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Optimizing the periop for the older adult surgical patient

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Aging is having a profound impact on healthcare costs in the United States. Between 2000 and 2030, it's estimated that the number of people over 65 will double, representing approximately 21% of the total U.S. population.[1-3] As the baby boomers continue to age, the strain on healthcare resources will continue to escalate with nearly 19 million people in the United States aged 85 years or older by 2050.[4] The aging population is also transforming nursing care. Older adult surgical patients, once considered too old for surgery, now routinely undergo procedures well into their 80s, 90s, and even 100s.

Perioperative nurses are significantly impacted by the influx of older patients experiencing surgery. There's no question that people are living longer, have healthier lifestyles, and better nutritional habits. However, many older adults live with comorbidities from preexisting conditions. Also, older adult surgical patients have slower metabolisms, more allergies, increased risk of malnutrition, increased cardiopulmonary complications, changes in mental status, and decreased reserve capacity of their organs to respond to the stress of surgery.[5,6] Perioperative nurses must become the gatekeepers to help prevent complications in older adult surgical patients through early identification of risk and appropriate actions to address the risks based on best practices.

The purpose of this article is to address the importance of early identification and interventions for older adult surgical patients through comprehensive preoperative assessments, proper positioning, maintaining normothermia, pain management, and education/discharging planning to avert potential postsurgical complications.

Additionally, while awareness of cultural factors that influence patients' behaviors during the perioperative phase is of utmost importance for all perioperative nurses. However, a comprehensive discussion of cultural factors is beyond the scope of this article.

Awareness of the physiologic, psychosocial, and cognitive changes associated with aging can help

erative nursing role

perioperative nurses prevent potential complications and improve surgical outcomes for older adult surgical patients.

Assessment

Frailty. There are known risk factors that have been used as benchmark predictors for postoperative complications, such as age, the patient's American Society of Anesthesiologists Physical Status classification score, emergency surgical procedures, site of surgery, and low albumin levels. However, many believe the aging process is much more complex and interrelated than these factors demonstrate.[1,7] Much of the recent work specific to older adult surgical patients considers frailty a more important predictor of complications because it considers the individual's vulnerability to stressors resulting from diminished physiologic reserve as a result of aging.[7]

Identifying frailty using a frailty scale helps to focus assessment of older adult surgical patients.

Identifying frailty using a frailty scale helps to comprehensively focus the assessment of older adult surgical patients because each patient is reviewed as an individual and the assessment and plan of care are based on risk factors identified by the scale. There are several frailty scales used in nursing; however, the Braden Scale is a simple, familiar tool that's been shown to be effective in evaluating the older adult surgical patient for frailty and is growing more popular in perioperative settings.[7] Even though the Braden Scale has been associated with early detection of pressure ulcers, it's become a tool also used to assess frailty preoperatively. It's an excellent predictor of complications for the older adult surgical patients because it reviews six domains, which characterize many of the vulnerabilities of frailty stressors (sensory perception and communication, moisture, mobility, nutrition, activity, skin friction, and shearing).[7] This tool is easy to use, has no increase in costs, and nurses are familiar with using it. It has been recommended in the literature that the Braden Scale should be included in the preoperative assessment and then updated through the surgical stay.[7]

Body system changes. Age-related changes for the older adult surgical patients differ for each patient and can't be generalized. Each individual ages at a different rate that impacts organ function, responses to pain, temperature changes, and the metabolism and elimination of drugs, including anesthetic agents.[6]

Every system within the body is impacted by aging. There are changes in the cardiovascular system, which include decreased cardiac output, increased thickness of the vascular intimal layer, and decreased vascular elasticity.[6] These changes can cause hypertension, tachycardia, lightheadedness, fatigue, dysrhythmias, chest pain, shortness of breath, and decreased sensation or pain in the extremities.[1,6] Changes in the immune system increase the older adult surgical patient's risk of infection and delayed wound healing due to decreased immune response.[1] Changes in the respiratory system, such as reduced vital capacity and lung elasticity, cause decreased oxygenation to the body's tissue, whereas decreased cough reflex and reduced cilia and capillaries in the lungs increase the risk of aspiration, atelectasis, and pneumonia.[6,8] Gastric emptying is delayed, which further puts the older adult surgical patients at risk for aspiration.[9] Changes in the renal/genitourinary system include diminished renal tubular function, decreased glomerular filtration rate, prostate enlargement in men, and relaxed perineal muscles in women. These changes can cause fluid and electrolyte imbalances, kidney infections, and alterations in drug elimination.[6,9] Changes in the musculoskeletal system, such as loss of muscle mass and degenerative joint changes, impact positioning, and increase the risk of pressure ulcers and thrombus formation.[1]

