

Bridget N. Fahy

Introduction

Palliative care is based upon the Latin word *palliare*, to cloak. Based upon this Latin root, it follows that palliative care is care focused on providing cover or protection to patients. In its purest sense, palliative care is intended to shield or protect patients from suffering.

According to the current World Health Organization (WHO) [1], palliative care is “an approach that improves the quality of life of patients and their families facing the problem associated with life-threatening illness, through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems, physical, psychosocial, and spiritual.” Furthermore, the following are considered essential elements of palliative care services:

- Provides relief from pain and other distressing symptoms.
- Will enhance quality of life and may also positively influence the course of illness.
- Is applicable early in the course of illness, in conjunction with other therapies that are intended to prolong life.
- Includes those investigations needed to better understand and manage distressing clinical complications.
- Integrates the psychological and spiritual aspects of patient care.
- Offers a support system to help patients live as actively as possible until death.
- Affirms life and regards dying as a normal process.
- Intends neither to hasten nor to postpone death.
- Offers a support system to help the family cope during the patient’s illness and in their own bereavement.
- Uses a team approach to address the needs of patients and their families, including bereavement counseling, if indicated.

B.N. Fahy, M.D., F.A.C.S. (✉)
Department of Surgery, The Methodist Hospital, Weill Cornell
Medical College, 6550 Fannin Street, SM 1661,
Houston, TX 77030, USA
e-mail: bnfahy@tmhs.org

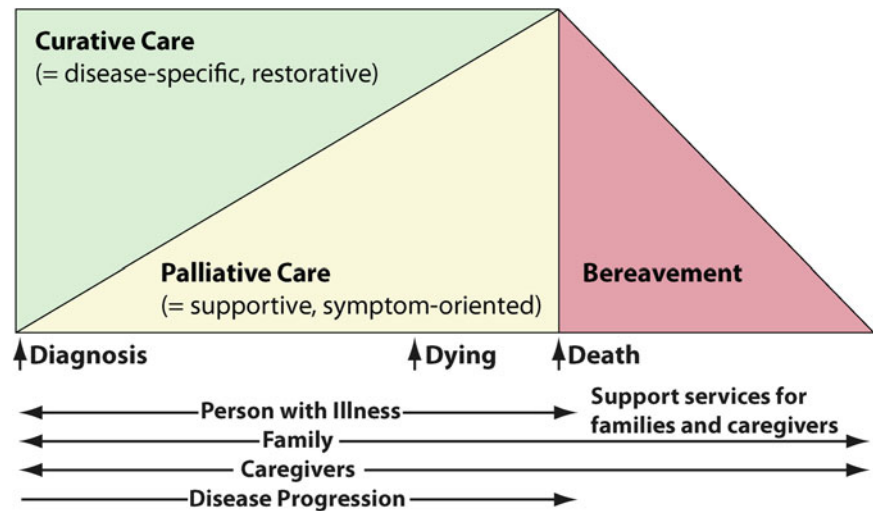
Based upon this definition and the associated key elements, palliative care is ideally suited to the care of the acute care surgical patient given its focus on pain and other distressing symptoms, its holistic approach to the patient and their family, the emphasis on a team approach to both the patient and his/her family, and its applicability in conjunction with other therapies intended to prolong life. Notably absent from the World Health Organization definition provided above is a proscription about who can provide palliative care or what specific interventions or treatments may be considered palliative. The definition leaves open a role for *all* healthcare providers to utilize any and all tools available that will meet the needs of their patients and families as they face serious, life-threatening, and/or debilitating illness.

An important corollary to the essential components of palliative care is an understanding of what palliative care is not. Perhaps most importantly, palliative care is not synonymous with hospice care. Hospice is a program of services designed to provide care to patients and families in which a patient’s life expectancy is 6 months or less. In contrast, palliative care is appropriate for patients with potentially curable diseases or conditions for which a complete recovery may be expected. Given this distinction, palliative care is sometimes referred to as supportive care in order to avoid confusion with patients considered to have terminal conditions. According to the “modern” conception of palliative care, palliative care can be provided in conjunction with curative treatment and at any point during a disease: from diagnosis through end-of-life care (Fig. 39.1).

Surgeon’s Role in Palliative Care

Prior to the start of the hospice movement in the 1960s with the pioneering work of Dame Cicely Saunders, surgeons have long played a central role in the care of the seriously ill. This is no better illustrated than the work of surgeons who provided burn care during World War II. Burn care begins with pain control and progresses through the acute phase of

Fig. 39.1 Palliative care model. Adapted from United States Department of Health and Human Services



wound healing into an ongoing process of interdisciplinary care designed to restore function and quality of life. Furthermore, many operations currently or previously used to effect a surgical “cure” were originally introduced to alleviate symptoms. Perhaps the best example of such a procedure is the radical mastectomy, first used in 1881 by William S. Halstead to treat pain from locally advanced and ulcerated breast cancers and later accepted as standard curative treatment for breast cancer.

The circumstances which have led surgeons to play a central role in palliative care were aptly described by Dunn and Milch [2] as follows: “The widening spectrum of disease and life expectancy encountered in palliative care led to the inevitable arrival of the concept at the doorstep of many specialties, including surgery. With their significant presence in the setting of advanced and incurable illness, surgeons could not indefinitely avoid the social, psychological, and spiritual challenges encountered there.”

