The importance of surgical oncology in China: a view from across the ocean

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Submitted Nov 16, 2012. Accepted for publication Dec 17, 2012.

DOI: 10.3978/j.issn.2304-3865.2012.12.08

Scan to your mobile device or view this article at: http://www.thecco.net/article/view/1344/1857

In China, as in the United States and other countries, cancer patients will increasingly receive more than one modality of treatment delivered by cancer physicians from different medical specialties (e.g., internal medicine and surgery). Increasingly, those physicians delivering cancer care will also be specialists, or even subspecialists, who confine their practice to a narrow scope of care, such as breast cancer and gastrointestinal cancers, because it is almost impossible to keep up with the application of new information in the rapidly expanding cancer field, which is growing exponentially.

As a consequence, there is a substantial re-organization of cancer care delivery taking place around the globe that is focused around the multidisciplinary care of patients by physicians, united more around a specific disease management approach, such a breast cancer, than by their boarded medical specialty, such as medical oncology. Therefore, contemporary cancer care is becoming a team approach!

So what is the role of the surgeon in this new environment of cancer care delivery? How much do surgeons need to specialize, or limit the scope of their practice to keep up with a rapidly advancing field? How can practicing surgeons incorporate new devices, diagnostics and drugs into their surgical practice? How do we need to train and certify the next generation of surgeons who will be a future partner in providing multidisciplinary cancer care? Does specialization make a difference in the outcomes of our care? These and other fundamental issues will need to be addressed by both surgical and oncology leadership in China, as it is in the United States and elsewhere. In this context, some perspective about how the issue of surgical specialization and the role of the surgeon in contemporary cancer care in the United States may be helpful in framing discussions that are taking place in China and in other countries around the world.

Definition of a surgical oncologist

Over the past 30 years in the United States, the surgical specialization, known as "surgical oncology" has grown as an essential part of cancer care delivery in the United States, both in academic medical centers and in the majority of cancer centers and hospitals in the local community. In many centers, the role of surgical management for most types of cancer is expanding, and surgical oncologists are at the forefront of multidisciplinary and protocol-driven programs to improve the outcome of the surgical patient with cancer. Thru the years, the primary professional organization that has led this effort has been the Society of Surgical Oncology (SSO). For membership purposes, the SSO defines a surgical oncologist as "…a physician with a major professional interest and commitment to oncology". The mission of the SSO is to improve patient care by advancing the science and practice of surgical oncology.

Although surgical treatment is the centerpiece of our specialty, what differentiates surgical oncology from other areas in surgery is the oncology experience and expertise needed in dealing with all aspects of cancer management in a multidisciplinary fashion. The salient feature of differentiation is that surgical oncology is both a technical and cognitive specialty involving a chronic disease process (1).

At a broad level, one can define the roles and responsibilities of a surgical oncologist as follows: (I) an excellent surgeon who can safely manage cancer patients

through complex operations and have the judgment to know what operations to select, (II) knows how to integrate surgical treatment as part of a multidisciplinary team, including the type and timing of surgery after pre-operative systemic therapies and/or radiation therapies, (III) participates as an oncologist in the long-term disease-management of cancer patients, and (IV) participates in cancer clinical research and/or translational research (1). Thus, the surgical oncologists is a dual specialist- both a surgeon and an oncologist — who can incorporate the advances in oncology management into their surgical management, which in many, if not most cancer patients involves frequent use of preoperative and postoperative chemotherapy, biological therapy and radiation therapy in various combinations and sequences (2).

The training of surgical oncologists in the United States

In 2011, an important event occurred in the United States that has implications on the practice of oncology worldwide, including in China. After many years of deliberations, the American Board of Surgery and the American Council on Graduate Medical Education formally approved surgical oncology has a boarded subspecialty of general surgery (technically it is termed: "Complex General Surgical Oncology") (3). Graduates of surgical oncology training programs as of June, 2013 will be able to take the written and oral exam. The components of training are helpful for those in other countries who are defining the training and certification of the subspecialty of surgical oncology in their country.

The surgical oncology program involves a minimum of two years training after the successful completion of 5 years of general surgery training. Many individuals actually spend three years training in management of complex cancers and also in conducting high quality research. The main component of the training program in surgical oncology include: (I) Oncology skills necessary to participate in multidisciplinary cancer care, (II) Surgical management of complex oncologic conditions, (III) Non-surgical cancer treatment modalities, (IV) Patient counseling on cancer prevention interventions, (V) Clinical research and trial design, and (VI) Community outreach.