Cognitive impairment. Mental status assessments examine the mental and behavioral function of older adult. In 2013, AORN's position statement for care of the older adult stated that the preoperative baseline mental status assessment is

critical in both understanding the appropriate care during the surgical experience and also to anticipate extra support, which older adult surgical patients may need during the perioperative experience.[9]

Delirium is always a concern postoperatively in relation to older adult surgical patients; unlike dementia, which would be noted preoperatively, delirium can result after the surgical procedure. Delirium is associated with post-operative complications, including increased morbidity, poorer functional outcomes, and increased risk of long-term care placement.[1] Risk factors associated with delirium include the following: advanced age, underlying cognitive impairment, coexisting medical comorbidities, psychotropic medications, alcohol abuse, sensory impairment, and immobility.[10] Post-operative delirium may initially present in older adult surgical patients in the post anesthesia care unit (PACU). However, the symptoms of delirium may be attributed to hypoxemia and treated as such, and therefore, the delirium initially may go undiagnosed.[11] It's important that PACU nurses know the risk factors for delirium and are able to identify the symptoms. The symptoms of delirium include fluctuating levels of consciousness, shifting attention span, agitation, disorientation, hallucinations, and hypoactive symptoms (such as a slow response to questioning, lethargy, decreased spontaneous movement, and withdrawal) which are more common in older adults.[11] The Mini-cog cognition test is a common, simple tool that can be used preoperatively to assess for cognitive impairment, which indicates the older adult surgical patient is at increased risk for postoperative delirium. The patient is asked to remember three words (for example, snow, tree, and ball) and is then asked to draw the hands of a clock as a distraction. The patient is then asked to restate their words. If the patient fails the test by not remembering the three words or can't draw the hands of a clock, he or she is at greater risk for postoperative delirium.[2] Cognitive, neurologic, or communication deficits that are not noted preoperatively may challenge pain assessment and patient care postoperatively.[9]

Comorbidities. The overall health and well-being of older adult surgical patients includes the assessment of comorbidities to identify factors that could negatively impact a normal recovery period. Surgery is most hazardous for older adult surgical patients due to the prevalence of having multiple comorbidities that may lead to complications. Older adults (65 or older) account for 55% of all surgical procedures.[11] Common comorbidities among older adult surgical patients include heart disease, chronic obstructive pulmonary disease, cancer, and diabetes.

Multiple medications. With multiple comorbidities, older adult surgical patients usually take many medications that can interfere or intensify the effects of anesthetic agents and medications used for surgery, so a thorough history of all current medications, supplements, and herbal preparations must be performed preoperatively. It's important to educate the patient about when to discontinue certain medications, such as aspirin, anticoagulants, and nonsteroidal anti-inflammatory drug (NSAIDs) before surgery. Patients should be instructed to talk with their primary care provider or cardiologist about the medications that should be discontinued before surgery. Common practice is to stop taking warfarin, NSAIDs, and aspirin prior to surgery.[12,13] However, there is a need to balance the increased risk of bleeding related to surgery with the increased risk of developing a thromboembolism.[13] Recent evidence disputes discontinuing mild platelet inhibitors such as aspirin; when taken up until surgery, these drugs may decrease incidences of coronary events and stroke.[13]

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Monoamine oxidase inhibitors (MAOIs) are not commonly used for treating depression

today, but perioperative nurses need to be aware of their numerous drug interactions if an older adult patient has been prescribed an MAOI.[14] Discontinuing MAOIs is no longer the standard of practice because discontinuing MAOIs could cause an exacerbation of major depressive disorder.[14] Additionally, the standard of practice is not to discontinue benzodiazepines before surgery.[14] Both classes of medication can cause potentially lethal interactions with some anesthetics, so it's important that the surgeon and anesthesia provider are aware if the older adult patient is taking any psychotropic medications.[13,14]

The skin changes seen in older adult surgical patients increase the risk for bruising and tearing/shearing, and infection.