The routine incorporation of palliative care into the daily practice of acute care surgery falls under von Gunten’s definition of primary palliative care [3]. Primary palliative care refers to the basic skills and competencies required of all healthcare providers to relieve pain and other distressing symptoms. The application of basic palliative care principles to surgery is a fundamental component of good surgical clinical care. Surgeons can and should be expected to relieve suffering and maintain quality of life for all of their patients, not just those at the end of their life. Consequently, surgeons must be able to provide palliative treatment in conjunction with curative treatment and furthermore, must possess the skills to transition from curative to purely palliative as dictated by both the patient’s disease as well as their goals.

Unlike few other medical specialties, surgeons are frequently at the forefront of providing pain and symptom control for their patients. Furthermore, surgeons from all specialties are routinely called upon to provide palliation.

The central role of surgeons as “palliativists” is perhaps illustrated best through the work of the acute care surgeon charged with “manning” the front lines against acute surgical disease. In this way, palliative surgery, and by extension palliative surgeons, are not restricted by surgical subspecialty or procedure but by the intent of the surgical intervention offered—that is, to relieve pain or other distressing symptoms.

Despite the introduction of the term “palliative care” by Balfour Mount, a Canadian urologist, in 1975, it was not until 1998 that the Board of Regents of the American College of Surgeons approved the “Principles Guiding Care at the End of Life [4] and identified key palliative care concepts for surgeons.” Of the ten principles outlined, those most germane to the current discussion include the following:

- Be sensitive to and respectful of the patient’s and family’s wishes.
- Ensure alleviation of pain and management of other physical symptoms.
- Recognize, assess, and address psychological, social, and spiritual problems.
- Provide access to therapies that may realistically be expected to improve the patient’s quality of life.
- Provide access to appropriate palliative care and hospice care.
- Recognize the physician’s responsibility to forego treatments that are futile.

Notable among these principles is the focus on provision of care consistent with patient and family wishes, interventions designed to improve quality of life, and an appreciation of all symptoms—physical, emotional, psychosocial.

In 2003, the American College of Surgeons published the core competencies for surgical palliative care [5]. Structured according to the Accreditation Council for Graduate Medical Education six core competencies, the Surgeons Palliative Care Workgroup of the American College of Surgeons

established core competencies in two basic elements of palliative care—pain management and communication skills—to be essential for all surgeons. Additionally, for surgeons who care for dying patients more frequently, additional skills in end-of-life care were felt to be important. While a complete review of the surgical palliative care core competencies is beyond the scope of this chapter, the competencies, as delineated by the Workgroup are fundamental to the complete care of the surgical patient, regardless of diagnosis or specialty of the surgeon providing care.

Application of Palliative Care to the Acute Care Surgery Patient

Recognizing the Acute Care Surgical Patient in Need of Palliative Care

Given that palliative care is appropriate for any patient facing a serious or life-threatening illness, many patients presenting with acute surgical illness will benefit from palliative care. Furthermore, virtually all patients with acute surgical disease are symptomatic. Symptoms commonly seen in the acute care surgical patient include: right upper quadrant pain from acute cholecystitis, right lower quadrant abdominal pain from appendicitis, left lower quadrant pain from diverticulitis, nausea and vomiting due to a small bowel obstruction, anorectal pain caused by a perirectal abscess. While many of these diseases will not be life-threatening or produce long-term debility, a significant percentage of patients with these common acute surgical problems are at risk for disease and/or treatment-related morbidity and mortality which may result in long-lasting symptoms or debility. A recent study by Moore et al. [6] found that emergency colon operations were associated with a 28% mortality rate even in the hands of experienced acute care surgeons. Ingraham et al. [7] examined the morbidity and mortality associated with emergency appendectomy, cholecystectomy, or colon resection in the National Surgical Quality Improvement Program database and reported a 15% complication rate across these three procedures. The morbidity rate was highest for colorectal resection (47%), followed by cholecystectomy (9%) and appendectomy (6%).

The first challenge facing the acute care surgeon is the identification of a patient who will benefit from a palliative procedure. In other words, “what are the characteristics of a prospective palliative care patient?” An acute care surgical patient appropriate for palliative care will typically meet the following criteria:

1. Serious or life-threatening condition.
2. Disease potentially responsive to surgical intervention.
3. Patient’s premorbid health conditions do not preclude surgical intervention.

Taken together, these criteria reflect the basic tenets of surgical decision-making. As Winchester noted [8], “It is judgment that matters in this profession. Otherwise the surgeon is no more than a man (or woman) with a knife, and a license to mutilate.”

While it may be argued that any surgical disease, no matter how limited or seemingly uncomplicated, may become serious or life-threatening under certain circumstances (e.g., incarcerated ventral hernia in a patient 3 months following an acute myocardial infarction). The more obvious cases involve either patients with common surgical problems in the setting of advanced underlying disease such as cancer or end stage organ dysfunction or advanced surgical disease in an otherwise healthy patient. In the case of the former, it is imperative that the acute care surgeon consider the status of the underlying disease and its associated prognosis before considering the disease-related complications or procedure-specific risks. To illustrate this point, consider the following case of Ms. O.

Ms. O is a 57-year-old woman with Stage IIIC ovarian cancer whose disease has progressed on second-line chemotherapy. She presents to the emergency department with severe anorectal pain. On physical examination, you determine that she has a perirectal abscess.

