

# Perspectives

Recovery Strategies from the OR to Home

## Our Mission

Welcome to the inaugural edition of the *Perspectives* newsletter. *Perspectives* is committed to providing timely and relevant information on postoperative recovery strategies. Our articles focus on the continuum of care from operating room to recovery room, ward, or home. *Perspectives* strives to provide pertinent, pragmatic information, continuing education, and guidelines to maximize nurses' ability to enhance patient outcomes and minimize secondary (iatrogenic) problems. Our articles are authored by nurses, who have in-depth knowledge and experience in a broad range of clinical specialties, and are reviewed by our advisory board. We welcome opinions and suggestions from our readers. In each issue, we will provide our readers with an opportunity to earn continuing education credits.

Also in this issue: **Bladder Neck Suspension: Post Op**

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## Tracheostomy: Postoperative Recovery

by Lois Dixon, MSN, RN

To earn CE credits, refer to page 7

An important nursing responsibility is the assessment and management of respiratory function. Besides assessing information about airway clearance and gas exchange, nurses encourage patients with altered respiratory function to improve their respiratory efforts. This support extends to the management of patients with artificial airways, such as tracheostomy tubes.

A tracheostomy tube is an artificial airway consisting of a plastic or metal tube, which is surgically implanted just below the larynx in the trachea, bypassing the mouth and upper airway. The surgical procedure that creates this artificial airway is called a tracheotomy. The artificial airway is usually a temporary measure. With a tracheostomy, it is easier to stabilize the patient, suction and attach respiratory equipment than with other artificial airways, such as nasopharyngeal or oropharyngeal tubes.

### Reasons for a tracheostomy

An individual needs a tracheostomy to maintain an open, functional airway. A tracheostomy is often used to bypass an airway obstruction. In such cases, oral or

nasal intubation is not feasible. Airways may be obstructed by tumors or a foreign body, larynx or tracheal injury, or soft tissue swelling.<sup>1-3</sup> When obstructions cannot be relieved through less invasive means, temporary or permanent tracheostomies are used to maintain oxygenation.

Another reason for a tracheostomy is to remove secretions from the distal tracheobronchial tree.<sup>2,3</sup> Oropharyngeal suctioning clears the airway of patients with a poor cough effort. These people may be unable to effectively expectorate increased amounts of sputum or thick secretions. When oropharyngeal suctioning is inadequate to maintain a patent airway, a tracheostomy may be indicated.

Patients with severe pulmonary disease or pulmonary depression resulting in hypoxia or hypercapnia need supplemental oxygen instilled into the tracheobronchial tree.<sup>3</sup> As exhausted accessory muscles gradually lose effectiveness in respiration, the body can no longer maintain an adequate gas exchange. A tracheostomy may be necessary to improve lung ventilation.

Tracheostomy tubes may be inserted following oropharyngeal or prolonged intubation, when needed for mechanical



Continued on page 4

# Bladder Neck Suspension Nursing Care: Preop, Postop, and Beyond

by Vicki Y. Johnson, RN, PhD, CURN

## Abstract

Anti-incontinence surgical procedures, collectively referred to as bladder neck suspensions, have been effective for treatment of urethral hypermobility and bladder descent, eliminating involuntary urine leakage associated with genuine stress urinary incontinence. Concomitant use of sling procedures for better urethral coaptation and resistance has been effective for intrinsic sphincter dysfunction. Preoperative and postoperative nursing care and patient management are critical for identification of potential risks, preparation of the patient for surgery, and interventions to prevent or diminish possible complications. Patient education on admission and initiation of discharge planning is paramount to ensure successful surgical and nursing outcome measurements beyond the hospital stay.

## Introduction

Urinary incontinence (UI) affects more than 13 million people in the United States, the majority of whom are women.<sup>1</sup> This condition includes but is not limited to stress, urge, reflex, overflow, functional, and intractable UI.<sup>2</sup> This discussion will be limited to stress urinary incontinence (SUI), specifically Type I and II genuine SUI, and intrinsic sphincter dysfunction (ISD), Type III.