The risk of complications is more likely to occur in patients who have chronically used medications.[14] Many medications can be taken up until the day of surgery but would need a physician's prescription, since policies and procedures for preoperative drug administration vary considerably at different healthcare institutions.

Nutritional status. Assessing older adult surgical patients' nutritional status is vital in preventing complications.[6] Undernourished and malnourished states are significantly prevalent in the older adult population. There are many risk factors for malnutrition in older adults, such as social isolation, limited financial resources, poor dentition, alcohol consumption, depression, gastrointestinal issues, or other chronic disorders.[1] Malnourishment can be disguised if the older adult patient had once been overweight or if the distribution of the increase in body fat from aging gives the impression that the patient is nourished. Inadequate nutrition increases the risk of tissue damage, delayed wound healing, sepsis, wound infection, and mortality for older adult surgical patients.[10] Malnutrition should be corrected prior to surgery (if possible), and nutritional therapy should continue postoperatively.[1] The optimal dietary daily protein intake for older adults should be in the range of 1.0 to 1.2 g/kg body weight; patients with comorbidities should have a daily protein intake of 1.2 to 1.5 g/kg body weight/d to maintain lean muscle mass.[15]

Skin assessment. The older adult patient's skin is thin, more friable, and there's less tissue padding on bony prominences. The skin changes seen in older adult surgical patients such as reduced collagen, thinning of skin, and decreased blood supply delay healing, increase the risk for bruising and tearing/shearing, and infection.[11] Prior to surgery, it's imperative to perform a full skin assessment, noting any bruising, skin breakdown, or reddened areas so that any changes to the integrity of the skin can be distinguished from the preoperative assessment baseline. Due to the fragility of older adult patient's skin, the type of tape used on the patient shouldn't cause undue trauma when removed, so paper tape is used frequently if necessary.

Individual risk factors of older adult surgical patients can be identified and prevented only through a complete and thorough perioperative assessment.

Positioning

Positioning is one of the most important responsibilities for the perioperative nurse. Positioning surgical patients to prevent injuries such as nerve and joint damage, muscle strain or stretch, pressure ulcers, and skin breakdown takes extra time and more caution. Older adult skin integrity can be compromised due to the aging process, which increases the risk of shearing injuries, accentuated bony prominences, and limited range of motion (possibly leading to serious complications after surgery).

Older adult surgical patients can be subjected to prolonged pressure on dependent body parts due to the position for surgery. Gravity produces a force that compresses the patient's skin and muscle between the musculoskeletal system and the operating table, placing patients at risk for pressure ulcers that may not be visible for several days postoperatively.[16] It's important for the perioperative nurse to have the correct equipment in place for appropriate positions

with padding on the bed (foam or silicone gel pads) and other supporting devices, such as pillows, blankets, sheepskin, and beanbags, available to prevent injuries during surgery. Positioning devices need to maintain correct body alignment with extra protection to bony prominence areas, which are accentuated in the older adult surgical patients. Also, checking the older adult surgical patient's skin for dryness after skin preparation solutions and the dispersive pad (also known as a grounding pad) have been applied are necessary to ensure the patient is not lying on wet padding and that fluids haven't pooled under or around the dispersive pad.

Besides pressure ulcers, nerve damage is a preventable complication. Prevention of brachial plexus (causes loss of sensation of arm and shoulder), radial nerve (causes wrist drop), median/ulnar nerve (causes hand weakness, claw hand), and peroneal nerve (causes foot drop) complications are avoided through correct positioning and padding.[17] For example, when appropriate, arms should be placed on padded arm boards at less than a 90-degree angle, palms up, and fingers extended to prevent injury to the brachial plexus and ulnar nerve.[1] The older adult surgical patient is at increased risk for these types of injuries due to the musculoskeletal changes related to aging. Correct positioning should be reviewed with perioperative staff frequently and reinforced at different intervals throughout the year.

