

Perspectives

Recovery Strategies from the OR to Home

In This Issue

Ms. Bressler provides a highly informative article on the post-operative care of the laryngectomy patient. The nursing care begins in the outpatient setting where a complete head and neck assessment is performed, as well as a comprehensive review of the patient's past medical and social history. During the post-operative period, nursing interventions focus on airway management, wound care, nutrition supplementation, assisting patients in alternate forms of communications, and discharge planning.

Prostate cancer is the second most common type of cancer. About 179,300 new cases will occur in 1999. Ms. Dowler describes the continuum of care for men undergoing a radical prostatectomy, the treatment of choice for men who have nonmetastatic prostate cancer. Nurses play an integral role in the perioperative period, post-operative recovery, and transition to home care.

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Post-operative Care of the Laryngectomy Patient

By Cheryl Bressler, MSN, RN

Head and neck cancer ranks as the sixth most common form of cancer worldwide.¹ The larynx is the second most common site of cancer in the head and neck region. About 12,300 new cases of laryngeal cancer are diagnosed annually in the United States; one-third will die of this disease.² The incidence of laryngeal cancer is higher in men vs. women (5:1). People in the fifth and sixth decade of life are most often affected.

Excessive tobacco and alcohol use are the primary etiologic factors in the development of laryngeal cancer. A history of laryngeal papillomas and exposure to ionizing radiation, asbestos, wood dust, mustard gas, and petroleum products are less common causes.³

The larynx

Anatomically positioned in the center of the neck between the third and sixth vertebrae, the larynx or voice box is composed of cartilage, ligaments, and muscles that prevent its walls from collapsing during inspiration.⁴

The main functions of the larynx are³:

- respiration
- protection of the lower airway
- fixation of the thorax aided by glottic closure
- phonation



The larynx can be divided into three regions:

1. supraglottic
2. glottic (region of true vocal cords) (Fig. 1)
3. subglottic

For practical purposes, this article only discusses patients who have a total laryngectomy for glottic cancer.

Cancer of the glottic larynx

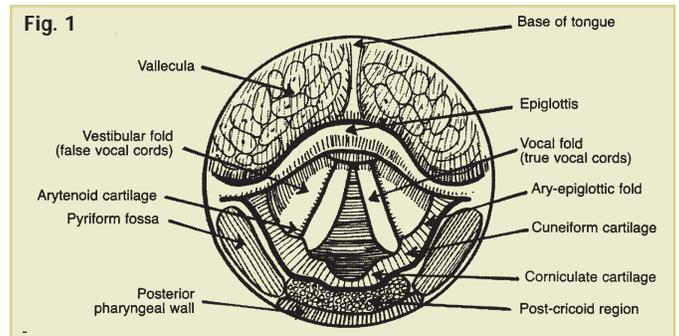
Clinical manifestations

Glottic lesions usually begin on the anterior half of one cord and slowly extend to the anterior commissure, the opposite cord, or posteriorly to the arytenoid of the same cord.

Fixation of one or both cords or nerve involvement is common and indicates more advanced disease.² Hoarseness, caused when a lesion interferes with normal phonatory function of the true vocal cords, is the cardinal symptom of glottic carcinoma.

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Fig. 1



Radical Prostatectomy

by Karen Dowler, RN, BSN, CCRN

Prostate cancer is the most common type of cancer in American men, other than skin cancer. Although men of any age can develop prostate cancer, it is found most often in men over 50 years of age. In fact, 8 of 10 men with prostate cancer are over the age of 65. The American Cancer Society estimates that about 179,300 new cases of prostate cancer will occur in 1999 and about 37,000 men will die of this disease.

Anatomy

The prostate gland is a male sex gland about the size of a walnut. It is located just below the bladder and in front of the rectum. The urethra runs through the prostate. This gland produces a fluid that is part of semen and needs male hormones to function. The major male hormone is testosterone, which is made mainly by the testes. The adrenal glands also produce male hormones.

Cancer that begins in the prostate is called primary prostatic cancer. It may remain in the gland or spread to nearby lymph nodes. Prostate cancer can also spread to the bones, bladder, rectum, and other organs.

Symptoms

Early prostatic cancer is often asymptomatic. When symptoms occur, they include some of the following problems:

- a frequent need to urinate, especially at night
- difficulty starting or holding back urine
- inability to urinate
- painful or burning urination
- painful ejaculation
- blood in urine or semen
- frequent pain or stiffness in the lower back, hips, or upper thighs

Although these symptoms can be caused by other health problems, such as benign prostatic hyperplasia (BPH) or infection, a man who has these symptoms should see his primary-care physician or a urologist.