Genuine SUI is the result of weakening of the pubococcygeus musculature, which supports the lower urinary tract. Urethrovesical distortion and subsequent loss of pressure transmission from the abdomen to the pelvis results in urine leakage when intra-abdominal pressure is increased.<sup>2,3</sup> Type I and II refer to the severity of incontinence and degree of bladder descent.<sup>4</sup>

With loss or inefficiency of sphincteric function (ISD), the bladder neck does not fully close. Women with ISD report frequent or constant urine leakage with or without physical activity. The diagnosis of ISD is based on history, symptom report, and urodynamic confirmation of the bladder's inability to store urine. Although nonsurgical intervention is rec-

ommended as first-line therapy, many women with SUI or ISD may require surgery for successful elimination of leakage.

leakage subsequent to increased intra-abdominal pressure. Stabilization of the urethra and bladder elevation is insufficient to eliminate leakage in women with ISD due to inadequate closure of the bladder neck and lack of coaptation and resistance within the urethra.<sup>4</sup> Surgical procedures to correct ISD use fascial tissue from the pa-

## Bladder Neck Suspension Procedures

Procedure	Description
Marshall-Marchetti-Krantz (MMK)	Uses the retropubic approach for vesicourethral suspension. Periurethral tissue is sutured to cartilage of the posterior symphysis pubis. <sup>3</sup>
Burch Colposuspension	A modification of the MMK in which the vaginal wall and bladder neck lateral to the urethra are elevated toward Cooper's ligament. <sup>3</sup>
Stamey	Tissues adjacent to the urethra and bladder neck are anchored by suspending sutures to create a sling. <sup>3</sup>
Raz	Modification of the Stamey procedure and the preferred method. Uses the vaginal approach to mobilize the vaginal wall and endopelvic fascia. The sling is anchored to the rectus fascia. <sup>7</sup>
Gittes	Modification of the Stamey and Raz, performed as a no-incision endourethropy. <sup>9</sup>

Table 1

ommended as first-line therapy, many women with SUI or ISD may require surgery for successful elimination of leakage.

## Surgical Procedures

Bladder neck suspension is a term used to describe anti-incontinence surgical procedures. Specific suspension procedures are described in Table 1 and illustrated in Figure 1. The purpose of any suspension procedure is to raise and stabilize the bladder and bladder neck in a more anatomically normal position. Stabilization of urethral hypermobility and correction of bladder descent has been shown to be effective in eliminating urine

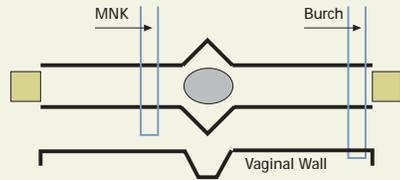
tient or synthetic silastic materials to fashion a sling apparatus (Figure 2). Repair of a coexisting rectocele or cystocele should be performed during the bladder neck suspension or sling procedure if possible and not otherwise contraindicated.

## Nursing Care

As with any surgical procedure, anti-incontinence surgery involves certain risks to the patient who has general anesthesia, such as respiratory distress or insufficiency, intraoperative hemorrhage, hypotensive or hypertensive crisis, aspiration, pneumonia, etc. Although these risks are common to all surgical patients and

## Bladder Neck Suspension Procedures

### Abdominal Approach



### Transvaginal Approach

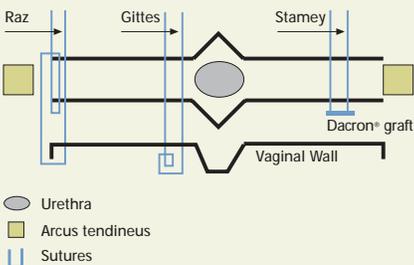


Figure 1. Adapted from Raz S, Slothers L, Chopra A. Raz techniques for anterior vaginal wall repair. In: Raz S (ed). Female urology, 2nd ed. Philadelphia: W. B. Saunders Company, 1996; p. 356; Figure 30-4.

should be considered in preoperative patient education and postoperative nursing care, they are not specific to urologic surgical procedures.

### Preoperative Care

During admission, the nurse should obtain a comprehensive patient history, including inquiries about previous bladder or pelvic surgeries or injuries, the presence of varicose veins, and a history of deep vein thrombosis (DVT) or pulmonary embolus.