Many older adult surgical patients suffer from musculoskeletal deformities and diseases, such as arthritis, which limit their range of motion—especially of the spine, neck, or upper and lower extremities.[1] Extra padding or comforting devices not only prevent further discomfort and/or injury, but the patient is more comfortable after surgery. When possible, if patients can be awake during positioning, they can participate in the position and direct the staff where areas of discomfort are located.

New advances in surgical techniques have reduced patients' risk for complications through the use of minimally invasive procedures.[18] However, minimally invasive procedures can place older adult surgical patients in unnatural positions, which can produce many of the complications discussed above.

Thermoregulation

Extreme fluctuations in temperature during the perioperative experience can put patients at risk for impaired thermoregulation. Contributing factors for the older adult surgical patients include decreased muscle mass and decreased metabolism, both of which reduce heat uptake and heat loss. A drop in core temperature below 96.9° F (36.1° C) increases the oxygen demands by 200%, and if an older adult surgical patient is shivering, oxygen consumption increases by 500%.[11] Shivering is uncommon in older adult surgical patients; however, when it occurs, the implications for the need of oxygen consumption are extreme, which can increase the metabolic rates.[1] The importance of maintaining normal body temperatures can't be understated, especially since cardiac morbidity increases as body temperatures decrease for older adult surgical patients. Older adult surgical patients should be maintained at normal body temperatures, unless contraindicated by the surgical procedure, by using a forced-air warming device, have warm blankets wrapped around exposed areas, warm I.V. fluids, heated and humidified inspired gases, decreasing exposure of unclothed body areas, and warmed prep solutions.[8,11]

Pain

Pain is often underdiagnosed and undertreated in older adult surgical patients. There are many reasons why older adult surgical patients' pain control is not sufficient. Nurses can be concerned about overmedicating the older adult, or think that the older adults need less pain medication because they don't "feel" pain like younger patients.[1,8] To complicate matters, many older adult surgical patients have beliefs that pain is a part of life and needs to be endured without complaining; therefore, they are less likely to report pain.[1,8] Whatever the reasons, postoperative pain causes stress to the body, which can lead to a variety of complications, such as hypertension, anxiety, tachycardia, hypoxemia, depression, confusion, fluid imbalance, and cardiac ischemia.[8] Assessing pain and medicating for pain control are important steps in reducing postoperative complications.

There are many pain assessment scales in use today. Unfortunately, the perioperative patient

is often not able to express themselves clearly due to effects from opioid analgesics and anesthetic agents. Also, due to multiple medications being used during and after surgery to prevent vomiting, control pain, and reverse anesthesia, the older surgical patients are at risk for severe adverse reactions and toxicity because of the drugs remaining in their system longer due to more adipose tissue, slower metabolism, and poorer kidney function.[17] In addition to assessing pain using a pain scale, it's crucial to assess for nonverbal pain indicators such as facial expressions (grimacing), behavioral changes, and body movements. It's especially challenging to assess pain levels in the cognitively impaired; therefore, nurses need to assume that pain is present.[19] Preoperative information related to the older adult surgical patient's mental status is important in helping nurses assess postoperative pain when these patients can't speak for themselves. When medicating older adult surgical patients for pain, perioperative nurses should avoid the use of meperidine and codeine. Tramadol should be used with caution; opioids should be introduced at low levels and increased slowly; NSAIDs (associated with gastrointestinal bleeding) and acetaminophen (associated with hepatotoxicity and nephrotoxicity) use should be limited; and nondrug pain-relief measures should be considered.[1,19] Perioperative nurses need to frequently check, assess, and document older adult surgical patients' responses to pain medications to ensure pain relief.

Postoperative pain management needs to be individualized to the needs of older adult surgical patients. The use of analgesics as well complementary and alternative pain control measures such as guided imagery, therapeutic touch, darken and quiet rooms, and careful observation of the older adult surgical patients can help to effectively control pain after surgery.

Positioning devices need to maintain correct body alignment with extra protection to bony prominence areas.

Education and discharge

Education should begin when the patient and family are in a quiet setting and not during hectic times, such as when waiting in the preoperative area for surgery or recovery. Verbal and written instructions will help older adult surgical patients better understand the material, especially if the print is large and easy to read.[1] Family members should be encouraged to participate in the discharge instructions. Discharge planning should begin when surgery is scheduled and should be ongoing until discharge. Preoperative assessment information is vital to assist medical and nursing staff in determining discharge needs, such as equipment, assisted living facilities, home health services, and the like. Discharge requirements need to be identified as early as possible to facilitate the appropriate education, referral, and home preparation.

