

Tonsillar cancer

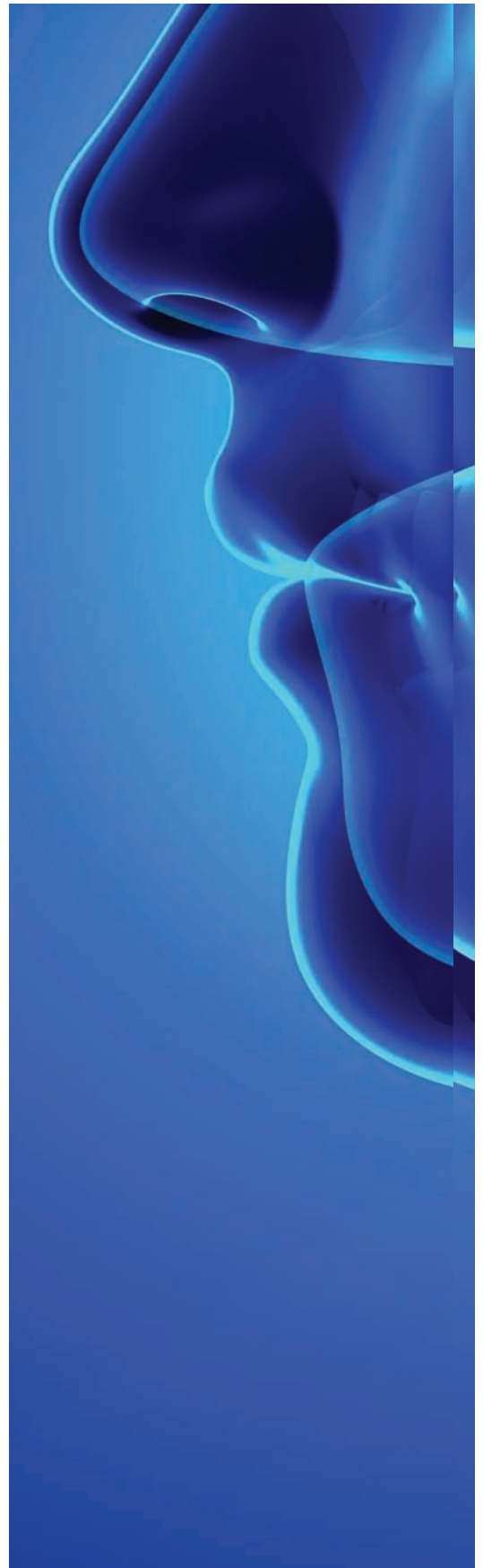
What
nurses
need to
know

By Linda Schiech, MSN, RN, AOCN

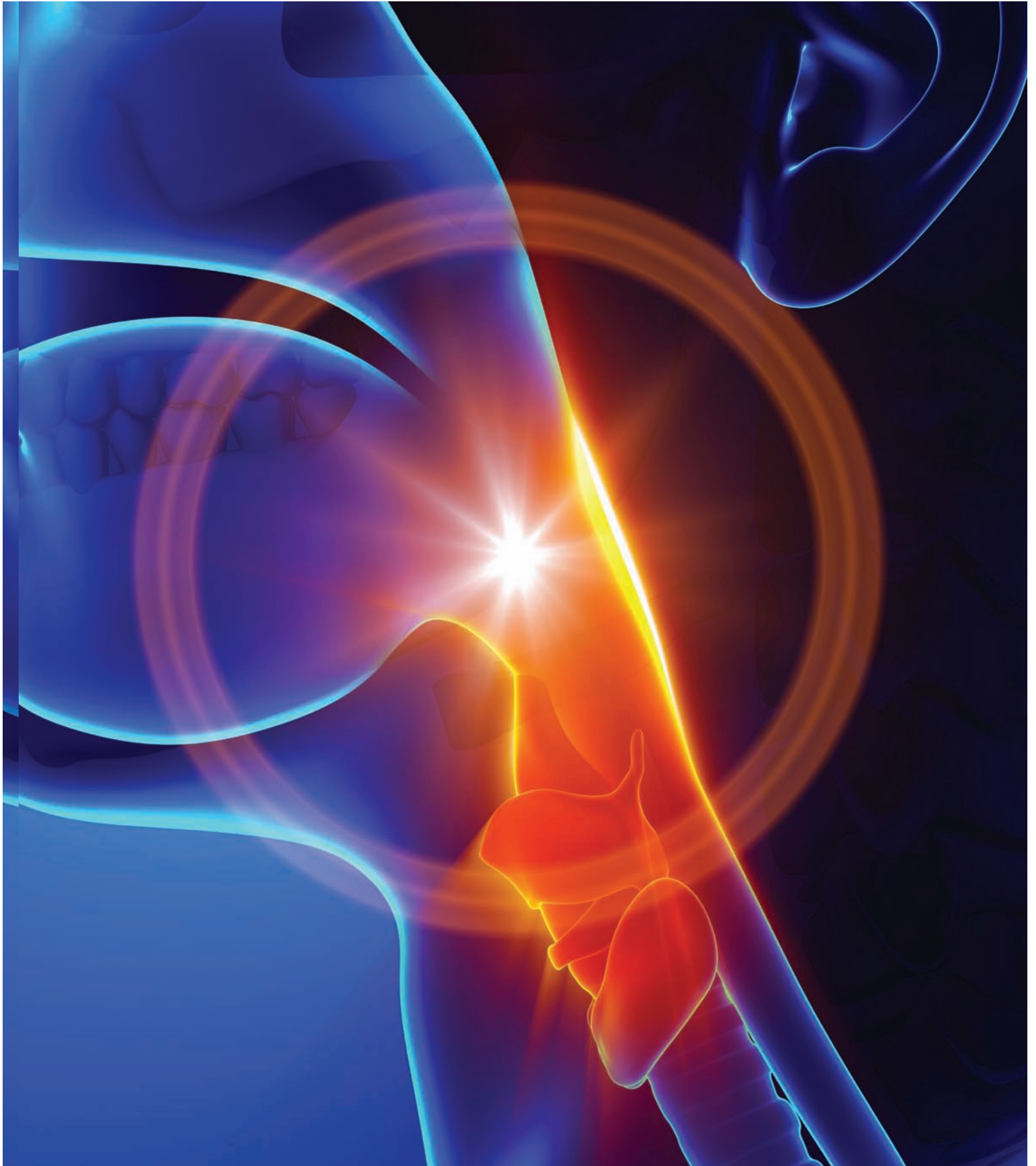
BL, 45, VISITED his healthcare provider with complaints of a persistent “severe sore throat” for about 3 weeks and a feeling that “something was caught” in the back of his throat—a feeling known as a globus sensation. During the physical assessment, the healthcare provider noted some swelling in his left neck and swelling and erythema of his left tonsil. The provider gave BL a prescription for acetaminophen and hydrocodone and referred him to an oral surgeon. A biopsy of BL’s left tonsil revealed squamous cell carcinoma (SCC).

Head and neck cancer comprises 3% to 5% of all cancers.¹ SCC is the most common cancer affecting head and neck structures, including the tonsils.² The American Cancer Society has predicted that 48,330 new cases of cancer of the oral cavity and oropharynx will be diagnosed in 2016. Males are three to five times more likely to get cancer of the oral cavity or oropharynx than females.³

This article discusses the pathology of tonsillar cancer, its diagnosis and treatment, and nursing considerations for patient care.



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Normal anatomy and physiology

The tonsils are part of the oropharynx, which is made up of the soft palate, pharynx, tonsillar fossa, and base of tongue (see *Take a closer look*).⁴ Because this area has no bone, only soft tissue and many lymph nodes draining the area, it offers no real barriers to disease progress and disease may advance rapidly. Consequently, patients may have later-stage disease at the time of diagnosis.