Diagnosis

If symptoms occur, the physician should obtain a complete medical history and perform a physical examination. The exam

should include:

- **Digital rectal examination (DRE):** During the DRE, the practitioner inserts a gloved, lubricated finger into the rectum and palpates the prostate through the rectal wall to check for hard or lumpy areas. The American Cancer Society recommends that every man of 40 years of age or older have a digital rectal exam as part of an annual health check-up.
- **Blood work:** Laboratory measurements of prostate specific antigen (PSA) and prostatic acid phosphatase (PAP) should be performed. While these measurements may be higher in nonmalignant conditions, these levels will be taken into account in conjunction with other data.
- **Urine evaluation:** The urine needs to be checked for blood or infection.
- **Transurethral ultrasonography:** A ultrasonic probe is inserted into the rectum. Sonic waves are bounced off the prostate, and a computer uses these echoes to create a sonogram.
- **Intravenous pyelogram:** A series of x-rays of urinary tract organs is ordered.
- **Cystoscopy:** A physician looks into the urethra and bladder through a thin lighted tube.

If test results suggest that cancer may be present, the patient will need to have a biopsy. If cancer is present, the pathologist reports the tumor grade. When present, the patient and his physician need to know the stage or extent of cancer. Staging identifies whether the cancer has spread and, if so, what parts of the body are affected. Treatment decisions depend on these findings.

Staging

Stage I(A): Cancer cannot be detected by rectal exam and causes no symptoms. The cancer is usually found during surgery to relieve problems with urination. Stage I tumors may be found in more than one area of the prostate, but there is no spread outside the prostate.

Stage II(B): The tumor is felt during DRE or detected by a blood test, but there

is no evidence that the cancer has spread outside the prostate.

Stage III(C): The cancer has spread outside the prostate to nearby tissues.

Stage IV(D): Cancer cells have spread to lymph nodes or other parts of the body.

Risk factors

The exact cause of prostate cancer remains unknown; however, researchers have found several factors that are consistently associated with an increased risk of developing this disease. They include:

- **Age:** The chance of having prostate cancer increases rapidly after 50 years of age.
- **Race:** Prostate cancer is about twice as common among African-American men as in Caucasian-American men.
- **Nationality:** Prostate cancer is most common in North America and Northwestern Europe. It is less common in Asia, Africa, Central America, and South America.
- **Diet:** Studies suggest that men who eat a high-fat diet have a greater chance of developing prostate cancer. Lycopenes, which are found in fruits and vegetables, seem to lower prostate cancer risk.
- **Physical activity:** Regular exercise and maintaining a healthy weight may help reduce prostate cancer risk.
- **Family history:** Prostate cancer seems to run in some families, suggesting an inherited or genetic factor. DNA research has already isolated genetic involvement.
- **Vasectomy:** Men who have had a vasectomy may have a slightly increased risk of prostate cancer.

Treatment

Decisions about how to treat prostate cancer are complex. The physician develops a treatment plan to fit each patient's needs. Treatment for prostate cancer depends on the stage and grade of the tumor. Other important factors are the man's age, general health, and his feelings about the various treatments and their possible side effects, as they can affect the quality of life. The major treatments are surgery, radiation therapy (internal and/or external), and hormone therapy. Sometimes, patients receive a combination of treatments.

Surgery

Surgery is a common treatment for early stages of prostate cancer. Cryosurgery is a procedure that uses extremely cold liquid

nitrogen to destroy cancer cells. Orchiectomy is the surgical removal of the testicles. Surgery to remove the entire prostate gland and surrounding tissue is called radical prostatectomy.

Radical prostatectomy is performed when there is no evidence of metastases. Two main types of radical prostatectomies are performed: retropubic or perineal approaches. In the retropubic approach, an incision is made in the lower abdomen. With this approach, it is sometimes possible for the surgeon to avoid removing the nerves that control erections and bladder muscles. This lowers but does not eliminate the risk of impotence and incontinence after surgery.

In radical perineal prostatectomy, the incision is made in the skin between the scrotum and anus. Nerve-sparing surgery cannot be done with this approach. Lymph nodes cannot be removed through this incision; however, the surgeon can remove some lymph nodes through a small incision in the abdomen by using a narrow, lighted tube called a laparoscope.