Patient education reinforces information about surgery and reviews the potential intraoperative risks, postoperative complications, and long-term complications associated with the particular procedure (Table 2). Although intraoperative injuries can and do occur, they are relatively infrequent and should not be over-emphasized.

Preoperative patient education should outline the most common postoperative complications, such as retention,

suprapubic pain, and bladder instability, and emphasize instructions that will facilitate successful patient outcomes.

The nurse should describe the postoperative regimen, give instructions, then ask the patient to demonstrate postoperative repositioning, deep breathing, and incentive spirometry to prevent pulmonary fluid stasis. The nurse should describe and clearly explain the intraoperative placement of either a Foley or suprapubic catheter, which is usually removed on the first postoperative day.<sup>5</sup>

Prolonged urinary retention is usually managed with intermittent catheterization, unless the patient is unable or unwilling to perform this technique. If long-term urethral catheterization is required, the indwelling Foley catheter should be secured and fastened to the leg with a Velcro and elastic-type holder to create enough slack to prevent meatal movement and irritation that can lead to UTI. Holders to secure indwelling catheters are available commercially.

The patient should be taught self-intermittent catheterization (SIC) before surgery, as knowledge retention of a new skill requires attention and concentration. Short-term urinary retention after catheter removal is related to temporary swell-

ing and surgical manipulation.

The patient should be advised that if spontaneous voiding does not occur by the fourth to fifth postoperative day, she may be discharged with the catheter<sup>6</sup> in place or SIC may be required for an extended period and, as an infrequent, long-term complication of the sling procedure, may be required permanently.

The nurse should inform the patient that vaginal packing may be present after surgery. It is usually removed 24 to 36 hours after surgery.<sup>7</sup>

Failure to achieve the desired surgical result is a potential long-term complication, particularly with prolonged instability or urinary retention that lasts longer than one to two months.

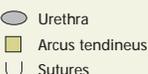
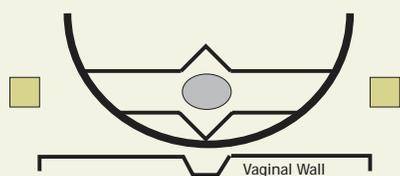
Physical preparation of the patient for surgery depends on the procedure, surgeon's preference, and hospital protocol. Typically, patients will receive prophylactic antibiotics, a Betadine vaginal douche and, if rectocele repair is anticipated, a bowel prep. If the patient has a history of DVT, preoperative heparin may be ordered and administered. Shaving of the perineal area may be a preoperative order or may be performed after the patient arrives in the surgical suite.

## Potential Complications

Complication	Symptom/Comments
Urinary tract infection	Increased white blood cell count (WBC), increased temperature, malodorous urine, bacteruria, dysuria
Urinary retention	Inability to void or completely empty the bladder, requiring intermittent catheterization or insertion of indwelling Foley catheter
Suture abscess	Symptoms of inflammation: increased temperature, purulent drainage, malodorous drainage
Vesicocutaneous fistula	Urine leakage from the vagina
Hematoma	Decreased red blood cells (RBC); increasing discomfort in or around incisional area
Detrusor instability	Frequency, urgency, urge incontinence, bladder pain
Suprapubic pain	Due to swelling and/or surgical manipulation
Osteopubis	Prolonged suprapubic pain, tenderness, spasm with adduction, febrile temperature, decreased WBC, increased sedimentation rate
Ureteral ligation	Hypertension during immediate postoperative period; potential renal loss if uncorrected. This risk is increased if patient has had previous pelvic surgery
Peritonitis	Complication due to inadvertent puncture or laceration of the bowel. May occur during repair of rectocele or if patient has history of previous pelvic surgeries with concomitant adhesions

Table 2

## Sling Procedures



### Fascial Sling

Figure 2. Adapted from Raz S, Slothers L, Chopra A. Raz techniques for anterior vaginal wall repair. In: Raz S (ed). Female urology, 2nd ed. Philadelphia: W. B. Saunders Company, 1996; p. 356; Figure 30-4.