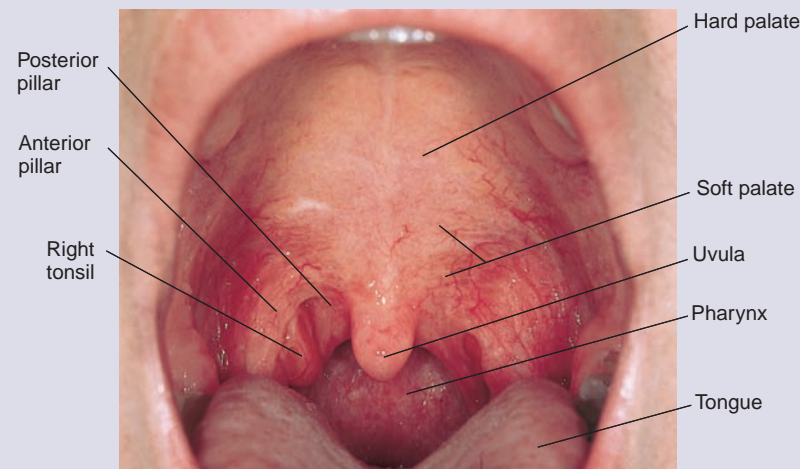
Most oropharyngeal cancers originate in squamous cells lining the oropharynx. Historically, the most common causative factors for SCC of the head and neck are exposure to tobacco and alcohol and, more recently, human papilloma virus (HPV) infection.²

Tobacco and alcohol increase risks

Tobacco in cigarettes, the most common tobacco vehicle, contains nicotine, the addictive substance. Nicotine isn't necessarily carcinogenic, but many other substances in tobacco are clearly implicated in development of cancers in the mouth and throat. In addition, when inhaled as smoke, these substances are absorbed into the bloodstream and carried throughout the body, potentially triggering cancer in the bladder, kidneys, and other organs.

Carcinogens from tobacco products that are held in the oral cavity, such as chewing tobacco or snuff, and even pipes or cigars habitually held in the same area of the mouth, can be

Take a closer look³²



absorbed directly through the skin or moist oral tissues.⁵ Besides cancer, these substances also cause gum disease and bone destruction, leading to tooth loss (see *Tobacco products ramp up the risk*). Refraining from smoking could probably help to reduce the risk but not eliminate it completely.

An estimated 7 out of 10 patients with oral cancer are heavy drinkers of alcohol, according to the American Cancer Society. Using alcohol and tobacco together creates a synergistic effect that greatly increases the risk of head and neck cancer. Some studies suggest that the risk of these cancers in those who smoke and drink heavily is up to 100 times greater than the risk in people who don't smoke or drink.⁶

HPV: Another prime offender

Over the past several decades, tonsillar cancer in people in their 60s and

70s with a history of smoking and drinking has been decreasing. This trend most likely reflects a decrease in smoking in all age groups during those years. However, the rate of tonsillar cancer in younger males (40s or early 50s) with no history of any risk factors related to smoking and drinking has been rising.^{2,4} When tested, these tumors are positive for HPV, indicating that the risk factor for these patients is related to their history of sexual activity, including number of oral, vaginal, and anal sex partners, both heterosexual and homosexual in activity.² HPV harbored in the mouth and oropharynx seems to be the cause of these tumors.

HPV is an oncogenic virus, meaning it's known to cause cancer. About 70% of oropharyngeal cancers are caused by HPV. Although over 150 types of HPV have been identified, types 16 and 18 are most commonly implicated in oropharyngeal cancer.^{6,7}

People with HPV-positive oropharyngeal cancer tend to be younger and less likely to smoke and drink. Research is demonstrating that HPV-positive oropharyngeal tumors respond better to treatment than HPV-negative tumors.⁴

Tobacco products ramp up the risk³³

Causing millions of deaths annually, tobacco-related cancers are a major public health problem. Two agents in tobacco, 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) and N'-nitrosornicotine (NNN), are known to cause mutations in oncogenes and tumor suppression genes. The binding of NNK and NNN to the nicotinic acetylcholine receptor also promotes tumor growth by enhancing and deregulating cell proliferation, survival, migration, and invasion. Thus, NNK and NNN act synergistically to induce cancers in people who use tobacco products.

Some patients have mixed tumors, meaning that the tissue tests positive for HPV, but the patient also has the habits (smoking and drinking) known to cause HPV-negative tumors. These patients may respond to treatment a little better than those with a purely HPV-negative cancer.⁴ All tumors of the head and neck area should be tested for HPV.

