



Cancer Survivorship Patient Education on Post-Treatment Care

Radiation Fibrosis

What is radiation fibrosis?

- Radiation therapy for head and neck cancer exposes the normal bone and soft tissues of the jaws, face, neck and throat to radiation which can result in tissue damage known as radiation fibrosis
- All of the soft tissues within the field of radiation can be affected, including skin, connective tissue, muscles, nerves and blood vessels
- The signs and symptoms of soft tissue injury resulting from radiation therapy is termed Radiation Fibrosis Syndrome (RFS)

What are the signs and symptoms of RFS?

- Trismus, or restricted mouth opening, may result from radiation treatments to the muscles and connective tissues that permit mouth opening
- Tightness, pain and/or spasms (Cervical dystonia) of the neck can occur following radiation to the neck
- Head and neck lymphedema, or swelling that results from impaired lymphatic fluid drainage, can affect speech and swallowing function, and can also lead to facial swelling and disfigurement
- Dysphagia, or impairments in swallowing function resulting from radiation treatments to the swallowing muscles of the throat
- These signs and symptoms may take months or years to develop, and the signs and symptoms can progressively worsen over time

How common is RFS among head and neck cancer patients?

- Approximately 25% of patients who receive radiation to the jaw muscle region develop trismus that is severe enough to impact normal function
- Radiation therapy to the soft tissues of the neck leads to subcutaneous fibrosis resulting in pain or discomfort that may also be accompanied by limited mobility in about 10% of head and neck cancer patients
- Lymphedema that results in significant functional impairment or deformity occurs in less than 10% of patients treated for head and neck cancer
- Dysphagia is a presenting symptom in approximately 15% of patients with head and neck cancer. The rate of swallowing impairment following radiation treatment varies widely and depends on the dose of radiation delivered to the swallowing muscles and the addition of chemotherapy.
- The likelihood of developing RFS and the severity of RFS increases with higher doses of radiation therapy, and radiation therapy in combination with chemotherapy and /or surgery

How is RFS diagnosed?

- Trismus is diagnosed by measuring the degree of mouth opening in millimeters
- Tightness, pain and neck spasms are patient-reported experiences that can be evaluated by experienced clinicians using established quality of life assessment tools
- The diagnosis of head and neck lymphedema is based on the patient's signs and symptoms and whether the suspected lymphedema is located in the throat (internal) or involves the face and neck (external). Evaluation by a speech and language pathologist or a clinician with special expertise in head and neck cancer may be required.
- Dysphagia resulting from radiation therapy typically requires evaluation by a speech and language pathologist and may require endoscopic and/or radiographic evaluation



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How is RFS treated?

- Trismus is treated by an active regimen of exercise therapy utilizing a variety of commercially available appliances
- Neck tightness, pain and cervical dystonia are treated with physical therapy aimed at improvements in range of motion and decreased pain, nerve-stabilizing medications, and botulinum toxin injections in selected patients
- Head and neck lymphedema is treated with manual lymphatic drainage and, in selected cases, compressive bandaging
- Dysphagia therapy requires referral to a speech and language pathologist who is knowledgeable about the evaluation and management of head and neck cancer patients. Outcomes are generally improved when patients with swallowing problems are engaged in an active dysphagia rehabilitation program

When should I call my doctor?

- Contact your doctor if you notice any changes in mouth opening, pain in the jaw, throat or neck region, stiffness or decreased range of motion of your neck, muscle spasms, unremitting pain, persistent swelling of the face or neck, or changes in speech and swallowing

Where can I learn more about RFS?

<http://www.cancerforward.org/survivor-resources/experts-speak/Michael-D-Stubblefield-MD/radiation-fibrosis-syndrome-what-it-is-and-how-to-treat-it>

<https://www.mskcc.org/cancer-care/patient-education/trismus>

<http://oralcancerfoundation.org/complications/trismus/>

<http://oncologypt.org/consumer-resources/index.cfm> (Radiation Fibrosis Fact Sheet)