## Postoperative Care

Measure	Increased	Decreased
<b>Vital signs:</b> Temperature	atelectasis; infection	
Blood pressure	ureteral ligation; increased pain/anxiety	significant blood loss hemorrhage; pulmonary embolus
Respiration	atelectasis; increased pain; pulmonary embolus (dyspnea)	
Pulse	pulmonary embolus	blood loss (weak, thready)

Table 3

### Postoperative Care

Postoperative nursing care includes the monitoring of vital signs (Table 3), maintaining strict intake and output records, and frequent assessment of patient status. In the immediate postoperative period, an increase in blood pressure may indicate significant blood loss or unilateral ligation of a ureter. Increased respiratory effort may signal atelectasis. If hypertension is noted, the surgeon should be notified immediately for possible ureter repair.<sup>8</sup>

Preoperative prophylactic antibiotic therapy is usually continued postoperatively. However, a sustained elevation in temperature may be symptomatic of infection and should be carefully assessed with other clinical signs, such as a change in wound drainage, increase in WBC, and increased suprapubic pain.

Postoperative assessment of pain should include location, duration, and character. Narcotics are effective for incisional pain and bladder spasms can be controlled with anticholinergic medications to prevent detrusor contractions.

Discharge teaching should include a review of SIC and at-home care of an indwelling Foley catheter, if required. If an indwelling catheter is required to manage long-term retention, patients should be taught how to rotate the legband catheter holder periodically to relieve the meatal pressure point and to rotate between alternate legs every 12 to 24 hours.

Patients should be taught the signs and symptoms for urinary tract infection and instructed to notify their physician when they are present. They should be instructed to avoid strenuous activity, heavy lifting, and sexual intercourse for about six weeks.

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Tracheostomy: Postoperative Recovery  
Continued from page 1

ventilation, obstructive sleep apnea resistant to conventional therapy, and upper airway bleeding.<sup>1,2</sup> The anticipated duration of need for the tracheostomy will indicate which type of tube is selected by the physician.

### Complications and Nursing Implications

During the immediate postoperative period, the nurse's major responsibility is airway management. This task involves ensuring that the airway remains patent, listening for bilateral breath sounds, and assessing the patient for postoperative complications. After tracheostomy, frequent assessment is necessary, including:

- monitoring of vital signs
- assessing the amount, color, and consistency of secretions
- watching for complications, such as signs and symptoms of respiratory insufficiency, hemorrhage, shock, or other problems related to surgery or the patient's condition (Table 2).

Many complications can be avoided by careful assessment and appropriate intervention.

### Types of Tracheostomy Tubes

A variety of tracheostomy tubes are available. Which tube is selected by the physician depends on the patient's specific needs. Tracheostomy tubes vary in size, composition, number of parts, and shape. They are disposable or reusable.<sup>4</sup> Table 1 describes the types and uses of various tubes.

#### Universal

Also called the double-lumen or double-cannula tube, this is the most common type of tracheostomy tube. It has three parts:

- outer cannula with cuff and pilot tube
- inner cannula
- obturator

## Types and Uses of Tracheostomy Tubes

Type	Description & Use
Universal	Also called the double-lumen or double-cannula tube, this is the most common type of tracheostomy tube. It has three parts: <ul style="list-style-type: none"> <li>• outer cannula with cuff and pilot tube</li> <li>• inner cannula</li> <li>• obturator</li> </ul> <p>The outer cannula keeps the airway open, while the inner cannula has a universal adaptor for use with a ventilator and other respiratory equipment. Some inner cannulas are disposable; others must be removed, cleaned, and reinserted.</p>
Single cannula	Slightly longer than the universal tube, it is used for patients who have long or thick necks. This tube usually requires additional humidification to prevent the accumulation of secretions.
Fenestrated	These tubes have an opening on the posterior wall of the outer cannula, which allows air to flow through the upper airway and tracheostomy opening. This air movement allows the patient to speak and produce a more effective cough. The fenestrated tube is often used during weaning to ensure that patients can tolerate breathing through the natural airway before tube removal.
Tracheostomy button	This short, straight tube fits into the tracheostomy stoma but does not enter the tracheal lumen. It is often used during weaning, because it creates less airway resistance than a standard tracheostomy, making breathing easier.
Cuffed tube	When inflated, this tube seals the airway and prevents the aspiration of oral or gastric secretions. The cuff directs air through but not around the tube. It is commonly used when mechanical ventilation is required.
Cuffless tube	Usually double-lumen tubes, cuffless tubes are used for the long-term management of patients. The patient must have effective cough and gag reflexes to protect themselves from aspiration. Cuffless tubes are rarely used in acute care.