In the molecular biology of tonsillar tumors, the p53 tumor suppressor protein can be mutated by factors such as tobacco exposure that tend to be related to poor overall survival. This can allow the tumor to grow unabated. Also, overexpression of the epidermal growth factor receptor (*EGFR*) gene occurs in almost every type of head and neck tumor. When overexpressed, the *EGFR* gene can increase cell growth and decrease apoptosis (programmed cell death), explaining why local recurrence of head and neck cancer is common and overall survival is poor.⁸

Diagnosing tonsillar cancer

The first sign of tonsillar cancer a patient may notice is an enlarged lymph node in the neck that may or may not be painful. Other signs and symptoms include pharyngitis, dysphagia, odynophagia, globus sensation, otalgia, ear pain, and hemoptysis.⁹ These symptoms are most likely related to the size of the primary tumor on the tonsil. Some patients present with asymptomatic unilateral cervical lymphadenopathy.

A computed tomography (CT) scan may reveal tonsillar asymmetry, but a biopsy is required to confirm the diagnosis. Because biopsies of several sites may be required, many surgeons prefer to perform an examination under anesthesia (EUA) using a laryngoscope to view biopsy sites.

Ultrasound is often used to guide the biopsy of lymph nodes in the neck. A positron emission tomography scan is best when used with a CT scan to evaluate lymph node involve-

Staging oropharyngeal cancer^{29,30,31}

The TNM staging system, developed by the American Joint Committee on Cancer and the Union for International Cancer Control, describes the extent of the tumor (T), the extent of spread to lymph nodes (N), and the presence of distant metastasis (M). The following is a summary of categories that apply to staging a primary tumor in the oropharynx. A letter and number are assigned to each area (T, N, M), such as T2 N2b MO.

Tumor (T)	
T1	Primary tumor about 2 cm or less
T2	Primary tumor 2 to 4 cm
T3	Primary tumor larger than 4 cm at its largest dimension or that extends to lingual surface of the epiglottis
T4a	Tumor invading the larynx, extrinsic muscle of tongue, medial pterygoid, hard palate, or mandible
T4b	Tumor invading lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base, or encasing carotid artery
Nodes (N)	
N1	Metastasis in a single ipsilateral lymph node, 3 cm or less
N2	Metastasis in a single lymph node, more than 3 cm to no more than 6 cm, or in multiple ipsilateral lymph nodes, none more than 6 cm, or in bilateral or contralateral lymph nodes, none more than 6 cm
N2 (a)	Metastasis in a single ipsilateral lymph node more than 3 cm, but no more than 6 cm
N2 (b)	Metastasis in multiple ipsilateral lymph nodes, none more than 6 cm
N2 (c)	Metastasis in bilateral or contralateral lymph nodes, none more than 6 cm
N3	Metastasis in a lymph node more than 6 cm at its largest
Distant metastasis (M)	
M 0	No distant metastasis
M 1	Distant metastasis

ment and new disease or metastatic disease. But it can't be used within 4 months of any large insult to the body, such as surgery or radiation, because the affected tissues will appear "active" on the scan during that time period.¹⁰ Some clinicians perform a fine needle biopsy of a very localized, visible, and palpable lymph node.

Many tonsil tumors aren't visible on any scans; in that case, the clinician may perform an EUA as previously mentioned to take multiple biopsy specimens and make a diagnosis.¹¹

The healthcare provider may order either CT or magnetic resonance imaging (MRI) to assist with staging the patient's disease and determine a course of treatment. (See *Staging oropharyngeal cancer*.) Quick and easy, a

CT scan is useful for assessing lymph nodes for necrosis and for identifying extracapsular spread (ECS), or the spread of disease outside the lymph node wall. However, it exposes the patient to radiation and requires contrast for visualization of all areas.¹¹

The MRI is superior to CT for viewing soft tissue and reveals perineural spread of the tumor much better than a CT scan. (Head and neck cancers often spread along nerves.) In some cases, however, performing an MRI isn't practical or possible because of the length of time an MRI may take to perform and patient fears of the scanner, or because the patient has an implanted device, such as a pacemaker, that contraindicates the use of MRI.¹¹

All of these imaging modalities help a clinician determine the stage of the disease at the time of diagnosis and throughout the patient's disease.

Radical tonsillectomy: Mainstay of treatment

Surgery, radiation, chemotherapy, and, more recently, targeted therapies that interfere with specific molecules involved in cancer progression have been used to treat tonsillar cancer over the years. Trends have turned in the past decade or so to a less invasive surgical approach and/or organ preservation using radiation and chemotherapy combined to treat the disease. However, radical tonsillectomy is the mainstay of treatment.^{12,13}

A patient with a T2 or slightly larger tumor with positive lymph nodes will most likely need a radical tonsillectomy that includes portions of the pharyngeal wall and/or soft palate in the surgical resection to ensure that the margins are clear of disease. Surgeons can't get a good view of the surgical site by performing a transoral radical tonsillectomy; even with general anesthesia, the patient's relaxed mouth can't open wide enough for the surgeon to access and view the entire area.