A surgical palliative care approach to Ms. O will include the following steps:

1. Global assessment of Ms. O’s health, including a discussion with her oncologist regarding the status of her cancer, additional treatment options, and previous conversations regarding her prognosis.
2. Discussion with Ms. O regarding the anticipated outcomes following the proposed surgical procedure. The specific outcomes to be discussed include the likelihood that the proposed procedure will alleviate her symptom (anorectal pain), perioperative risks of the procedure considering her premorbid and treatment-related risk factors (i.e., neutropenia, thrombocytopenia, etc.), and impact of the procedure on future treatment options (i.e., potential delay in additional cancer treatment).
3. Articulation of alternate nonoperative treatment options and how this may interfere or promote her goals of treatment.

Prognostication for the Acute Care Surgical Patient

A second criterion of an acute care surgical patient appropriate for a palliative surgical approach is the presence of disease potentially responsive to surgical therapy. This criterion highlights the importance of accurate prognostication in the acute care surgical patient. Although prognostication has traditionally been listed as the third of the three great clinical

skills-behind diagnosis and treatment, it may be considered second behind diagnosis when caring for the acute care surgical patient in need of palliative care. Prognosis is generally used to describe the prediction of any health outcome. When performed accurately, prognostication allows patients and their families to participate in their healthcare decision-making in a way that ensures their autonomy through a process of informed consent.

Although issues related to informed consent are addressed elsewhere in this book, it is instructive to briefly consider the informed consent process here since informed consent is a direct extension of accurate prognostication. As Robert Veatch [9] notes in his remarks regarding informed consent: "Telling the patient everything about a procedure is an impossible task. All that is being called for is adequate information." The standards used to determine adequate information include the professional standard, the reasonable person standard, and the subjective standard. According to the subjective standard, the surgeon gives the patient the information he or she would personally find meaningful. The information shared should fit with the life plan and interests of the individual patient. In the setting of palliative acute care surgery, it is the subjective standard that seems most relevant when considering prognostication and informed consent given the emphasis placed on providing treatments that may realistically be expected to improve the patient's quality of life and reflect sensitivity to, and respect for, the patient's and family's wishes.

Unlike prognostication in other medical specialties, surgical palliative care is unique in that surgeons are called upon to incorporate knowledge of the surgical disease, any relevant underlying diseases (e.g., end stage organ dysfunction), as well as the anticipated surgical outcome, when providing prognostic information to a patient and their family. Various factors have been used to formulate estimates of prognosis: clinician estimate of survival, performance status scales (e.g., Karnofsky performance status), biological parameters (e.g., preoperative albumin levels, Acute Physiology and Chronic Health Evaluation II score). The Palliative Prognostic (PaP) Score [10] was created by a group of Italian investigators who combined laboratory values, symptoms, clinician estimates, and performance status into a survival prognostication tool that can be readily calculable at the bedside. In their study of 451 terminally ill cancer patients, the PaP score was able to subdivide patients into three distinct risk groups with median survival of 14, 32, and 76 days in three groups.

The Palliative Performance Scale (PPS) is another validated prognostic tool used to estimate the survival of patients with life-threatening illness [11, 12]. The PPS provides a functional assessment of ambulation, activity level, evidence of disease, self-care, oral intake, and level of consciousness. The scale consists of 11 categories yielding a score from 0% (death) to 100% (ambulatory and healthy). A PPS score of

50% is associated with a patient who is non-ambulatory (mainly sits or lies), requires a significant amount of assistance, and has normal to reduced oral intake. At a score of 50%, extensive disease is evident, and the estimated life expectancy ranges from 2 to 4 weeks. The PPS was recently used to assess survival in an inpatient population at a university teaching [13]. A total of 310 adult inpatients with advanced cancer (60%) and other advanced (life-limiting) diseases were included in the study cohort. Three distinct survival groups were identified based upon PPS: 10–20, 30–40, and ≥ 50 . The median survival for patients with PPS 10–20 was approximately 10 days, while that for 30–40 was approximately 40 days, and for patients with PPS of ≥ 50 it was not reached by 150 days. A 10% decrement in PPS was associated with a 1.65-fold increased risk of death [13].

Formulating a prognosis in other serious diseases such as congestive heart failure, chronic obstructive pulmonary disease, and various forms of dementia can be more difficult than it is in the case of malignancy due to the difference in disease trajectories. Despite these challenges, guidelines exist to assist in determining the prognosis of patients with non-cancer diagnoses [14]. A thorough review of the guidelines for each disease is beyond the scope of this chapter, but they are nicely summarized in a review article by Lynn [15].

Communication with the Acute Care Surgical Patient

The other group of acute care surgical patients who may benefit from a surgical palliative care approach is those with advanced surgical disease but are otherwise without significant comorbidities or serious underlying disease. The case of Mr. A illustrates the vital role of communication in the setting of acute surgical disease.

Mr. A is a healthy 73-year-old man recently diagnosed with atrial fibrillation during an annual physical examination. He was started on digoxin and his heart rate is well controlled. He presents to the emergency department with acute onset of abdominal pain which woke him from sleep. His workup in the emergency department shows that he is in atrial fibrillation with a heart rate of 125 and a blood pressure of 102/58. When you examine his abdomen, you do not hear any bowel sounds, he is soft, non-tender, and non-distended. He complains of severe abdominal pain out of proportion to his physical examination. You diagnose him with mesenteric ischemia and take him to the operating room for urgent exploration. At laparotomy, his entire small bowel is ischemic but not necrotic and he has an embolus in his superior mesenteric artery for which you perform an embolectomy. You transfer him to the surgical intensive care unit intubated with a temporary abdominal closure and plan to examine his bowel again in 24 h.