Table 1

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## Troubleshooting Tracheostomies

### Abnormal bleeding

A small amount of bleeding from the tracheostomy stoma is not unusual for the first few days after surgery. It usually lessens within 24 to 48 hours. Bright, frank bleeding is significant and should be reported to the physician. Constant oozing is unexpected and may signal that a bleeding vessel needs surgical intervention.

Contact the physician who may direct the nurse to wind petroleum gauze around the tube then pack it into the wound to apply pressure to help stop the bleeding.<sup>1</sup> Massive bleeding suggests rupture of the innominate artery, which is life-threatening. Contact the physician immediately.

### Tube dislodgement

A tracheostomy tube may be accidentally dislodged by excessive manipulation or suctioning, which may produce vigorous coughing that displaces the tube from the stoma. Dislodgement within 48 hours after surgery is a medical emergency, because the tracheostomy tract is not fully formed and may close.<sup>1,2</sup>

To prevent accidental decannulation, the nurse can use twill ties or a Velcro device to secure the tube properly. A nurse can reinsert a dislodged tube in an obturator, which is kept at the bedside. If the nurse is unable to reinsert the tracheostomy tube within one minute, the resuscitation team is called.

### Obstructed airway

Often, the accumulation of secretions obstructs the tracheostomy tube, reducing air flow. Without adequate airway care, the tube may become occluded with dried or excessive bronchial secretions.<sup>2</sup>

The nurse carefully monitors the patient's respiratory status during the post-operative period. Indications of problems with airway clearance and impaired gas exchange include<sup>1,2</sup>:

- dyspnea
- restlessness
- crackles or ronchi
- difficulty in inserting the suction catheter
- increased pulse or respiratory rates (SaO<sub>2</sub>)

## Trouble Shooting Tracheostomies

Problem	Cause	Prevention	Nursing Intervention
Decreased SaO <sub>2</sub>	Increased secretions may be blocking the airway and affecting ventilation	Increase fluids to 2000 mL daily unless contraindicated Increase humidification Maintain SaO <sub>2</sub> > 90%	Suction Trach care to remove dried and crusted secretions from inner cannula
Continous bleeding from trachea	Incomplete ligation of blood vessel during surgery, rupture of innominate artery	N/A	Contact physician Apply pressure to site with petroleum gauze in and around tracheal opening Prepare patient for surgery is indicated Monitor vital signs
Tube dislodgement	Excessive manipulation of tube by vigorous suctioning or coughing; trach ties improperly secured	Suction only when necessary Secure tracheal tube ties to allow only one finger between neck and tie Keep obturator at bedside	Replace trach tube using obturator If unable to replace trach tube, call physician and resuscitation team as needed
Infection	Ineffective cough effort may cause retained secretions which promote bronchopulmonary infections; soiled tracheostomy dressings may incubate infection at the tracheal stoma	Frequent hand washing Maintain sterile technique when suctioning Frequent tracheal care to cleanse tracheal stoma Replace tracheal dressings when soiled	Assess sputum for color consistency, odor Assess tracheal stoma for cardinal signs of infection, redness, edema, pain drainage Administer antibiotics as ordered by physician

Table 2

- increased peak airway pressures on the ventilator
- pulse oximetry readings less than 90%

Humidification of inspired air, suctioning, and helping the patient to cough effectively and breathe deeply will promote a patent airway. Nurses perform tracheostomy care according the established standards of nursing care usually every shift and as needed to maintain a patent airway. Suctioning to clear the airway of excessive secretions optimizes the amount of oxygen that patients breathe and limits the risk of infection from retained secretions.

