Clinical Science

Geriatric surgery—evolution of a clinical community

Michael E. Zenilman, M.D.a,b,*, Mark R. Katlic, M.D.c, Ronnie A. Rosenthal, M.D.d

aDepartment of Surgery, Johns Hopkins School of Medicine, 8600 Old Georgetown Road, Bethesda, MD 20817, USA; bSUNY Downstate School of Public Health, Brooklyn, NY, USA; cDepartment of Surgery, Sinai Hospital, Baltimore, MD, USA; dDepartment of Surgery, Yale University School of Medicine, New Haven, CT, USA

KEYWORDS:
Geriatric surgery; Surgery in the elderly; Clinical survey; Clinical community; Multidisciplinary care

Abstract
BACKGROUND: We reviewed the current scientific data and opinions from thought leaders in the field of surgery in the elderly population and queried whether a new society should be formed.

METHODS: The science of geriatric surgery (GS) was reviewed, including topics scientific sessions focused on GS. A town hall meeting was held, which included geriatric surgical scholars. A survey was created to define the interest in GS as a specialty society was sent to surgical scholars.

RESULTS: As the volume of GS scholarly work has increased, the focus of geriatric science has migrated toward clinical studies on frailty and geriatric syndromes. Our town hall meeting outlined the need for a multidisciplinary GS team. Our survey documented more interest in multidisciplinary sessions at national meetings rather than a new, unique society.

CONCLUSIONS: GS as a discipline is a multidisciplinary practice. Our data suggest that this unique characteristic speaks to the development of a clinical community rather than an independent society.

Surgery in the elderly has a history that goes back as far as when Smith,1 in 1907, described 160 patients older than 50 years who underwent general surgical procedures with a mortality rate of 19%. The ages studied increased linearly until 1985 when the first series of centenarians was reported by Katlic2 with a mortality rate of 0%. Although surgical studies have evolved from those focusing on simple mortality to those defining perioperative risk based on comorbidities (cardiac, pulmonary, renal, and diabetes), recent studies have identified frailty and geriatric syndromes as very powerful markers.3,4

This increase in interest has led to suggestions that geriatric surgery might be recognized as a subspecialty in surgery. To date, there has not been a systematic review of the factors to evaluate this concept.

This article reviews the science of geriatric surgery (GS), novel educational initiatives, the required components of a geriatric-focused surgical service, and finally, whether there is enough support to form a new “society” for those of us interested in this field.

Methods

Science of GS

A PUBMED review of published literature on GS was done using the terms “surgery elderly,” “surgery

- The authors declare no conflicts of interest.
- * Corresponding author. Tel.: +1-301-896-3509; fax: +1-301-897-1330.
- E-mail address: mzenilm1@jhmi.edu
- Manuscript received April 21, 2014; revised manuscript December 30, 2014

0002-9610/© 2015 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/). http://dx.doi.org/10.1016/j.amjsurg.2015.01.016
The number of publications in GS has increased significantly for the past 60 years (Fig. 1A). Although this rise appears linear, more recently, there have been exponential increases in articles specific for comorbidities, surgery and dementia, and delirium (Fig. 1B,C). PUBMED searches of the term “surgery elderly” (Fig. 1A) had more publications than “surgery geriatrics” (Fig. 1C), likely because of the young nature of the field of geriatrics.

To assess the topics of current geriatric surgical science, we reviewed abstracts presented at an established national meeting, the Owen H. Wangensteen Forum on Fundamental Surgical Problems at the American College of Surgeons. In 2007, in collaboration with the American College of Surgeons Task Force on Geriatric Surgery, the Forum and the senior author (M.E.Z.) established a multidisciplinary session to promote the science of GS. The breakdown of topics presented at this meeting from 2007 to 2013 is shown in Table 1. Of the 48 abstracts, most topics were in trauma or critical care, followed by newer concepts of frailty, delirium, and post-hospital discharge and then by cancer and endocrine surgery. Interestingly, only 2 articles addressed the use of preoperative comorbidities as markers of surgical risk. Evaluations of these sessions by participants have uniformly been positive, and this particular session consistently ranked in the top one third of all the Surgical Forum sessions (data not shown).

Training programs

Training residents in GS has only recently been addressed. Bell et al15 outlined the clinical competencies for surgical resident trainees in GS, and recent initiatives from the American College of Surgeons focused on training residents in palliative care.16,17 Recently, 2 geriatric surgical fellowships were established, 1 focused on education and 1 on health policy and outcomes. The former was implemented in 2007 at the Department of Surgery, University of South Carolina,18 and focused on education.19 The latter was formed by the American College of Surgeons outcomes division, the James C. Thompson Fellowship.20 Soon after its formation, a seminal article authored by the inaugural fellow on best practices for the optimal preoperative assessment of geriatric patients was published.21

Clinical components of a geriatric surgical service

The town hall meeting led to the following recommendations for a geriatric-focused surgical service:

(1) The core of GS is a multidisciplinary approach to care.