A surgical palliative care approach to Mr. A will include the following steps:

1. Discussion of the intraoperative findings with Mr. A's family, including the possible outcomes from re-exploration: complete necrosis of his small intestine representing a non-survivable injury, large amount of nonviable bowel requiring a massive small bowel resection and short-gut, or little to no bowel ischemia with the prospect of full recovery.
2. Determine if Mr. A has completed an advance directive and/or a medical power of attorney to assist with medical decision-making.
3. Make referrals to a hospital social worker and/or chaplain as needed to provide support to Mr. A's family.
4. Arrange for a family meeting to follow Mr. A's re-exploration to update his family and begin planning for his next phase of care.

The case of Mr. A emphasizes the importance of prompt, clear, and direct communication. As noted above, the American College of Surgeons has identified communication one of the two basic elements of palliative care in which all surgeons must be competent. Essential components of communication in the acute care surgery setting include willingness on the part of the surgeon to disclose prognosis truthfully, an appreciation that communication with patients and/or their families is a process and not a singular event, and the skills to effectively communicate with all members of the care team. Despite the well-intentioned efforts of some surgeons to avoid giving bad news out of fear of robbing hope, there is little evidence to support this position. In his book entitled *The Dying Patient*, Simpson asserts that "Hope is based on knowledge, not ignorance" [16]. It is more likely that misguided avoidance of difficult information, or worse, blatant dishonesty about prognosis, may add to a patient or family's distress, cause them to seek treatment which they might not otherwise pursue, and rob them of precious time better spent engaged in activities that promote peace and dignity. A recent study by Wilkinson et al. [17] studied patient preferences for information and for participation in decision-making among 152 consecutive acute medical inpatients. They found that 61% of patients favored a passive approach to decision-making (physician makes the final decision). In contrast, 66% of patients sought "very extensive" or "a lot" of information about their condition. Importantly, there was no relationship between patient preferences for involvement in decision-making and for information about their medical condition. A study by Mazur and Hickam [18] of 467 veterans studied the level of involvement the patients wanted in decision-making related to invasive medical interventions. The vast majority of patients (93%) preferred that their physician disclose risk information to them and two-thirds of patients preferred shared decision-making compared to only 21% who preferred physician-based decision-making.

Taken together, these studies confirm that patients want to participate in their healthcare decisions and desire the necessary information needed to make these decisions.

Family meetings are a crucial tool for effective communication in palliative care. Optimal palliative decision-making is facilitated through effective interactions among the patient, family members, and the surgeon through a dynamic relationship described as the "palliative triangle" [19]. The "palliative triangle" is a model designed to aid in complex surgical decision-making when palliative surgical procedures are being considered. The three arms of the triangle include the patient, family and surgeon and the goals that each member of the triangle brings when palliative surgical procedures are considered. The patient's concerns, values, and emotional support are considered against existing medical and surgical alternatives. The process of aligning the concerns and interests of the three parties involved can moderate against the unrealistic expectations that each party may bring to the decision-making process. A study by Miner et al. [20] utilized the "palliative triangle" technique in 227 patients with incurable metastatic or advanced cancer considered for a palliative procedure. A palliative procedure was performed in 47% of patients, while 53% were not selected for a palliative operation. The indications for the palliative procedures included gastrointestinal obstruction in 36%, local control of tumor-related symptoms (e.g., bleeding, pain, or malodor, 25.5%), jaundice in 10%, and other symptoms in 28%. Patient-reported symptom improvement or resolution was noted following 91% of procedures. Patients who experienced symptom relief did so within 30 days of the operation. It is noteworthy that prior to the palliative procedures being performed, one or two meetings between the patient, family, and surgeons occurred before a final treatment decision was reached [20]. While there may be cases in which time for such meetings are not possible, this opportunity does exist for a significant proportion of acute care surgical patients. In the end, the highly satisfactory results published by Miner et al. [20] reflect the essential combination of appropriate patient selection, excellent surgical technique, and effective communication among the arms of the "palliative triangle." As Buckman noted, "Communication is often the most important component of palliative care, and effective symptom control is virtually impossible without effective communication" [21].

Outcomes of Palliative Procedures

Definition of Palliative Procedure

Once the surgeon has identified the acute care surgical patient in need of palliative care, the next steps, as noted above, are prognostication and communication of anticipated outcomes

to patients and their families. Even after the surgeon has gathered the necessary information to discuss prognosis for a given disease process and has communicated this information effectively, she/he is faced with a formidable challenge, namely, the actual provision of a palliative procedure.

Agreement about what constitutes a palliative procedure has been the matter of debate in the existing surgical literature. First and foremost, palliative surgery care begins with a symptomatic patient. To paraphrase Blake Cady: It is impossible to palliate the asymptomatic patient [22]. The precise definition of palliative surgery is less clear, as illustrated by a study by McCahill et al. [23]. In this study, 419 members of the Society of Surgical Oncology were surveyed and asked to select the single best way they classified a procedure as palliative. They found that 41% of surgeons defined a procedure as palliative based upon the preoperative intent of the procedure, 27% defined the procedure based upon the postoperative evaluation. Surgeons in this group waited for the results of the operation to determine whether it was palliative or curative. One-third of surgeons based their definition of a palliative procedure based upon the patient's prognosis [23]. If a palliative operation is defined by its outcome and not by its intention, the possibility to effectively inform and prognosticate is severely hampered. In their article on the ethics of palliative surgery in patients with advanced cancer, Hofmann et al. [24] define palliative surgery in this select group of patients as "any invasive procedure in which the main intention is to mitigate physical symptoms in patients with non-curable disease without causing premature death." Regardless of the underlying disease process, most surgeons agree that the goals of a palliative operation include symptom relief, pain relief, and maintaining patient independence and function [23]. The logical extension of any definition of palliative operation that focuses on relief of symptoms and/or improvement in quality of life is that no specific surgical intervention is automatically included or excluded as potentially palliative.

