patients who display poor oral hygiene and poor compliance with prior dental recommendations. Generally if the patient's interest in oral health care is low then it will become even less of a priority for them as they cope with the challenges of their cancer treatment. Full mouth scale as well as a prophylaxis to reduce the bacterial load is recommended. It is essential that patients continue their oral hygiene regime prior to commencing cancer therapy. Self-care procedures should include frequent tooth brushing with a soft toothbrush and fluoride toothpaste to help prevent plaque accumulation and demineralization of tooth enamel. Oral health education and instruction is necessary and may include tooth brushing instruction, interproximal cleaning aids, diet counseling, motivation, smoking and alcohol cessation.

The dentist needs to identify which teeth may need to be extracted before radiation therapy to minimize possible complications of osteoradionecrosis. Teeth that exhibit advanced caries, partial impaction, have periapical pathology, or advanced periodontal disease, including molar teeth with furcation involvement, should be extracted if in the field of radiation. **(Table 3).** Dental treatment for cancer patients must be prioritized as oncologic treatment must not be delayed.

TABLE 2: Strategies for pre-cancer therapy dental evaluation

Psychosocial issues OPG radiograph
Extra and intraoral soft tissue exam Periodontal evaluation
Carious lesions and faulty restorations to be restored
Oral hygiene and dental compliance
Custom-fitted fluoride trays
Cariogenic diet and medication analysis
Tobacco and alcohol cessation

TABLE 3: Criteria for pre-radiotherapy extractions

Caries (non-restorable)
Periodontal disease
Lack of opposing teeth
Partial impaction Extensive periapical lesions
Priority to extract mandibular teeth is higher than maxillary teeth as osteoradionecrosis of the maxilla is rare compared to the mandible.

TABLE 4: Peri-operative management during cancer therapy

Palliative treatment
Xerostomia
Mucositis
Mouthrinses (alcohol free) for hygiene, lubrication or pain management
Prescribe anti-fungal medication, antibiotics, and/or oral analgesics
Maintenance of good oral hygiene and diet counseling Emphasis on meticulous oral hygiene Lip moisturizer
Passive jaw-opening exercises to reduce trismus

PRE CANCER THERAPY DENTAL MANAGEMENT

Generally this phase is best performed by oral health practitioners working as part of the Head and Neck Cancer team. If performed by the private practitioner then they should seek advice from experienced dentists working in the field before embarking on therapy. In particular the main risk is that there may be undue emphasis on the dental aspects which is not associated with the overall patients' head and neck cancer management.

During cancer therapy the patient will require regular monitoring and support in an effort to decrease the severity of their side effects. Oral complicationsmanagement.

The most common symptoms that occur during this stage of radiation treatment are oral discomfort and pain secondary to oral mucositis. Consistent oral cleansing to reduce microbial burden, replacing moisture and the use of topical antiseptics, antimicrobial and anti-inflammatory agents is usually recommended **(Table 4)**.

Mucositis is a side effect of radiotherapy and/or chemotherapy. It appears as ulceration of the mucosal surfaces of the oral cavity and can lead to significant problems with eating, drinking and compliance with medication. In addition, patients who go through cancer treatment and who develop mucositis have an increased risk of developing systemic infection, as a consequence cancer therapy modification or cessation may be necessary and may compromise the outcome of their cancer management Supportive oral health care to alleviate the discomfort of mucositis can include the use of mouthwashes and topical anesthetic agents. Non-alcohol mouthrinse containing chiorhexidine gluconate, which has antibacterial and antifungal properties in addition to anti-plaque effect, can be used to help reduce the oral flora populations which may in turn decrease severity of oral mucositis, if chiorhexidine is used it is important to note that it should be used at least 30 minutes before or after the use of any other topical agents with which it may bind, rendering chiorhexidine and any other agent ineffective, in addition the use of topical anesthetics such as 2% lidocaine can help alleviate pain and discomfort.

Xerostomia is apparent during this period of the cancer treatment, especially in radiotherapy/chemotherapy.

Patients who experience a dry mouth

during treatment commonly suffer from this symptom long term. Thus, preventive measures may have to be intensified and continued throughout life. Simple fluids such as water and non-cariogenic liquids can be used to keep the oral cavity moist and lubricated. In addition, several products are commercially available such as saliva substitutes, which help replicate saliva's natural enzymes and lubricate the mouth.

As a result of the oral side effects, loss of appetite, dehydration and subsequent weight loss can occur. Offering supportive dietary counseling and alternatives such as enriched dietary supplements are useful.

Following cancer therapy, oral complications may improve but they often linger for months or years. Once the acute side effects have resolved, a strict dental hygiene care plan and preventive program including fluoride treatments must be instituted. Frequent dental maintenance appointments, approximately every three months may be recommended.