Both surgeries last from 2 to 6 hours. The perineal approach takes less time than the retropubic approach. They are followed by an average hospital stay of 3 days and an average time away from work of 3 to 5 weeks.

Perioperative fluid management must be maintained by the administration of crystalloid and colloid solutions. In most cases, patients can donate their blood prior to surgery to guarantee autologous transfusions. The anesthesiologist monitors the patient's hemodynamic status, responses to fluid losses and administration, ventilatory status, and administration of analgesia.

Complications

Complications after radical prostatectomy include hemorrhage and shock during or after surgery, urinary tract infection, wound infection, urinary obstruction, displacement or accidental catheter removal, urethral stricture, short- and long-term urinary incontinence, impotence, and the usual problems associated with deep anesthesia and highly invasive surgery.

The immediate postoperative period, the first 12 hours after surgery, is the most crucial for the patient. Close observation at this time is important. The patient's physical and psychological functioning must be supported, until the effects of anesthesia have worn off.

Post-operative nursing care

Nursing assessment of the patient's respiratory status begins on admission to the

recovery room and continues throughout the post-operative period. Normal respiratory function depends on the maintenance of an open and clear airway. Causes of a closed airway include:

1. obstruction due to:
 - mucus collection in the throat
 - aspiration of mucus or vomit
 - loss of the swallowing reflex
 - loss of control of the muscles of the neck, jaw, and tongue
2. laryngospasm due to:
 - intubation
 - irritating effects of anesthetics
3. bronchospasm due to:
 - prior respiratory disease
 - inhalation of gastric juices during surgery

Nursing interventions should be aimed at assessing for signs of poor respiratory function: restlessness, tachypnea, tachycardia, cyanosis, snoring, wheezing, or stridor. Interventions to promote adequate respiratory function include positioning, suctioning, use of adjunct airways, and artificial ventilation.

As the patient regains consciousness, the nurse should encourage coughing, deep breathing, and the use of incentive spirometry. The nurse may apply an abdominal binder (Velcro®-type) to encourage a more productive cough.

The surgeon will be most concerned with bleeding, which can be venous or arterial. Hypovolemia is defined as a reduction in intravascular volume relative to that person's normal blood volume. Shock can occur when a person loses about one-third of their normal blood volume. Hemodynamic status needs to be assessed often. Vital signs, urinary output, mentation, the operative site, wound and catheter drainage, serial hematocrit measurements, and hemodynamic monitoring, when indicated, should be measured and assessed. The fluids most often given are colloid and crystalloid infusions.

Indwelling urethral catheters are typically used after all types of prostatectomies. Hematuria is usual for a few post-operative days. Various types of catheter irrigation systems may be used after surgery. A closed system permits constant or intermittent flow of irrigating fluid without the hazard of breaking aseptic technique. It is important to prevent overdistention of the bladder, as it can cause secondary hemorrhage by placing undue strain on freshly coagulated blood vessels.

Observe the patient carefully for local



Fig. 1

systemic indications of infection. After perineal prostatectomy, aseptic technique must be closely maintained because of a high possibility of wound infection, owing to the location of the incision.

Prevent wound trauma after perineal surgery by avoiding enemas, rectal tubes, thermometers, or rectal medications.

The urinary catheter serves not only for urinary drainage but may act as a splint for urethral anastomosis. Therefore, its patency and security need to be maintained. Blocked catheters can lead to infections, bladder distention, and painful bladder spasms. Often, the surgeon places the catheter in traction or a stretched position to control bleeding. A Velcro®-type legband holder helps to hold the Foley catheter in traction.

Although patients are often uncomfortable during the first few days after surgery, their pain can be managed with analgesia. Patient-controlled analgesia and epidural administration of narcotics should be considered for optimal pain relief in the post-operative period. Optimizing pain control will enhance respiratory function, increase the patient's ability to move, facilitate early ambulation, and hasten recovery time.

In most patients, an indwelling catheter is inserted into the bladder after the surgery, while the patient is still asleep. This allows the patient to urinate easily, keeping the operative area free of pressure from a full bladder and allowing the nurse to adequately measure urinary output. The catheter typically stays in place for 10 to 21 days.

Discharge education must include care of the Foley catheter. A Velcro®-type legband holder secures the Foley catheter comfortably and stably with less skin irritation than may be associated with adhesive tape.