To thin secretions and promote adequate hydration, fluid intake is increased to 1500-2000 mL/day, if no contra indica-

tions are present.<sup>5</sup> Oral fluids can be supplemented by the parenteral route, if needed. Hydration status is maintained by increasing the humidity of room air or by administering humidified oxygen through a tracheostomy collar or T-piece.<sup>2</sup>

### Subcutaneous emphysema

Air may escape into the fresh tracheotomy incision, causing subcutaneous emphysema. Usually of no clinical consequence, subcutaneous emphysema may be alarming to the patient and family.

The nurse inspects and palpates the neck and upper chest for edema and crepitus. A crackling sensation upon palpations is the hallmark sign of subcutaneous emphysema.<sup>1,3</sup> The patient and family are reassured, as needed.

### Infection

The patient with a tracheostomy is at risk of infection within the pulmonary tree and at the surgical site. Bronchopulmonary infections may occur, because the tracheostomy bypasses protective upper airway mechanisms that filter, warm, and humidify inhaled air. Secretions, retained due to decreased mucociliary action and an ineffective or absent cough reflex, are an excellent medium for bacterial growth. A careful, sterile, and mechanical suctioning technique reduces mucosal trauma, which can lead to tracheal infection, and prevents introduction of bacteria into the trachea. Soiled, moist, tracheostomy dressings contribute to infection at the tracheal stoma by providing a moist environment for bacterial growth.

The nurse carefully assesses the stoma for the cardinal signs of infection: redness, drainage, swelling, and pain. Soiled tracheostomy dressings are changed regularly. Because the lower airway is considered sterile, strict technique must be maintained during suctioning and tracheostomy care.<sup>1-3</sup> Should infection develop, appropriate cultures and antibiotics are ordered by the physician and administered by the nurse.

### Delayed complications

Tissue damage can occur from mechanical causes, such as suctioning, increased intratracheal pressure, and scar formation. These complications may develop within several days or years after intubation.

### Tracheoesophageal fistula

Tracheoesophageal fistula, also known as tracheal wall necrosis, results when the inflated cuff of a tracheostomy tube increases pressure on the tracheal mucosa. As pressure increases, ischemia occurs, leading to necrosis and fistula formation. The fistula allows air to escape into the stomach, which may cause the aspiration of gastric contents. The presence of a nasogastric feeding tube in conjunction with a cuffed tracheostomy tube enhances the risk of tracheal fistula formation. The use of small bore feeding tubes reduces the risk of fistula formation.<sup>2</sup>

The nurse may suspect a tracheoesophageal fistula if the patient coughs or chokes while eating and food particles are seen in tracheal secretions.<sup>1</sup> The nurse

may also note that an increased amount of air is needed to maintain an adequate seal or that the patient does not receive the set tidal volume on the ventilator.<sup>1</sup>

The maintenance of proper cuff pressures will prevent damage of the tracheal mucosa. The minimal leak technique maintains the proper pressure in cuffs without a pressure relief valve, while the occlusive technique is used in cuffs with pressure relief valves. The objective is to inflate the cuff enough to achieve an adequate seal between it and the trachea, while creating the least amount of pressure.<sup>1</sup> Assessment and maintenance of appropriate cuff pressures on each nursing shift will minimize local airway damage.

### Tracheal stenosis

Characterized by the narrowing of the tracheal lumen, tracheal stenosis is a result of scar formation due to cuff-induced irritation of the tracheal mucosa.

Tracheal stenosis is usually assessed only after the cuff is deflated or the tracheostomy tube is removed. The nurse may observe increased coughing episodes, inability to expectorate secretions, or difficulty in breathing or talking.<sup>1</sup>

The nurse can reduce the risk by maintaining proper cuff pressures and preventing infections. Restricting tube movement and securing the tube in a mid-line position reduces irritation of the tracheal mucosa.<sup>1,2</sup> Tracheostomy ties should be taut enough to prevent accidental dislodgement but loose enough to avoid choking or pressure on the jugular veins.<sup>5</sup> With a properly secured tie, only one or two fingers can slide comfortably underneath the tie. Devices like the Dale Tracheostomy Tube Holder use Velcro tabs to allow the nurse to reposition and stabilize the tracheostomy tube easily and quickly. These devices incorporate a panel of stretch material that flexes the device during coughing, accommodates edema, and ensures a snug fit.