At each recall appointment all areas of the oral cavity should be inspected. In the presence of abnormal pain signs or symptoms then the possibility of recurrence must be considered and excluded by investigation before routine dental treatment continues.

ORAL HYGINE ASSESMENT AND CARE PLAN

- Full mouth periodontal examination
- Review plaque control and motivation
- Scaling and root debridement
- Review home fluoride use
- Administer topical application
- Review xerostomia
- Assess dietary practices
- Additional hygiene appointments

There is considerable evidence to support that in caries active patients it is crucial to increase the use of fluoride. This can be achieved by recommending high concentration toothpaste i.e. 5000ppm, fluoride mouthwashes, professionally applied topical fluoride applications or a combination of these methods. It is important to take into consideration that the vehicle of fluoride is not crucial, it is the fact that the patient accepts the mode of treatment and complies with the advice given.

RADIATION THERAPY FOR ORAL CANCER

Radiation therapy uses targeted energy (e.g., X-rays, radioactive substances) to destroy cancer cells, shrink tumors, and/or alleviate certain cancer-related symptoms. It may be used:

- As a primary treatment to destroy cancer cells
- In combination with other treatments to stop the growth of cancer cells
- Before another treatment to shrink a tumor
- After another treatment to stop the growth of any remaining cancer cells
- To relieve symptoms of advanced cancer

At Cancer Treatment Centers of America® (CTCA), our radiation oncologists are experienced in using advanced technologies to deliver targeted radiation therapy while also proactively managing side effects.

Types of radiation

Some radiation therapy delivery methods include:

- External beam radiation therapy - radiation is directed from a machine outside the body onto cancerous ceils within the body. (Examples: 3D conformal radiation therapy, IMRT, IGRT,TomoTherapy, stereotactic radiosurgery)
- Internal radiation therapy - radioactive material is placed (via a catheter or other carrier) directly into or near a tumor. (Example: high-dose rate brachytherapy)
- Systemic radiation therapy - a radioactive substance (that is swallowed or injected) travels through the blood to locate and destroy cancerous cells. (Example: radioactive iodine therapy)

Individualized treatment approach

Radiation therapy is an important part of treatment for many of our patients. Since each cancer type requires a different approach, your treatment plan will be based on your unique needs and treatment goals.

Radiation oncologists use advanced imaging techniques before and during radiation treatment to closely track the tumor. They use highly targeted radiation technologies to deliver maximum radiation doses to tumors, with less impact on healthy tissues and organs. Thereby, it can often provide options to patients who have reached their maximum tolerated dosage of traditional radiation.

Depending on individual needs,patient receive radiation therapy alone or in combination with other treatment modalities like surgery, chemotherapy, hormone therapy and/or immunotherapy. Throughout the treatment, radiation oncologist monitor the effectiveness of the radiation therapy and modify the treatment plan accordingly.

MANAGING RADIATION SIDE EFFECTS

Typical radiation therapy can be damaging to the body and cause unpleasant side effects, such as skin changes, fatigue, nausea, and other side effects, depending on the part of the body being treated. During the radiation treatment, clinicians from a variety of integrative oncology services work to reduce side effects and improve the quality of life.

RECOMMENDATIONS FOR PREVENTION AND TREATMENT OF ORAL MUCOSITIS DUE TO RADIOTHERAPY AND CHEMOTHERAPY

1. MOUTH WASHES
Edel mouth wash – benzydimine (4-6 times a day)
2. MOUTH PAINT
Clotrimazole mouth paint (4-6 times a day)
3. Mucaine gel – Anesthetic and pain relief (4-6 times a day)
4. Cryo Therapy – Rapid cooling of maxillary cavity using ice causing vaso constriction and hence reduces amount of drug reaching oral mucosa
5. Allopurinol – mouth washes (4-6 times a day)
6. Antiseptics – Chlorhexidine mouthwash
7. Anti Bacterial- Antifungal and Antiviral Agent
Antibacterial lozenges ++++===
8. Immuno Modulatory agents – G-M-C5F Mouth wash
9. Mucosal barrier and Coating agents
10. Cytoprotectants
11. Analgesics
12. Psyco therapy
13. All oral hygeine protocols to be maintained

CONCLUSIONS

Patients that experience cancer treatment are faced with difficult oral health issues before, during and post cancer therapy. The dental team is required to actively participate in the delivery and maintenance of oral health care. Not only will the dental team help reduce the acute and long term side effects that the patients are exposed to, but they may help to improve the patients quality of life.

Dr. R. C. Kakar, *Senior Consultant, 31, South Patel Nagar, New Delhi;*

Dr. Annil Dhingra, *Professor & HOD, Department of Conservative Dentistry & Endodontics, D.J.College of Dental Sciences & Research, Modinagar (U.P.)*