Morbidity and Mortality of Palliative Procedures

Regardless of the specific procedure performed or underlying disease process, the literature is clear regarding the high morbidity and mortality rates associated with palliative procedures. Mesa and Tefferi [25] reported a 30.5% morbidity and 9% operative mortality rate following splenectomy for symptom palliation from myelofibrosis with myeloid metaplasia. McCahill et al. [26] reported a 41% complication rate among their palliative-intent procedure in patients with advanced malignancy. Similar to the findings of the City of Hope group, the Memorial Sloan-Kettering Cancer Center group [27] reported that 40% of patients developed some postoperative complication and 11% of patients died within

30 days following their palliative procedure. Badgwell et al. [28] and the group from the M. D. Anderson Cancer Center reviewed the records of 442 patients with advanced or incurable cancer for whom a surgical oncology consultation for palliation was requested. A total of 119 (27%) of patients underwent a palliative surgical procedure. Sixty-seven complications occurred in 48 patients for an overall morbidity rate of 40%. The most common complications were respiratory distress or failure in 12%, wound infection/non-healing wounds in 11%, with approximately 5% of patients suffering from postoperative bowel obstructions, ileus, or bacteremia/line sepsis. The overall mortality rate was 7%. The median survival for all patients, nonoperative patients, and patients who underwent a palliative procedure was 2.9, 2.1, and 6.9 months, respectively [28]. Compared to these older studies, there appears to be some improvement in the postoperative morbidity and mortality following palliative procedures as recently reported by Miner et al. [20]. In their study of 129 patients who underwent a palliative procedure for incurable malignancy, 20% sustained a postoperative complication and the 30-day postoperative mortality rate was 4%.

Palliative Outcomes Following Palliative Procedures

In addition to counseling patients and their families about the high morbidity and mortality associated with palliative procedures, surgeons are challenged with providing information about the anticipated success of the proposed procedure in alleviating the patient's symptom(s). The paucity of literature regarding palliative outcomes following palliative procedures was first described by Miner et al. [29]. The authors reviewed 348 studies published between 1990 and 1996 that studied outcomes following surgical procedures for cancer palliation. They found that the majority of these studies were retrospective in nature with the balance of the reports divided between review articles, prospective studies and case reports. More than two-thirds of the studies reviewed reported physiologic response, survival, and morbidity and mortality data while only 17% of the studied reported any quality of life outcomes and only 26% reported the effect of the procedure on pain control. Furthermore, less than half of the studies that considered quality of life outcomes used a validated instrument [29].

Since this study by Miner et al. [29] was published, a handful of studies have specifically examined the outcomes of palliative procedures and the majority of these studies have focused on oncology patients. Among the earliest studies to prospectively examine the outcome following palliative surgical procedures was published by McCahill and the group from the City of Hope Cancer Center in 2003 [26]. They studied 59 patients who underwent major operations

for advanced malignancy; 22 operations were performed for palliation and 37 were performed with curative intent. A total of 33 patients (20 in palliative group, 13 in the curative group) were symptomatic from their tumors preoperatively. Symptom resolution was seen in 26/33 patients (79%). A large study was published in 2004 by the group at the Memorial Sloan-Kettering Cancer Center [27] in which they examined the outcomes following over 1,000 palliative procedures performed in 823 patients with advanced cancer. The indications for the procedure were gastrointestinal obstruction in 34%, neurologic symptoms in 23%, pain in 12%, and dyspnea in 9%. Eighty percent of patients experienced an improvement in their symptoms and almost half remained symptom free for a median of 135 days. Most recently, Miner et al. [20] studied the outcomes following 129 palliative procedures and found that patient-reported symptom improvement or resolution occurred following 91% of procedures. Those patients who experienced symptom relief did so within 30 days of the operation.

On balance, the surgical literature is severely limited regarding palliative outcomes (e.g., symptom resolution) following palliative procedures. As noted by Smith and McCahill [30], "... there are educational and research opportunities among surgeons in better defining factors associated with successful surgical palliation." Although they were referring specifically to surgical palliation of advanced malignancies, their statement is equally applicable to the acute care surgical patient without malignancy.

Patient Selection for Palliative Procedures

Given the high morbidity and mortality rates associated with palliative procedures—regardless of procedure or underlying disease process—it seems that patient selection may be the single more important factor in successful surgical palliation [19]. As Smith and McCahill [30] recently noted, "The decision to pursue a major surgical intervention becomes more controversial when it is likely to be noncurative and instead has symptom relief as its major objective." The accuracy of surgeons' preoperative predictions following major surgery for advanced malignancy was recently studied by Smith and McCahill [30]. The authors correlated surgeons' preoperative estimation of each patient's life expectancy and likelihood of symptom palliation following surgery with patient self-reports of symptom palliation following surgery. They found that surgeons' preoperative estimates of patient survival agreed with survival outcomes. However, surgeons' preoperative estimates of the success of symptom improvement following surgery did not correlate in general with patients' self-assessments; surgeons underestimated their success in symptom resolution. This tendency to underestimate the success of symptom resolution may result in patients

with advanced malignancies not receiving palliative procedures.