Surgery to remove the prostate can cause urinary incontinence secondary to dis-

ruption of the bladder neck musculature during surgery. If nerve-sparing techniques were used, they may prevent permanent injury to the bladder opening. When successful, urinary incontinence will only be temporary. Normal bladder control returns for many patients within several weeks to several months after surgery.

About 10% of men will experience permanent incontinence after prostate surgery. Mild stress incontinence (passing small amounts of urine when coughing, laughing, sneezing, or exercising) may happen in up to 35% of men.

Surgery to remove the prostate can cause impotence (the inability to obtain or sustain an erection). Nerve-sparing techniques may prevent injury to the nerves that control erection. If successful, impotence will be temporary. Currently, there is a 30% to 40% risk of permanent impotence. Even if impotence is temporary, men who have had a prostatectomy no longer produce semen. Should impotence persist, the patient should consult his urologist about alternative therapies, e.g., medications or implants.

Discharge Planning

Although most patients are eager to return home, after prostatectomy, many men have concerns. The diagnosis of cancer and its implications can be devastating. Coping with these problems is often easier when people have helpful information and support services. Families, friends, and support groups may be helpful. People with cancer may worry about their job, caring for their family, and resuming daily activities. Financial concerns can be overwhelming. Social workers, counselors, and members of the clergy may provide support.

It is natural for a man and his partner to be concerned about the effects of prostate cancer and its treatment on their sexual relationship. They may want to talk to their physician about their concerns and options. Infertility may concern the patient and his partner. They may need to discuss their concerns and may eventually need a referral for assisted reproductive services.

Patient education needs to include the use of medications, particularly analgesics.

More than likely, your patient will be discharged with an indwelling catheter, and catheter care must be taught to the patient and/or family. A Velcro®-type legband holder provides catheter stability and freedom of movement during walking. (Fig. 1)

Lastly, encourage your patient to comply with his follow-up regimen. He should see his surgeon two weeks after surgery. Typically, at this time, the catheter will be dis-

continued. PSA levels and physical exams will be closely monitored. These tests usually begin three months after surgery.

Conclusion

Radical prostatectomy is the treatment of choice for men who have nonmetastatic prostate cancer, especially in the early stages or younger, healthy men. This lengthy operation totally excises the gland and surrounding tissue. This surgery can be curative as opposed to palliative, yet it is not without significant side effects. The patient and physician should determine if it is the treatment of choice.

Nurses play an integral role in the perioperative period, post-operative recovery, and transition to home care. It is important for nurses to provide information to their patients but be aware of community resources.

American Cancer Society	1-800-ACS-2345
National Cancer Institute	1-800-4-Cancer
American Foundation for Urologic Disease	1-800-242-2383

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I would like to express my thanks to Steve Tannenbaum, MD, Dept. of Urology, New England Medical Center, and Nancy Ling at New England Sinai Hospital and Rehabilitation Center.



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Pain, dysphasia, dyspnea, and hemoptysis are clinical signs of more advanced disease. A person who has any of these signs or symptoms for longer than two weeks should have a thorough head and neck examination.

Assessment

The diagnostic evaluation of a person with suspected laryngeal cancer should include⁵:

- a thorough head and neck assessment
- a physical and social history, identifying long-term tobacco/alcohol abuse
- computed tomography (CT)
- magnetic resonance imaging (MRI)
- panendoscopy and biopsy

Information from these evaluations will confirm the diagnosis and assist the physician in determining the tumor stage.

Tumors are staged using the American Joint Committee for Cancer (AJCC) Staging Criteria (Fig. 2).³ The extent and stage of tumor will guide the physician in establishing a treatment plan that will offer the patient the best hope of survival.