In the past, surgeons performed radical tonsillectomy with a mandibulotomy or lateral pharyngotomy. Both options carry significant risks.¹⁴ For example, a mandibulotomy leaves a visible facial scar and may involve permanent nerve damage. Similarly, a lateral pharyngotomy may damage nerves and major blood vessels in the neck; fistula formation into the oral cavity is another significant risk.¹² Because of these risks and drawbacks, many patients in the past were reluctant to undergo a surgical radical tonsillectomy.

However, transoral robotic surgery (TORS) and transoral laser microsurgery (TLS) are newer techniques that can improve outcomes in early-stage tumors without the morbidity

associated with surgical radical tonsillectomy. Using a robot, surgeons performing TORS use a minimally invasive surgical procedure on hard-to-access areas in the head and neck. TORS also provides a three-dimensional view of the surgical area, much better than provided by a scope.^{13,15} Recent research suggests that TORS alone is highly effective for early-stage tumors.¹³

TLS, a rarely used endoscopic laser procedure, may be used for early-stage disease. TLS causes fewer adverse reactions and preserves better swallowing function compared with a radical tonsillectomy; however, overall outcomes may not be as good.¹⁶

More about TORS

Introducing TORS for radical tonsillectomy has allowed patients to comfortably choose surgery as a treatment for cancer. Not only does the surgeon gain better visibility of the area, which is magnified and three dimensional, but the surgeon can also operate on more extensive disease successfully because he or she can view all the way down to the base of tongue where disease may extend.¹²

Surgeons once performed the procedure in stages: TORS was performed first, followed by neck dissection 1 to 2 weeks later. Staged surgery was thought to reduce the risk of pharyngocutaneous fistula (fistula formation between the pharynx and neck), and also to reduce neck edema that may compromise the airway and lead to tracheostomy.¹² But as TORS is becoming the standard of surgical care for this disease, surgeons have found that they can complete the neck dissection immediately following TORS with minimal complications in most cases. However, patients having a level Ib lymph node dissection, which involves lymph nodes in the submandibular triangle, may have a staged procedure at the surgeon's discretion because these lymph nodes

are right under the ipsilateral mandible and may be too close to the primary surgery site.¹⁷ (See *Lymph nodes of the head and neck*.)

Potential postprocedure complications

The risk of bleeding after a TORS radical tonsillectomy is about 7%.¹² The carotid artery and the internal and external jugular veins are nearby and should be avoided, but the tonsillar branch of the lesser palatine artery and a tonsillar branch of the dorsal lingual artery arteries tend to be right in the operative area. Vessels encountered that are 1 mm or larger should be clipped and divided to prevent bleeding after surgery.¹² Patients generally remain under observation in the hospital for 2 to 3 days until the threat of bleeding is no longer a concern.

Fistula formation is also a possibility. Pharyngocutaneous fistula can occur during surgery, especially when certain level neck dissections are completed at the same time. This is usually corrected with primary closure at the time of surgery. Postoperative fistula formation occurs in 1% to 4% of patients, who may require wound packing and antibiotic coverage.¹²

Another major postoperative problem is pain. The tonsillar area and the pharynx have many nerves by the branches of the trigeminal and glossopharyngeal nerves, making this area particularly sensitive.¹⁸ Patients are constantly producing and swallowing saliva, which can be severely painful. Patients may require enteral nutrition (EN) for several days while the pain continues. Patient-controlled analgesia may also be indicated.

Researchers have tried different surgical methods to reduce post-op pain, such as avoiding the use of electrodissection with an electrocautery. Doing sharp dissection instead, however, takes much longer and causes more bleeding in the area. Some research has shown that nonsteroidal anti-inflammatory drugs (NSAIDs) provide

good pain control with some of these patients, but many surgeons don't want to increase the risk of bleeding, a possible adverse reaction to NSAIDs.¹⁹

Aspiration is another possible complication, especially if the surgeon removed a great deal of pharyngeal tissue.²⁰ With the assistance of speech therapy, patients can compensate for the defect by learning specific techniques; for example, turning their head to the affected side to close off the area that's been left open. If a patient can't swallow liquids well enough to get nourishment, either because of severe pain or because of a surgical defect, the patient may require EN for slightly longer.