If surgeons' predictions of symptom relief following palliative procedures cannot accurately identify those patients most likely to benefit, what other criteria are available? McCahill et al. [26] attempted to quantitate the effectiveness of palliative surgery in symptomatic patients with advanced malignancies through a Palliative Surgery Outcome Score (PSOS). The PSOS incorporates elements of treatment success (e.g., symptom relief) and treatment failure (e.g., symptom recurrence and surgical complications) and their associated hospital days. The PSOS indicates the percentage of postoperative days for which a patient was not hospitalized, free of the symptom that the operation was intended to treat, and free of major surgical complication in the 6 months after surgery. A PSOS of 70 was defined as good-excellent surgical palliation as it represented a patient who lived at least 70% of the study period outside of the hospital, free of the symptom addressed by the procedure and without major surgical morbidity. This result was achieved in 64% of patients. Given that only 36% of patients who lived <6 months achieved a PSOS of 70, the authors emphasized the significant impact of limited longevity on successful surgical palliation and stressed the importance of identifying clinical factors known to correlate with survival. In their study, preoperative serum albumin and weight loss were important predictors of survival. Similarly, the group from the Memorial Sloan-Kettering Cancer Center [27] found that poor palliative outcomes were associated with patients who had poor performance status, poor nutrition, weight loss, and no previous cancer therapy. Furthermore, a major postoperative complication reduced the probability of symptom improvement to 17%. A recent examination of the National Surgical Quality Improvement Program database for outcomes following operations for disseminated cancer identified the following independent risk factors for postoperative morbidity and mortality: increasing age, impaired functional status, weight loss >10%, dyspnea, ascites, chronic steroid use, active sepsis, elevated creatinine, hypoalbuminemia, decreased serum hematocrit, acuity of the surgical procedure, impaired respiratory function, and abnormal white blood cell count [31].

Future Directions for Palliative Care in the Acute Care Surgical Patient

Expanding the Role of Surgeons as Primary Providers of Palliative Care

Although palliative surgical care has been most consistently applied to the field of oncology, it is increasingly being applied to patients with disease processes other than oncology.

Furthermore, while physicians from nonsurgical specialties have traditionally dominated the ranks of palliative care providers, this too, is changing. Surgeons can point to Balfour Mount, Geoff Dunn, Karen Brasel, Anne Mosenthal, and others as early pioneers in palliative surgical care. Furthermore, beginning in 2008, the American Board of Surgery (along with nine other medical specialty boards) began offering a subspecialty certificate in Hospice and Palliative Medicine. As of December 2011, the American Board of Surgery has certified 26 diplomates in Hospice and Palliative Medicine. This number is expected to continue to rise as several surgeons prepare to enter the board certification process in Hospice and Palliative Medicine through the Experiential and Practice Pathways. Current surgical leaders in palliative care can be found in every surgical specialty, including acute care and surgical intensivists.

Education in Surgical Palliative Care

Despite the American College of Surgeon's publication of core competencies in palliative care in 2003 [5] few surgeons receive the education and training needed to satisfy these competencies. The lack of formal instruction in palliative care among surgical oncologists was reported by McCahill et al. in 2002 [23]. They queried 419 members of the Society of Surgical Oncology about prior education or training they had received in palliative surgery. They found that the respondents had received a mean of 5 h of palliative care education during medical school and a mean of 9.8 h of education during residency and/or fellowship. One third of respondents had received no training in residency or fellowship. Galante et al. [32] surveyed 70 surgeons from a variety of subspecialties who practiced in both academic and community settings about their palliative care education experience. The median number of hours of palliative care education during residency was zero; approximately 85% of those surveyed received no palliative care education during residency or fellowship. These studies highlight the significant need for palliative care education for surgeons at all levels of training and in all subspecialties. Given the unique perspective surgeons bring to the specialty of palliative medicine (in contrast to our non-procedural colleagues), it is imperative that education about surgical palliative care be provided by surgeons in conjunction with the other interdisciplinary palliative care team members.

Need for Surgical Palliative Care Research

The studies cited above on the morbidity and mortality of palliative-intent procedures and the paucity of research available regarding palliative outcomes following these proce-

dures clearly demonstrates an urgent need for research specifically focused on surgical palliative care. Some of the specific areas of surgical palliative care that warrant further study include the following:

Surgical Decision-Making

Surgeons must learn how to ask "should this operation be performed for this patient at this time?" before "can this operation be done?" Establishing basic guidelines for elements to be considered prior to undertaking a palliative procedure should be a priority. Much like the computer-aided decision support models currently available to address other clinical scenarios like abdominal sepsis [33] decision support based upon evidence (when available) should also be a goal for palliative surgical decision-making. In contrast to decision support in other situations, however, patient (and family) preferences and goals of care must play a central role as defined by the "palliative triangle" [19].