Fig. 2. TNM Classification System for Glottic Carcinoma

Primary Tumor (T)	
TIS	Carcinoma in situ
T1	Tumor confined to the vocal cord(s) with normal mobility (includes involvement of anterior or posterior commissures)
T1a	Tumor limited to one vocal cord
T1b	Tumor involves both vocal cords
T2	Supraglottic and/or subglottic extension with normal or impaired cord mobility
T3	Tumor confined to the larynx with cord fixation
T4	Massive tumor with thyroid cartilage destruction and/or extends to other tissues beyond the larynx (eg. oropharynx, soft tissues of the neck)

Treatment for glottic cancer

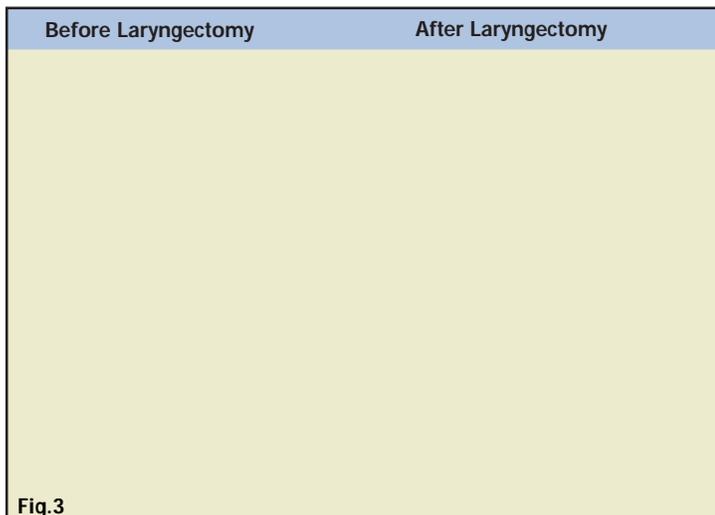
Early-stage disease

In most cases, early-stage glottic cancer can be successfully managed with external beam radiation and surgery.¹

Advanced disease

Although preservation of a functioning larynx is the most important quality-of-life issue for people with cancer of the larynx, longer survival is the ultimate goal of treatment in patients with advanced disease.¹

A total laryngectomy is planned for people with persistent or recurrent disease after radiation therapy, lesions on one or both vocal cords with cord fixation, and tumors in the thyroid cartilage or extending to tissues beyond the larynx.²



- Surgery removes or affects:
- the entire larynx
 - hyoid bone
 - true and false vocal cords
 - epiglottis
 - cricoid cartilage
 - two to three tracheal rings

Airway alterations are permanent, and the person will need to be educated in self-care of the stoma and alternatives for speech rehabilitation (Fig. 3).

Nursing care

Nurses play a critical role in patient education throughout the entire spectrum of healthcare. Nursing care of people who have a total laryngectomy starts in the pre-operative period with patient education and continues after discharge with follow-up care.

The nurse-patient relationship begins in the outpatient setting, where the nurse performs a complete head-and-neck assessment and comprehensive review of the patient's past medical and social history.

For people with advanced laryngeal cancer, the nurse directs careful attention to respiratory and nutritional status. All healthcare providers should be sensitive to any real or potential problems related to tobacco or alcohol abuse, which may impair the patient's recovery in the post-operative period.⁵

Pre-operative patient education

Pre-operative patient education should be individualized and directed at the patient's level of understanding. Emphasis should be placed on the patient and significant other's participation in learning self-care.⁵

It is extremely important to be sensitive to the dynamics of the patient's relationship with significant others. These relationships may be impaired due to a long history of substance abuse, which impacts the effectiveness of post-operative support.

How normal airway anatomy and physiology will be altered by the laryngectomy should be reviewed before surgery.

Wound care, nasogastric feedings, oral care, and airway management should be discussed. Knowledge of the patient's educational level and literacy is important, because these factors will influence assessment of their ability to communicate verbally after surgery.

It is beneficial for patients to have a pre-operative visit by someone who has achieved a successful means of communication after a laryngectomy. This visit will allow patients to discuss their concerns and help them to identify what method of communication to choose post-operatively. Becoming an active participant in the rehabilitation process in the pre-operative period is important for a successful recovery.

Post-operative nursing care

Immediately after surgery, nursing care should focus on airway management, wound care, nutrition, communication, body-image changes, and home-care needs.

Airway management

A post-operative laryngectomy tube ensures that the patient maintains an adequate airway and aids the healing of an adequate stoma.² Patients will have difficulty with secretions during the immediate post-operative period, so the nursing staff must provide good pulmonary hygiene. Safe, sterile suctioning at prescribed intervals and as needed is critical to avoid airway obstruction.

The oral cavity may also need to be suctioned; however, caution must be exercised if the suture lines extend to the posterior oral cavity.

The laryngectomy tube and stoma area requires meticulous cleaning every 8 hours and as needed to prevent the development of infection or airway obstruction. Tracheostomy care includes the changing of twill ties

or Velcro®-type holders.