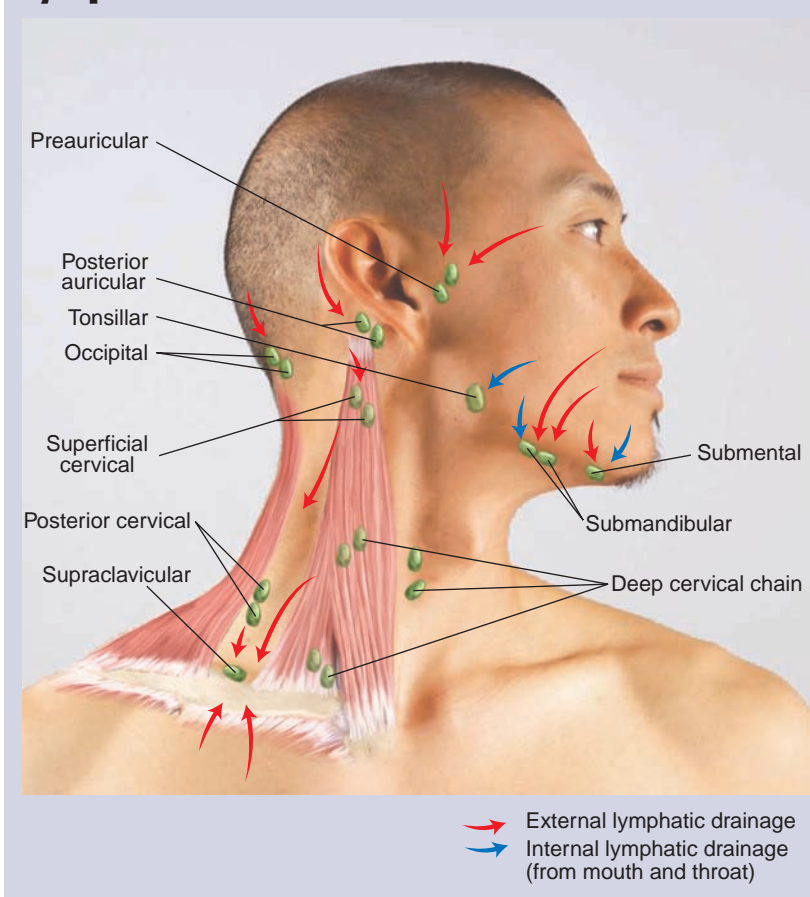
If the defect in the pharynx is large enough and other structures beneath are exposed, surgical reconstruction will need to be considered. The reconstruction can be done during the TORS procedure, but it's a difficult surgery to do robotically and is much more easily undertaken as an open procedure (regular surgery with an incision). Muscle used for reconstruction could be taken from the radial forearm or the anterior lateral thigh.²¹ Recovery takes much longer and patients may have a good deal of dysphagia because of the noninnervated muscle in the area.

Post-op nursing considerations

Monitoring for bleeding is an important element of nursing care after radical tonsillectomy. Keep the head of the bed elevated at least 30 degrees. Maintain NPO status as prescribed or until the patient is evaluated by a speech therapist to ensure the patient can swallow safely.

The patient will probably remain hospitalized for pain management and observation for bleeding for at least 4 days, although some patients require up to 10 days before discharge. To decrease chances of late bleeding, patients are discharged on a full liquid diet with nutritional

Lymph nodes of the head and neck³⁴



supplements providing most of their nourishment.

The nurse must also closely monitor for signs of aspiration when the patient drinks liquids. Make sure suction equipment is immediately available in case of bleeding or aspiration. The code cart or an emergency tracheostomy tray should be easily accessible from the patient's room.

The nurse needs to monitor for signs and symptoms of cutaneous fistula, such as neck incision dehiscence or a change in color or amount of drainage from the neck incision. If a nurse notices any such change, the surgeon must be notified immediately to evaluate and treat the patient. The patient may need more surgery to close the area, and will most likely require antibiotics for any possible infection in that area.