Intimately related to the process of surgical decision-making is the role of prognostication. Prognostication is based upon a surgeon's ability to incorporate his/her knowledge of the natural history of disease with and without treatment and expected outcomes of a procedure to arrive at an overall prognosis. Several clinical prognostic scales and indices exist (e.g., Palliative Prognostic Score [10], Palliative Performance Scale [12], Palliative Prognostic Index [34], and Good/Bad/Uncertain [35]), although, to date, none of these scales have been specifically validated in a surgical population and most have been applied primarily or exclusively to oncology patients.

Patient and Family Decision-Making

Understanding patient and family preferences for treatment, specifically as they relate to accepting or rejecting surgical intervention as a means of palliation, is an essential area in need of research. A recent study by Kwok et al. [36] retrospectively examined inpatient surgical procedures in the year before death for Medicare beneficiaries aged ≥ 65 years and found that 32% (575,596) underwent a surgical procedure in the last year of their life, 18% had a surgical procedure in the last month of life, and 8% had a surgical procedure in the last week of their life. The high volume of surgical procedures performed in this one cohort raises significant questions about the utility and benefit of these procedures meeting the goals of these patients and their families given their short life expectancy. An important corollary to this study would be an examination of patient and family satisfaction with the decision to proceed with surgical intervention and factors associated with their satisfaction or dissatisfaction.

Symptom Management

On a daily basis, surgeons are faced with determining whether surgical intervention is an appropriate or optimal

means of relieving patient symptoms. With rare exception (e.g., malignant gastric outlet obstruction [37]), surgeons have little evidence-based guidelines upon which to make their recommendations. For common clinical scenarios (e.g., malignant bowel obstruction), prospective randomized clinical trials are needed to effectively guide surgical decision-making about the optimal method of palliation. Furthermore, such trials must also include relevant palliation-specific outcomes such as efficacy of symptom relief, duration of symptom relief, and need for re-intervention.

Conclusion

Palliative care provides a multidisciplinary approach to patients and families facing life-threatening illness that seeks to relieve suffering in both physical and nonphysical domains. Importantly, palliative care can be initiated early in the course of disease (e.g., at the time of diagnosis) and may be provided in conjunction with therapies intended to prolong life. Palliative care principles form the basis of good surgical care and surgeons can and should be expected to possess the skills needed to provide palliative care in conjunction with/as part of their routine surgical care. The American College of Surgeons has established core competencies for surgical palliative care. Two basic elements of palliative care—pain management and communication skills—are considered core competencies for all surgeons.

The application of palliative care to the acute care surgical patient reveals a significant need in this vulnerable population. Specific needs in this setting include a prompt recognition of the acute care patient in need of surgical palliation, an accurate assessment of the patient's prognosis, and an honest and accurate discussion of prognosis with patients and their families. Essential components of the communication with the acute care surgical patient in need of palliation include a discussion of the anticipated palliation-specific outcomes following the proposed surgical intervention and a candid discussion of the significant morbidity and mortality associated with palliative procedures.

Although some progress has been made toward integrating palliative care principles into surgical practice, substantial challenges remain. These challenges, in turn, represent important opportunities for research. A few key areas prime for investigation include validation of existing palliative care prognostic scales in surgical populations, examination of patient and family decision-making for or against surgical intervention for palliation and satisfaction with these decisions, and prospective randomized trials designed to determine the optimal method of palliation for common clinical scenarios facing the acute care surgeon (e.g., malignant bowel obstruction).

References

1. World Health Organization. WHO definition of palliative care. 2012 [cited 28 Feb 2012]. Available from <http://www.who.int/cancer/palliative/definition/en/>
2. Dunn GP, Milch RA. Introduction and historical background of palliative care: where does the surgeon fit in? *J Am Coll Surg.* 2001;193(3):325–8.
3. von Gunten CF. Secondary and tertiary palliative care in US hospitals. *JAMA.* 2002;287(7):875–81.
4. Statement on principles guiding care at the end of life. American College of Surgeons' Committee on Ethics. *Bull Am Coll Surg.* 1998;83(4):46.
5. Surgeons Palliative Care Workgroup. Office of Promoting Excellence in End-of-Life Care: Surgeon's Palliative Care Workgroup report from the field. *J Am Coll Surg.* 2003;197(4):661–86.
6. Moore LJ, Turner KL, Jones SL, Fahy BN, Moore FA. Availability of acute care surgeons improves outcomes in patients requiring emergent colon surgery. *Am J Surg.* 2011;202(6):837–42.
7. Ingraham AM, Cohen ME, Bilimoria KY, Raval MV, Ko CY, Nathens AB, et al. Comparison of 30-day outcomes after emergency general surgery procedures: potential for targeted improvement. *Surgery.* 2011;148(2):217–38.
8. Winchester S. *A Man with a knife.* New York: GP Putnam's and Sons; 2003.
9. Veatch RM. *The basics of bioethics.* 2nd ed. Upper Saddle River, NJ: Pearson Education, Inc.; 2003.
10. Maltoni M, Nanni O, Pirovano M, Scarpi E, Indelli M, Martini C, et al. Successful validation of the palliative prognostic score in terminally ill cancer patients. Italian Multicenter Study Group on Palliative Care. *J Pain Symptom Manage.* 1999;17(4):240–7.
11. Anderson F, Downing GM, Hill J, Casorso L, Lerch N. Palliative performance scale (PPS): a new tool. *J Palliat Care.* 1996;12(1):5–11.
12. Morita T, Tsunoda J, Inoue S, Chihara S. Validity of the palliative performance scale from a survival perspective. *J Pain Symptom Manage.* 1999;18(1):2–3.
13. Olajide O, Hanson L, Usher BM, Qaqish BF, Schwartz R, Bernard S. Validation of the palliative performance scale in the acute tertiary care hospital setting. *J Palliat Med.* 2007;10(1):111–7.
14. Stuart B. The NHO Medical Guidelines for Non-Cancer Disease and local medical review policy: hospice access for patients with diseases other than cancer. *Hosp J.* 1999;14(3–4):139–54.
15. Lynn J. Perspectives on care at the close of life. Serving patients who may die soon and their families: the role of hospice and other services. *JAMA.* 2001;285(7):925–32.
16. Simpson M. Therapeutic uses of truth. In: Wilkes E, editor. *The dying patient.* Lancaster: MYP Press; 1982.
17. Wilkinson C, Khanji M, Cotter PE, Dunne O, O'Keeffe ST. Preferences of acutely ill patients for participation in medical decision-making. *Qual Saf Health Care.* 2008;17(2):97–100.
18. Mazur DJ, Hickam DH. Patients' preferences for risk disclosure and role in decision making for invasive medical procedures. *J Gen Intern Med.* 1997;12(2):114–7.
19. Thomay AA, Jaques DP, Miner TJ. Surgical palliation: getting back to our roots. *Surg Clin North Am.* 2009;89(1):27–41. vii–viii.
20. Miner TJ, Cohen J, Charpentier K, McPhillips J, Marvell L, Cioffi WG. The palliative triangle: improved patient selection and outcomes associated with palliative operations. *Arch Surg.* 2011;146(5):517–22.
21. Buckman R. Communication skills in palliative care: a practical guide. *Neurol Clin.* 2001;19(4):989–1004.
22. Cady B, Easson A, Aboulafia AJ, Ferson PF. Part 1: Surgical palliation of advanced illness—what's new, what's helpful. *J Am Coll Surg.* 2005;200(1):115–27.