Patients should be informed that they may have uncontrolled nasal secretions due to anatomical changes after laryngectomy.² Nasal secretions will decrease over time, but the patient will need to be aware of ways to keep the nasal membranes moist and free of crusting. A tracheostomy collar can supply warming and moistening functions normally provided by the mouth and nose.

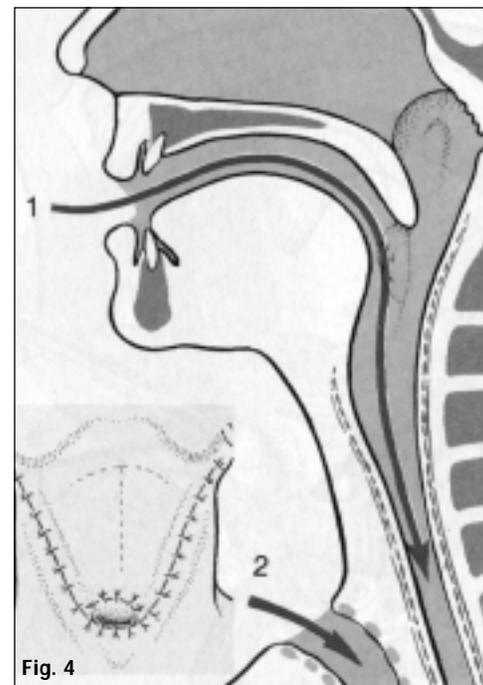
Instillation of 3-5 ml of normal saline into the stoma as needed will help to maintain moisture in the stoma and upper airway. Emergency equipment, including an Ambu bag and extra laryngectomy tube need to be kept at the patient's bedside at all times. In the event of heart attack, oxygen will need to be administered to the stoma via an adaptor on the Ambu bag.

Wound care

During resection, a U-shaped skin flap will be created (Fig. 4). In the immediate post-operative period, the patient will need meticulous wound care to the neck and stomal incisions. Drainage sites need attention every 8 hours and as needed to reduce the incidence of infection.

Wound drains are placed on either side of the skin flap to evacuate blood from the surgical site. The nurse should assess drainage sites and collection receptacles often for proper functioning. Inadequate output from these drains may lead to the formation of hematomas or seromas, poor wound healing, and infection.

Surgical/stoma incisions should be evaluated often for the cardinal signs of infection:



redness, swelling, or drainage. A sterile, pre-cut gauze dressing should be applied beneath the laryngectomy tube and changed often to prevent skin breakdown. Good oral hygiene with a prescribed solution is important post-operatively to avoid infection and control odor.

Nutritional supplementation

More than half of patients with head and neck cancer are nutritionally compromised before diagnosis or treatment. Dental caries, xerostomia, oral mucositis, infections, and dysphagia are consequences of the cancer or treatment regimen.

Generally, a nasogastric tube is inserted during laryngectomy. It usually remains in place for about 7 to 10 days (10 days in patients who have had radiation therapy). The tube is used to remove gastric contents via intermittent suction for the first 24 to 48 hours post-operatively.

When bowel sounds are present, tube feedings are started slowly and advanced to meet the patient's nutritional needs. It is critical to assess tube placement often to avoid tube displacement and the risk of aspiration pneumonia.

Because the nasogastric tube lies near internal incision lines, it should never be manipulated.² The application of tape or a nasogastric tube holder with a locking device may reduce the likelihood of tube manipulation or accidental displacement. Often, these holders remain in place for several days, reducing the risk of nasal erosion, necrosis, or abscess.

A dietitian will follow the patient to ensure that enteral feeding is well-tolerated and that the patient maintains good nutritional status. Daily weight and blood chemistries are obtained to monitor for any fluid or electrolyte imbalances, and replacement therapy is administered as indicated. When patient's incisions are healed with no evidence of fistula formation, the patient is advanced to an oral diet.

Communication methods

Pre-operatively, nurses play an essential role in helping the patient and family to identify the best methods of communication in the immediate post-operative period. Magic slates, writing materials, pictorial guides, or hand signals are useful ways for the new laryngectomy patient to communicate.

The three major methods of speech post-laryngectomy include:

- esophageal speech
- speech with the use of an artificial larynx

■ tracheoesophageal puncture

The tracheoesophageal puncture (TEP) is a surgically created fistula that extends from the superior wall of the tracheal stoma into the proximal esophageal wall.⁴ A prosthesis is inserted into the fistula to assist with speech. It is beyond the scope of this article describe the specific details of speech rehabilitation post-laryngectomy.