The nurse also needs to initiate interventions to prevent postoperative complications of immobility such as pneumonia and venous thromboembolism. Get the patient out of bed and walking as soon as possible and encourage coughing and deep breathing while monitoring for bleeding with exertion.

The extent of surgery and various patient factors determine recovery time. Pain is usually the symptom that defines how quickly a patient recovers. The nurse should be prepared to provide enough pain medication to relieve pain so the patient can ambulate and begin eating as soon as possible. If a patient can't get adequate nutrition orally due to the pain, he or she will need to have a percutaneous gastrostomy tube for feedings and may need rehabilitation therapy for swallowing.

Radiation therapy: Proven effective

Head and neck cancers respond well to radiation; before the advent of robotic surgery, radiation was often a treatment of choice for early tonsillar cancer.⁴ Along with prostate cancer, head and neck cancer was one of the first cancer types to be treated with intensity-modulated radiation therapy (IMRT). This therapy directs the highest radiation doses directly to the tumor, minimizing the effect of radiation on nearby normal tissues. Although research is ongoing, some studies suggest that IMRT causes fewer adverse reactions than conventional radiation therapy.^{4,22}

Radiation is often used adjuvantly (after surgery) if the patient has positive lymph nodes in the neck. The area of the primary site (tonsil) and

the neck on the side where the positive lymph node was removed will be treated. In addition to number and size of positive lymph nodes, considerations for postoperative radiation are perineural invasion and extracapsular extension (disease outside of the lymph node).²²

Some researchers are investigating lower radiation doses for HPV-positive oropharyngeal tumors. Because these patients are generally younger with a long life expectancy, clinicians will consider using deintensification protocols to limit their radiation exposure. Treatment protocols under investigation include concurrent chemotherapy with radiation therapy, reduced radiation doses, and decreased postoperative doses of radiation or chemotherapy. However, patients with HPV-negative tumors may need intensifying radiation therapy.²²

Adverse reactions to head and neck radiation can be categorized as acute or chronic. Acute reactions include mouth sores, which can extend into the esophagus in some patients causing dysphagia and pain. Patients may require EN to prevent dehydration, malnutrition, and weight loss.²² Some patients experience skin redness, irritation, and burning, requiring skin care with an emollient.

The most common chronic adverse reaction to radiation of the head and neck is xerostomia because radiation can ablate the salivary glands.²² Patients may use various aids such as artificial saliva preparations, but these provide only temporary relief.

Other possible chronic complications include:

- hypothyroidism, which may not develop for several years. This is corrected with oral synthetic thyroid hormone and the patient should be followed by an endocrinologist.
- skin and muscle friability in areas that were radiated; this can directly lead to bleeding in those areas.
- osteoradionecrosis of the mandible, which has occurred in patients who had radiation directly to the mandible.²²

Screening and prevention^{2,35}



A dentist or dental hygienist can perform oral cancer screening during twice-yearly dental exams. The tongue is wrapped in gauze and pulled out and to each side to examine the entire oral cavity, as shown here. A person's primary healthcare provider should also be suspicious if the patient has risk factors and is complaining of signs or symptoms associated with oropharyngeal cancer.

Preventing tonsil cancer starts with eliminating known risk factors such as smoking (or any type of tobacco exposure) and drinking alcohol. Vaccination against HPV is another important prevention strategy.

Past sexual behaviors influence the probability that a patient will develop an HPV-positive head and neck cancer. Educating patients to avoid risky behaviors and to follow safer sex recommendations can help them reduce the risk.

Nursing considerations following radiation therapy

Nursing care of the patient undergoing radiation therapy to the head and neck involves providing skin care and consulting with wound, ostomy, and continence nurses as needed. Closely monitor and document oral intake and daily weights to help determine if the patient requires EN. Educate the patient about possible chronic complications following head and neck radiation and how to monitor for them.

Systemic therapies

Systemic treatments for oropharyngeal cancers include chemotherapy and targeted therapy. Traditional cytotoxic chemotherapy kills rapidly dividing cells. Targeted drug therapy,

also called precision medicine, is designed to target specific molecules involved in an individual tumor's growth and progression. Because targeted therapies are less likely to damage healthy tissue, they may cause fewer adverse reactions.²³

Chemotherapy and targeted drugs are rarely used as first-line monotherapy for tonsillar cancer; however, systemic treatment may be combined with radiation as a primary treatment. Most systemic treatments are administered on an outpatient basis.