23. McCahill LE, Krouse R, Chu D, Juarez G, Uman GC, Ferrell B, et al. Indications and use of palliative surgery—results of Society of Surgical Oncology survey. *Ann Surg Oncol*. 2002;9(1):104–12.
24. Hofmann B, Haheim LL, Soreide JA. Ethics of palliative surgery in patients with cancer. *Br J Surg*. 2005;92(7):802–9.
25. Mesa RA, Tefferi A. Palliative splenectomy in myelofibrosis with myeloid metaplasia. *Leuk Lymphoma*. 2001;42(5):901–11.
26. McCahill LE, Smith DD, Borneman T, Juarez G, Cullinane C, Chu DZ, et al. A prospective evaluation of palliative outcomes for surgery of advanced malignancies. *Ann Surg Oncol*. 2003;10(6):654–63.
27. Miner TJ, Brennan MF, Jaques DP. A prospective, symptom related, outcomes analysis of 1022 palliative procedures for advanced cancer. *Ann Surg*. 2004;240(4):719–26. discussion 26–7.
28. Badgwell BD, Smith K, Liu P, Bruera E, Curley SA, Cormier JN. Indicators of surgery and survival in oncology inpatients requiring surgical evaluation for palliation. *Support Care Cancer*. 2009;17(6):727–34.
29. Miner TJ, Jaques DP, Tavaf-Motamen H, Shriver CD. Decision making on surgical palliation based on patient outcome data. *Am J Surg*. 1999;177(2):150–4.
30. Smith DD, McCahill LE. Predicting life expectancy and symptom relief following surgery for advanced malignancy. *Ann Surg Oncol*. 2008;15(12):3335–41.
31. Tseng WH, Yang X, Wang H, Martinez SR, Chen SL, Meyers FJ, et al. Nomogram to predict risk of 30-day morbidity and mortality for patients with disseminated malignancy undergoing surgical intervention. *Ann Surg*. 2011;254(2):333–8.
32. Galante JM, Bowles TL, Khatri VP, Schneider PD, Goodnight Jr JE, Bold RJ. Experience and attitudes of surgeons toward palliation in cancer. *Arch Surg*. 2005;140(9):873–8. discussion 8–80.
33. Moore LJ, Turner KL, Todd SR, McKinley B, Moore FA. Computerized clinical decision support improves mortality in intra abdominal surgical sepsis. *Am J Surg*. 2010;200(6):839–43. discussion 43–4.
34. Morita T, Tsunoda J, Inoue S, Chihara S. The Palliative Prognostic Index: a scoring system for survival prediction of terminally ill cancer patients. *Support Care Cancer*. 1999;7(3):128–33.
35. Sloan JA, Loprinzi CL, Laurie JA, Novotny PJ, Vargas-Chanes D, Krook JE, et al. A simple stratification factor prognostic for survival in advanced cancer: the good/bad/uncertain index. *J Clin Oncol*. 2001;19(15):3539–46.
36. Kwok AC, Semel ME, Lipsitz SR, Bader AM, Barnato AE, Gawande AA, et al. The intensity and variation of surgical care at the end of life: a retrospective cohort study. *Lancet*. 2011;378(9800):1408–13.
37. Jeurnink SM, Steyerberg EW, van Hooft JE, van Eijck CH, Schwartz MP, Vleggaar FP, et al. Surgical gastrojejunostomy or endoscopic stent placement for the palliation of malignant gastric outlet obstruction (SUSTENT study): a multicenter randomized trial. *Gastrointest Endosc*. 2010;71(3):490–9.