(2) A geriatric-focused unit needs to include all the sub-disciplines of surgery, such as gynecology, urology, orthopedics, otolaryngology, and ophthalmology. Importantly, nonsurgical specialties are needed such as geriatric medicine anesthesia, geriatric psychiatry, wound care specialists, palliative care, physical medicine, and rehabilitation.

(3) A preoperative assessment clinic should be available, which would include anesthesia and geriatric medicine.

(4) Geriatricians are interested in providing on-site consultation for all the patients, but because of current reimbursement structures, routine consultations are not practical.

(5) Therefore, a geriatric surgical service would benefit being led at best by an attending surgical hospitalist or at least a mid-level provider, who would function as a patient care co-ordinator and advocate. Every
patient should be assigned a care co-ordinator, who can manage multiple patients.

(6) The physical plant for geriatrics should include aids for cognitive deficits, visual impairment, hearing deficits, minimal background noise, appropriate contrasts in tiling, minimal glare, strategically placed rest areas, and valet parking.

(7) For discharge planning, a dedicated social worker and working partnership with a home health agency would streamline care.

GS survey

The survey was sent to 118 respondents, 30 e-mails failed because of invalid addresses; 32 ultimately responded for a response rate of 37.5%. The results are listed in Table 2. Interestingly, most surgeons who responded were in practice for more than 20 years, in academic surgery, and expressed an interest in GS. This suggests that despite the number of junior faculty grants given, younger faculties had less interest in geriatrics than older ones.

Three fourths of the respondents stated that GS should not become a separate specialty within surgery (Table 2a). Similarly, most did not wish for separate distinct meeting but were interested in a club or focused session at a national meeting. More than 50% would routinely attend sessions on GS when attending national meetings. All believed that the sessions should include physicians from multiple specialties; the majority believed that nursing and personnel from rehabilitation should be included as well.

Table 2b lists suggested topics and formats for a national meeting in GS. Most suggested to include discussions in perioperative risk assessment and palliative care issues, such as do-not-resuscitate orders. Less were interested in developing clinical competencies and education. Furthermore, most believed that a 1-day session at a national meeting would be sufficient with competitive abstracts, presentation of clinical scenarios, and a multidisciplinary format. Most felt that a “virtual” meeting (eg, teleconference or video conference) would not work.

Respondents noted that the 2 most appropriate national meetings to have dedicated multidisciplinary geriatric sessions were the American College of Surgeons and American Geriatric Society (data not shown); all respondents were members of other surgical specialty societies (eg, American Surgical Congress, Society for Surgery of the Alimentary Tract, American Academy of Otolaryngology, American College of Emergency Physicians, American Academy of Orthopedic Surgeons, and American Urogynecologic Society), and opined that the focus of those meetings were too narrow for a multidisciplinary session.
Specific comments made by the respondents are listed in Table 3. Most of the dissent to a separate society or meeting had to do with cost. This is in line with the large number of societies, to which the respondents belonged—more than 50% belonged to more than 5, with 25% being members of more than 10 societies (data not shown).
for GS have been published, there is no model for how a clinical service will look like? Although consult services interested in GS. This, along with the fellowships described earlier, provide opportunities for career development of young surgeons. Thought leaders from multiple surgical disciplines at our town hall meeting suggested that while a multidisciplinary service led by a physician champion is not practical, co-ordination of care by a mid-level provider champion, such as a nurse or physician assistant, would be most appropriate. This is in line with recent suggestions from the Institute of Medicine, which stated that multidisciplinary care for this particular population at risk is critical.

Our findings are consistent with other recent innovative ideas, such as integration with home health care and patient-centered homes. A mid-level provider would be the one to co-ordinate the care between all the subdisciplines.

The evolution of a core group of surgical specialists interested in GS has led to recent publications by national leaders in thoracic and pediatric surgeries, who have suggested the timing is right for a separate society in a manner similar to the evolution of other surgical specialties. This is a natural progression—both pediatric and geriatric surgeons take care of patients at the extremes of age, and both patient groups need advocates. On the other hand, is now the right time for a new specialty? With the increased specialization of surgery, decrease in general surgeons makes this evolution less likely.

Nevertheless, geriatric surgical patients need advocates at both the local and national level. The former was brought out forcefully at the town hall meeting described. Nationally, geriatric care is a specific area of interest, which has economic implications as the cost of the care of these patients is high. The Institute of Medicine report demonstrated that most of our health care expenditures occur in geriatric population. For example, the elderly comprise most of our nation’s chronic diseases. Specifically, this 12% of our population consumes 35% of the hospital stays, 26% of office visits, and 34% of prescriptions. Also, recent publications about the use of surgery in the last year of life also stirred controversy. In a review of 1.8 million patients older than 65 years, 32% of patients who died underwent an inpatient surgical procedure within the last year of life. Is this too much? Our elderly patients need surgical specialists to advocate for the adequate and appropriate surgical care of these complicated patients. These include directing specific palliative care and implementing policies regarding advanced directives. Lastly, with the life expectancy increasing, there are research opportunities to study how to optimally care for the oldest old of our population. This is potentially a new field that needs surgical leadership.