There are minimum requirements of training. This includes operative cancer procedures (12 months minimum) involving GI, endocrine, breast, skin and soft tissue cancers, as well as regional therapies and metastectomy for advanced stage cancers. This is an essential component of fellowship training to produce surgeons capable of providing state-of-the-art surgical care to cancer patients, especially for more complex and uncommon procedures. In addition, the trainee would spend at least one month each on medical oncology and radiation oncology rotations so that the surgical oncology trainee can obtain knowledge to partner with non-surgical colleagues in providing optimal care to the cancer patient needing interdisciplinary collaboration and to actively participate in the multidisciplinary treatment of the cancer patient.

The trainee would also have a minimum of three months training on the basic tenants of clinical research, including active participation in clinical research design and implementation, data analysis, abstract preparation and submission, preparation of oral communications, and manuscript preparation and publication. This training would provide the necessary knowledge to design and implement a prospective data base and to conduct clinical cancer research, especially prospective clinical trials, as well as sufficient familiarity with statistical methods to properly evaluate results of published research studies.

Although the vast majority of surgical oncologists will never be formally certified, we should all pursue educational efforts over a lifetime as if we were certified. This includes gaining credits and hours of educational activity that would fulfill the Board of Surgery Maintenance of Certification requirements for all boarded surgical oncologists of the future.

The value of surgical oncology in multidisciplinary cancer care and research

Surgeons must take the time to partner with other oncology specialists in the development of a multidisciplinary treatment plan, in the integration of surgery as a component of multidisciplinary treatment, and have sufficient knowledge to counsel patients about the indications, benefits and risks of pre- and postoperative cancer treatments. Many patients, if not the majority, of cancer patients will look to the surgeon who made the diagnosis and initiated the primary treatment for advice about systemic therapy and radiation therapy. Furthermore, surgical oncologists have led the way in defining predictors of survival outcomes for the majority of cancers, thereby identifying those at greatest risk of occult distant metastases, and hence are knowledgeable as to which of their surgical patients might benefit from adjuvant therapy. Surgeons must also know

how to process the cancer tissue after removal for molecular and genetic biomarker studies and know how to use the results in clinical decision-making of cancer patients.

Better outcomes for surgeons who specialize

Perhaps the most compelling reason for surgical specializations is the evidence from multiple studies in the United States and Europe that "high volume" cancer centers and surgical specialists have better outcomes for treating complex or advanced cancers. Variation in performance is related to several surgeon characteristics, including how often they perform a given procedure (volume), subspecialty certification, and the hospital setting in which they operate; thus surgeon factors predict rates of postoperative complications and even cancer outcomes after selected surgical procedures (4-6). For example, of 27 studies examining surgeon outcomes based on training and specialization, 25 found that specialized surgeons had better outcomes for cancer surgery than non-specialized surgeons (6).

These finding are most compelling for surgical management of the GI cancers and their metastases to the liver. For example, one study suggested a key role of experience in surgical skill and sensitivity for early stage diagnosis in gastric cancer survival (7). Reductions in hospital mortality and length of hospital stay by high volume and/or specialized centers have also been shown hepatic, pancreatic. colorectal and liver cancers (8-13).

A British study showed that breast cancer patients treated in specialist units compared to non-specialist units had half the risk of inadequate treatment of the breast, a five-fold lower risk of inadequate axillary staging, and nine times lower risk of inadequate axillary treatment. They concluded that adequate surgical management of breast cancer is fundamental to improving the outcome from breast cancer irrespective of where it is delivered (14).

The focus of these studies was on complex cancer procedures. Thus, these outcomes results should NOT be interpreted that all cancer patients need to be treated by specialists, especially if the cancer diagnosis is made early, the patient's treatment is standard, the operative risk is low, and there is no need for multiple specialties in their care.

Conclusions

Regardless of the surgical specialty, and level of training, it is important for all surgeons treating cancer patients to keep up to date with advances in oncology and be a *partner* with medical and radiation oncologists in providing contemporary multidisciplinary cancer care and to participate actively in cancer clinical trials where they are available. The uniqueness of our specialty is to function as both a surgeon and an oncologist in the management of the surgical patient with cancer.

Acknowledgements

Disclosure: The author declares no conflict of interest.

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Cite this article as: Balch CM. The importance of surgical oncology in China: a view from across the ocean. Chin Clin Oncol 2012;1(2):16. DOI: 10.3978/j.issn.2304-3865.2012.12.08

