Management of the Gastrointestinal Tract and Nutrition in the Geriatric Surgical Patient

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KEYWORDS

• Geriatric patient • Malnutrition • Nutrition • Surgery

KEY POINTS

- Elderly people experience physiologic changes in the gut and in every organ system, which predisposes them to impaired nutrition and associated increased risk factors.
- When the normal processes of aging is compounded by illness, the propensity to cause a pathologic state of malnutrition increases.
- Surgical nutrition support in the critical care setting aims to identify those at nutritional risk and to support nutritional needs in the direction of recovery; new evidence has arisen for use of certain nutrients as therapeutic agents because they are thought to contribute to the healing process and may be conditionally deficient in stress related to disease processes.
- It is important that health care providers follow evidenced-based recommendations for the provision of adequate nutrients and address the individual needs of every patient.

INTRODUCTION

Increased age leads to the loss of cells in the myenteric plexus[1] and decreased gastric emptying, possibly associated with reduced nitric oxide concentrations.[1] Satiety is affected by a reduction in the endogenous-opioid–mediated feeding drive and by altered neurotransmitter signaling in brain hunger and satiety centers.[1] There is an enhanced secretion of cholecystokinin that inhibits gastric emptying and increases satiety.[1] The functions of ghrelin and glucagonlike peptide are also modified.[1] Slowing of gastric emptying prolongs satiety.[2] Because of the delay in gastric emptying associated with normal aging, elderly patients often are recommended liquid diets that are high in calories and protein.[1] Therefore, the changes in appetite and satiety are

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multiple and include both central and peripheral factors that are impacted by aging, and many of these changes continue to be poorly understood.[2]

Because of the above factors, age is considered a nonmodifiable risk factor involving surgical outcome. This statement is modulated by the effect of physiologic age versus chronologic age,[3] which is often expressed in clinical practice as the perceived condition of the patient with respect to what the clinician would expect for their specific biological age. Objective measures exist for biological age, such as the concept of frailty,[4] which has been defined recently as the presence of 4 of 6 of the following factors associated with the prediction of 6-month mortality: Mini-Cog score of 3 or less, albumin level of 3.3 mg/dL or less, more than 1 fall in the last 6 months, hematocrit level less than 35%, dependency with at least one activity of daily living, and the presence of at least 3 comorbidities.[5] Frailty assessment is currently recommended in the routine preoperative assessment of the elderly patient and has been associated with an increased surgical risk among several procedures and in diverse prospective cohorts.[6–8]

It is important to understand the uniqueness of the aging patient to achieve the best surgical outcome by applying necessary screening criteria and using risk-modifying interventions to address their special perioperative needs. The elderly are a segment of the population significantly increasing in numbers. The US Census Bureau estimates that old-age dependency will approach youth dependency in 2030 and will actually surpass it in 2060.[9] The "baby boomers" are currently 50 to 65 years of age and with the current life expectancy will cause a significantly larger portion of the population to be elderly.[9] The number of elderly patients in the United States is expected to double in the next 25 years.[10]

The nutritional status of the elderly surgical patient has been found to be of paramount importance in the prediction of surgical risk.[8] Furthermore, nutritional interventions are purported to alter this risk when applied appropriately.[8] In addition, the postoperative elderly individual is at a greater risk of malnutrition development and subsequent health and quality of life deterioration than a younger person.[11] This review discusses the importance of optimizing the outcome of the geriatric surgical patient through proper nutritional assessment and delivery of adequate nutrition via the gastrointestinal tract.

BACKGROUND

It is estimated that more than 50% of surgical procedures are performed on individuals older than 65 years and that one-half of all individuals older than 65 will require some type of operative procedure.[12] In 2010, more than one-third of all surgical operations were performed on patients 65 years of age and older.[13] As noted above, the number of elderly individuals is steadily increasing, and the population census estimates that more than 20% of individuals in the United States will be elderly by 2025.[9]

Because the number of elderly patients is increasing and the nutrition aspect of their care is likely a modifiable risk factor for improved outcome, it is important for medical providers to be well versed in identifying potential or existing nutritional problems in their patient. In addition, health care providers must be skilled at appropriately identifying risk factors for malnutrition and creating care plans to implement appropriate nutritional support and treatment proactively.

Malnutrition has been associated with increased postoperative complications,[14–16] perioperative mortality,[17,18] increased hospital length of stay,[17] decreased longevity,[11] and quality of life[11] in elderly patients with various disease conditions. Sadly, the