Body-image changes

The nursing staff needs to be aware of the enormous physical and emotional impact of this surgery on the patient. Patients should be encouraged to express their feelings and concerns and to identify past coping strategies.⁴ Participation in a support group is very beneficial and allows the person to meet others with a similar diagnosis and surgical experience. Information about support groups and their meeting schedules can be obtained through the local branch of the American Cancer Society or National Information Desk at 1-800-4-CANCER.

Home-care needs

Preparing the laryngectomy patient for discharge is one of the nurse's most important responsibilities. Nurses can foster patient education by providing written material about post-laryngectomy care and by promoting patient participation in self-care.

Airway management and safety, the primary focus of home care, includes⁵:

1. suctioning
2. daily cleaning
3. humidification
4. the use of stoma covers
5. changing twill ties or Velcro®-type holders
6. resuscitation

Advising patients of the loss of their ability to smell is critical, so that they can purchase smoke alarms and other devices to alert them of impending danger in the home. Patients should wear a medic alert bracelet, identifying them as neck-breathers in the event of heart attack.

These patients need to be encouraged to continue to pursue daily activities, except water sports. Due to the greater risk of drowning, new laryngectomy patients need to be extremely cautious near water. The stoma should be protected during bathing and showering to prevent the entrance of large amounts of water. Products are available for this specific purpose, but many patients invent their own devices.

Stoma bibs or covers should be worn to warm, moisten, and filter the air. Stoma cov-

ers and Velcro®-type holders or information on how to make stoma covers can be obtained through the local branch of the American Cancer Society.

In hospital, the patient's social worker should arrange a visit from a home agency nurse, so that any additional instruction, equipment, or supplies can be provided for the home. Information on tobacco cessation should be included in discharge education.

Post-laryngectomy complications

The main complications after laryngectomy include wound infection and breakdown, pharyngocutaneous fistula, vessel exposure and possible rupture, and tracheobronchitis.⁷ The risk of complications is higher in patients who have radiation therapy before surgery.

Wound infection

Wound infections usually respond to local care and appropriate antibiotic therapy. Larger wounds and exposed vessels may require surgical flap closure. Nursing care of smaller wounds includes routine cleaning and application of antibiotic ointment. In larger wounds requiring flap closures, flap viability is assessed frequently with electronic monitoring devices. The physician should be immediately informed of any changes in electronic monitoring and other results, such as changes in color, blanching, or flap-tissue temperature.⁴

Pharyngocutaneous fistula

A pharyngocutaneous fistula results when an incision in the hypopharynx or esophagus breaks down. Nasogastric (NG) tubes are usually left in place for 7 to 10 days post-laryngectomy (10 days in patients with radiation therapy). A swallowing study on days 7 or 10 assesses the surgical site and checks for the presence of a sinus tract or esophageal fistula. If a fistula is present, the NG tube remains in place.

The fistula is treated with iodoform gauze packing, impregnated with an antibiotic solution to clean out the wound.⁸ It is the nurse's responsibility to maintain tube feedings, while the fistula is closing. To reduce movement, a nasogastric tube holder with a locking device may be applied. The wound should be packed as ordered by the physician and assessed for further evidence of infection or poor healing, which may require surgical closure.

Tracheobronchitis

Tracheobronchitis is common in patients with an altered airway due to the lack

of normal humidification by the mouth and nose. Mucous membranes lining the trachea become dry from exposure and secretions become crusty.

The nurse's responsibility is to educate the patient and family about interventions that will maintain a moist airway. Methods that increase stomal and tracheal humidity include⁴:

- applying humidified oxygen via a tracheostomy collar instilling 3-5 ml of normal saline into the laryngectomy stoma as needed
- using bedside humidifier
- sitting in a steam-filled bathroom
- applying a moistened cover over the laryngectomy stoma.

Conclusion

People who have a total laryngectomy for cancer of the larynx are faced with tremendous physical and emotional challenges. Anxiety about cancer and the permanent loss of normal voice affects them in every aspect of their lives.

As members of the health-care team, nurses play a vital role in providing these patients with the necessary support, education, and care, so they will have a safe and smooth transition back into society.