Chemotherapy regimens containing *cisplatin*, an alkylating agent, are commonly used with radiation to treat tonsillar cancer.²⁴ Although these regimens can be given in outpatient settings, they require I.V. hydration to prevent cisplatin-related nephrotoxicity. Nurses should monitor blood urea nitrogen, serum uric acid, and creatinine levels, watching for a decrease in creatinine clearance.²⁵

High-dose cisplatin can produce nausea and vomiting; administer short- and long-acting antiemetics as prescribed. High doses of cisplatin can also cause auditory toxicity, so monitor for tinnitus and hearing loss.

Carboplatin may be used in place of cisplatin in patients who may already have compromised renal function.²⁴ Carboplatin is less emetic and nephrotoxic, but it's more likely to cause bone marrow suppression. Monitor patients for anemia, bleeding, infection, thrombocytopenia, neutropenia, and leukopenia.

Regimens containing *cetuximab*, an EGFR-targeting monoclonal antibody, is a targeted therapy that may be combined with radiation to treat tonsillar cancer.⁴ Patients should be premedicated with diphenhydramine, corticosteroids, and a histamine₂ (H₂) blocker such as famotidine or ranitidine before cetuximab administration to prevent infusion reactions. Nurses should monitor patients for infusion reactions, hypotension, respiratory distress, hypomagnesemia, acneiform

rash and skin infections, and dysrhythmias.^{4,26} To manage problems with the skin and fingernails, teach the patient to use emollient creams to maintain moisture—not lotions, which cause more drying because they contain alcohol. Instruct patients to limit sun exposure during therapy and to report any new or worsening respiratory symptoms.

The taxane drugs *paclitaxel* and *docetaxel* are cellular mitotic inhibitors that have been used at times to treat head and neck cancers.²⁴ Because of the risk of severe hypersensitivity reactions including anaphylaxis, patients receiving these drugs are also premedicated with corticosteroids, diphenhydramine, and an H₂ antagonist. Other adverse reactions include nausea, bone marrow suppression, and peripheral neuropathy.²⁷ Teach patients to report any difficulty breathing, infections, or numbness, tingling, or burning in their hands or feet. Either of the taxane drugs can be given along with cisplatin in the treatment regimen.

Nursing considerations for systemic therapies

When caring for a patient receiving chemotherapy or targeted therapy, the nurse needs to be knowledgeable about these medications and have proper certification to administer them safely.²⁸ The nurse must also know the potential adverse reactions associated with each drug and monitor the patient appropriately. Teach patients about possible adverse reactions and what to report to their healthcare provider immediately.

Case study: A good prognosis

BL was diagnosed with a T2 (tumor more than 2 cm but not more than 4 cm in greatest dimension), N2 (metastasis in a single ipsilateral lymph node more than 3 cm but not more than 6 cm in greatest dimension). He underwent a TORS radical tonsillectomy with unilateral left neck dissec-

tion. The biopsy specimen and surgical pathology report identified his cancer as HPV-positive. After the dissection, disease was discovered in only one lymph node, which was 5 cm in size. No perineural invasion was found in the tumor specimen and there was no ECS outside of the lymph node. BL's healthcare provider recommended deintensified postoperative radiation therapy because of his good prognosis.

BL will continue to have follow-up appointments with the oncologist and periodic CT scans to monitor for any local recurrence every 6 months for the first year, with every 3-month clinical examinations. BL will move to exams and CT scans every 6 months for another year or two and then yearly exams unless a change in his condition warrants closer monitoring. ■

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- On the print form, record your answers in the test answer section of the CE enrollment form on page 45. Each question has only one correct answer. You may make copies of these forms.
- Complete the registration information and course evaluation. Mail the completed form and registration fee of \$24.95 to: **Lippincott Williams & Wilkins, CE Group**, 74 Brick Blvd., Bldg. 4, Suite 206, Brick, NJ 08723. We will mail your certificate in 4 to 6 weeks. For faster service, include a fax number and we will fax your certificate within 2 business days of receiving your enrollment form.
- You will receive your CE certificate of earned contact hours and an answer key to review your results.
- Registration deadline is July 31, 2018.

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