Specific individual outcomes

Older adult surgical patients are growing in considerable numbers. They have different needs than the general population due to the aging process along with cognitive and physical declines from already existing diseases. Beginning the surgical experience with a complete and comprehensive assessment that focuses on the specific needs of the older adult surgical patient can prevent complications after surgery. Older adult surgical patients should be assessed as individuals and the plan of care directed toward specific individual outcomes. **OR**

REFERENCES

1. Allen S. Geriatric surgery. In: Rothrock C, ed. *Alexander's Care of the Patient in Surgery*. 14th ed. Missouri: Elsevier; 2011:1157-1181.

2. Dickinson JD. How old is too old to be a patient? Providers weigh in on controversy. *Same-Day Surgery. 2013*;37(9):97-99.

3. Longley R. Census offers statistics on older Americans. http://usgovinfo.about.com/od/censusandstatistics/a/olderstats.htm.

4. U.S. Census Bureau. THE NEXT FOUR DECADES. The older population in the United States: 2010-2050, population estimates and projections. http://www.census.gov/prod/2010pubs/p25-1138.pdf.

5. Berger D, Dardik A, Rosenthal R. Surgery in the elderly. In: Townsend CM, et al, eds. *Sasbiston Textbook of Surgery*. 18th ed. Philadelphia: Saunders; 2008:371-398.

6. Chard R. Care of preoperative patients. In: Ignatavicius D, Workman ML, eds. *Medical-Surgical Nursing*. 6th ed. Missouri: Elsevier; 2010a:242-263.

7. Cohen RR, Lagoo-Deenadayalan SA, Heflin MT, et al. Exploring predictors of complication in older surgical patients: a deficit accumulation index and the Braden Scale. *J Am Geriatr Soc*. 2012;60(9):1609-1615. doi:10.1111/j.1532-5415.2012.04109.x.

8. Bashaw M, Scott DN. Surgical risk factors in geriatric perioperative patients. *AORN J*. 2012;96(1):58-74.

9. Association of periOperative Registered Nurses (AORN). Care of the older adult in perioperative settings. http://www.aorn.org/PracticeResources/AORNPositionStatements.

10. Lagoo-Deenadayalan S, Newell M, Pofahl W. Common perioperative complications in older patients. In *Principles and Practice of Geriatric Surgery*. Second edition. New York, NY. Spring Science & Business Media, LLC; 2011.

11. Doerflinger D. Older adult surgical patients: presentation and challenges. *AORN Journal*. 2009;90(2):223-244.

12. Wesley Medical Center. Preparing for your surgery. wesleymc.com/util/documents/preparingforyoursurgerymeds0413.pdf.

13. Nagelhout J, Elisha S, Waters E. Should I continue or discontinue that medication? *ANNA*. 2009;77(1):59-73.

14. Whinney C. Perioperative medication management: General principles and practical applications. *Cleveland Clinical Journal of Medicine*. 2009;76(supplement 4): s126-132. .

15. Bauer J, Biolo G, Cederholm T, et al. Evidence-based recommendations for optimal dietary protein intake in older people: a position paper from the PROT-AGE Study Group. *J Am Med Dir Assoc*. 2013;14(8):542-559.

16. Fred C, Ford S, Wagner D, Vanbrackle L. Intraoperatively acquired pressure ulcers and perioperative normothermia: A look at relationships. *AORN*. 2012;96(3): 251-260.

17. Chard R. *Medical-Surgical Nursing*. 6th Edition. Missouri: Elsevier; 2010.

18. Chitlik A. Safe positioning for robotic-assisted laparoscopic prostatectomy. *AORN J*. 2011;94(1):37-45.

19. McGuire L. Pain: the fifth vital sign. In: Ignatavicius D, Workman ML, eds. *Medical-Surgical Nursing*. 6th ed. Missouri: Elsevier; 2010:35-61.

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The authors and planners have disclosed that they have no financial relationships related to this article.

DOI-10.1097/01.ORN.0000451047.90117.7a

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