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Perspectives, a quarterly newsletter focusing on postoperative recovery strategies, is distributed free-of-charge to health professionals. *Perspectives* is published by Saxe Healthcare Communications and is funded through an education grant from Dale Medical Products Inc. The newsletter's objective is to provide nurses and other health professionals with timely and relevant information on postoperative recovery strategies, focusing on the continuum of care from operating room to recovery room, ward, or home.

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After reading this article, the reader should be able to:

1. Discuss the risk factors associated with cancer of the larynx.
2. Identify the major areas of patient education pre- and post-laryngectomy.
3. Describe methods to provide humidification to the patient's airway post-laryngectomy.
4. List the three major methods of speech post-laryngectomy.
5. Describe the major complications post-laryngectomy and the appropriate nursing interventions.

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1. Which of the following are considered acceptable means of communication post-laryngectomy?
 - A. esophageal speech
 - B. artificial larynx
 - C. tracheoesophageal puncture
 - D. all of the above
2. Mr. Jones has been diagnosed with laryngeal cancer. Which of the following is the most likely cause of Mr. Jones's hoarseness?
 - A. carotid bleeding
 - B. a lesion interfering with the normal phonatory function of the true cords
 - C. continued cigarette smoking
 - D. seasonal allergy
3. On exam, Mr. Jones has evidence of a lesion involving both vocal cords with invasion into the thyroid cartilage. The surgery that will be indicated for Mr. Jones is:
 - A. partial laryngectomy
 - B. total laryngectomy
 - C. hemilaryngectomy
 - D. vocal cord stripping
4. Which of the following would *not* be a nursing intervention to increase humidification to the stoma/trachea post-laryngectomy?
 - A. instillation of 3-5 ml of normal saline to the stoma/trachea as needed
 - B. bedside humidifier
 - C. moistened cover over stoma site
 - D. frequent deep suctioning
5. What is the primary etiologic factor related to laryngeal cancer?
 - A. pesticides
 - B. contaminated drinking water
 - C. tobacco abuse
 - D. environmental pollution
6. A nasogastric tube is usually maintained in place for ___ days post-laryngectomy in the previously radiated patient.
 - A. 5
 - B. 7
 - C. 10
 - D. 21
7. Improper functioning of wound drains post-laryngectomy will result in the formation of:
 - A. pooling of saliva
 - B. hematomas or seromas
 - C. carotid artery rupture
 - D. trapped venous blood
8. Impaired verbal communication is an important nursing diagnosis post-laryngectomy. Knowledge of the patient's _____ will assist the nurse in making the appropriate interventions.
 - A. family
 - B. social status
 - C. drinking history
 - D. educational level and literacy
9. Important issues to discuss in patient education sessions post-laryngectomy would include:
 - A. laryngectomy tube/stoma self care
 - B. suctioning/humidification
 - C. resuscitation
 - E. all of the above
10. Tracheobronchitis is common in patients with an altered airway due to:
 - A. aggressive suctioning
 - B. dehydration
 - C. lack of normal humidification by the mouth and nose
 - D. hyperosmolar tube feedings

Mark your answers with an X in the box next to the correct answer

1	A B C D	3	A B C D	5	A B C D	7	A B C D	9	A B C D
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2	A B C D	4	A B C D	6	A B C D	8	A B C D	10	A B C D
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Participant's Evaluation

1. What is the highest degree you have earned? 1. Diploma 2. Associate 3. Bachelor's 4. Master's 5. Doctorate
- Using 1=Strongly agree to 6= Strongly disagree rating scale, please circle the number that best reflects the extent of your agreement to each statement.

	Strongly Agree		Strongly Disagree
2. Indicate to what degree you met the objectives for this program:			
■ Discuss the risk factors associated with cancer of the larynx.	1	2	3 4 5 6
■ Identify the major areas of patient education pre- and postlaryngectomy.	1	2	3 4 5 6
■ Describe methods to provide humidification to the patient's airway post-laryngectomy.	1	2	3 4 5 6
■ List the three major methods of speech post-laryngectomy.	1	2	3 4 5 6
■ Describe the major complications post-laryngectomy and the appropriate nursing interventions	1	2	3 4 5 6
■ How long did it take you to complete this home-study program?	_____		
3. Have you used home-study in the past? ■ Yes ■ No	_____		
4. How many home-study courses do you typically use per year?	_____		
5. What is your preferred format? ■ Video ■ Audio-cassette ■ Written ■ Combination	_____		
6. What other areas would you like to cover through home study?	_____		

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