### Conclusion

Based on continual patient assessment, nurses can introduce measures that help to promote effective airway clearance and adequate gas exchange to maintain a patent airway. With careful attention to airway management and infection and trauma control, nursing practices can pre-

vent many common complications and ensure positive patient outcomes.

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

1. Describe the uses for the various types of tracheostomy tubes.
2. Identify three (3) postoperative complications that may occur following a tracheostomy procedure.
3. Discuss nursing assessment findings that indicate respiratory compromise in the client with a tracheostomy.
4. Explain appropriate nursing interventions to prevent and/or treat selected postoperative tracheostomy complications.
5. Recognize two (2) ways to prevent postoperative tracheostomy infections.

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1. The nurse's primary responsibility in managing a client with a tracheostomy is to:
  - a. assess respiratory status.
  - b. prevent respiratory infection.
  - c. suction inner cannula.
  - d. maintain patent airway.
  
2. Which of the following is the most common reason for tracheostomy?
  - a. To bypass an obstructed airway
  - b. To assist with mechanical ventilation
  - c. To remove secretions from the tracheo bronchial tree
  - d. To improve lung ventilation by instilling supplemental oxygen
  
3. Which type of tracheostomy tube is used to assure the client can tolerate breathing through the natural airway before the tracheostomy tube is removed?
  - a. Universal tube
  - b. Cuffed tube
  - c. Single cannula
  - d. Tracheostomy button
  
4. Trevor West, 56, is transferred to the medical unit 24 hours following tracheostomy. The nurse expects bleeding from the tracheostomy site to be:
  - a. dark red in color.
  - b. bright red in color.
  - c. decreasing within next 24 hours.
  - d. decreasing within next 72 hours.
  
5. To reduce movement of the tracheostomy tube as a strategy to minimize tracheal irritation, the nurse secures the tracheostomy ties so that:
  - a. No more than 1 finger fits under the ties.
  - b. No more than 2 fingers fit under the ties.
  - c. No more than 3 fingers fit under the ties.
  - d. No more than 4 fingers fit under the ties.
  
6. Joan Brown, 70, has a cuffed tracheostomy tube in place. The nurse uses a "minimal leak" technique to:
  - a. reduce pressure in the tracheal mucosa.
  - b. prevent accidental decannulation.
  - c. keep the airway patent.
  - d. allow the client to talk.
  
7. The most appropriate nursing intervention when SaO<sub>2</sub> levels are decreased is:
  - a. assess frequency of tracheostomy care.
  - b. contact physician to replace tracheal tube.
  - c. suction secretions from the inner cannula.
  - d. compare vital signs changes to SaO<sub>2</sub> levels.
  
8. How can the nurse best prevent infection to the tracheostomy site?
  - a. Cleanse tracheal stoma once a day
  - b. Wash hands before and after client contact
  - c. Maintain clean technique during suctioning
  - d. Replace tracheostomy dressing every other day
  
9. The nurse keeps the tracheostomy obturator at the bedside:
  - a. to replace the tracheal tube should it become dislodged.
  - b. to administer supplemental oxygen or medication.
  - c. to be used when securing the tracheostomy ties.
  - d. to insert during vigorous coughing episodes.

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					
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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 the objectives of this program were met:						
■ Describe the uses for the various types of tracheostomy tubes	1	2	3	4	5	6
■ Identify three (3) postoperative complications that may occur following tracheostomy procedure	1	2	3	4	5	6
■ Discuss nursing assessment findings that indicate respiratory compromise in the client with a tracheostomy	1	2	3	4	5	6
■ Explain appropriate nursing interventions to prevent and/or treat selected postoperative tracheostomy complications	1	2	3	4	5	6
■ Recognize two (2) ways to prevent post-operative infections	1	2	3	4	5	6
3. How long did it take you to complete this home-study program?						
4. Have you used home-study in the past? <input type="checkbox"/> Yes <input type="checkbox"/> No						
5. How many home-study courses do you typically use per year?						
6. What other areas would you like to cover through home study?						
7. Would you like to author a self-study program? <input type="checkbox"/> Yes <input type="checkbox"/> No						

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