Limitations of this study include the fact that our participants were biased as all were surgeons who are interested in geriatrics; surveys of nongeriatric surgeons or nonsurgeons would have added a less prejudiced view of the gaps in care. Survey of a larger section of the surgical discipline would have yielded more powerful data, but we chose to focus on those who we knew had an interest. Lastly, town hall meetings focus on opinion and conflict and start a conversation toward consensus, so the results should be viewed as an opinion.

Our survey suggests that a separate society is not necessarily required yet; but we need to continue advocating for the development of multidisciplinary groups.

### Comments

With the increasing number of publications in GS (Fig. 1), now is an opportune time to review recent trends in the science of GS, educational initiatives, the components of a geriatric surgery service, and survey the thought leaders in the field.

The scientific exploration of surgery in the elderly has evolved from simple reports of postoperative survival to effect of comorbidities on outcomes to the more novel concepts of frailty indicators of risk and the definition of geriatric syndromes, which include the risk of frailty, dementia, and delirium. The statistical power of these novel factors make it likely that as interest in the latter increases, the number of publications focusing comorbidities ultimately will wane; this is what we observed at our research sessions (Table 1).

Education is a key component to any discipline, and surgery in the elderly has become a component of general surgical education competencies. Post-residency fellowships in GS have not increased over the last decade; to date, only 2 exist, 1 focused on education and 1 on outcomes research.

For faculty development, Katz et al demonstrated that the Jahnigen Scholars Program is a model for career development. Funded by philanthropy and the American Geriatrics Society, its faculty awardees traversed many surgical disciplines. The scholarship has since migrated to the National Institute of Health’s “Grants for Early Medical or Surgical Subspecialists Transition to Aging Research.” This, along with the fellowships described earlier, provide opportunity for career development of young surgeons interested in GS.

As the multidisciplinary interest in GS increases, what will a clinical service look like? Although consult services for GS have been published, there is no model for how a dedicated service should look. Thought leaders from multiple surgical disciplines at our town hall meeting suggested that while a multidisciplinary service led by a physician champion is not practical, co-ordination of care by a mid-level provider champion, such as a nurse or physician assistant, would be most appropriate. This is in line with recent suggestions from the Institute of Medicine, which stated that multidisciplinary care for this particular population at risk is critical.

Our findings are consistent with other recent innovative ideas, such as integration with home health care and patient-centered homes. A mid-level provider would be the one to co-ordinate the care between all the subdisciplines.

The evolution of a core group of surgical specialists interested in GS has led to recent publications by national leaders in thoracic and pediatric surgeries, who have suggested the timing is right for a separate society in a manner similar to the evolution of other surgical specialties. This is a natural progression—both pediatric and geriatric surgeons take care of patients at the extremes of age, and both patient groups need advocates. On the other hand, is now the right time for a new specialty? With the increased specialization of surgery, decrease in general surgeons makes this evolution less likely.

Nonetheless, geriatric surgical patients need advocates at both the local and national level. The former was brought out forcefully at the town hall meeting described. Nationally, geriatric care is a specific area of interest, which has economic implications as the cost of the care of these patients is high. The Institute of Medicine report demonstrated that most of our health care expenditures occur in geriatric population. For example, the elderly comprise most of our nation’s chronic diseases. Specifically, this 12% of our population consumes 35% of the hospital stays, 26% of office visits, and 34% of prescriptions. Also, recent publications about the use of surgery in the last year of life also stirred controversy. In a review of 1.8 million patients older than 65 years, 32% of patients who died underwent an inpatient surgical procedure within the last year of life. Is this too much? Our elderly patients need surgical specialists to advocate for the adequate and appropriate surgical care of these complicated patients. These include directing specific palliative care and implementing policies regarding advanced directives. Lastly, with the life expectancy increasing, there are research opportunities to study how to optimally care for the oldest old of our population. This is potentially a new field that needs surgical leadership.

Limitations of this study include the fact that our participants were biased as all were surgeons who are interested in geriatrics; surveys of nongeriatric surgeons or nonsurgeons would have added a less prejudiced view of the gaps in care. Survey of a larger section of the surgical discipline would have yielded more powerful data, but we chose to focus on those who we knew had an interest. Lastly, town hall meetings focus on opinion and conflict and start a conversation toward consensus, so the results should be viewed as an opinion.

Our survey suggests that a separate society is not necessarily required yet; but we need to continue advocating for the development of multidisciplinary groups.

### Table 3: Individual survey comments about geriatric meetings

- Money, time, too many societies
- It is too pervasive in our patients! We all need to take care of geriatric patients
- There are numerous risks and quality of life issues unique to geriatric population that sets them apart.
- Risks and issues deserve more attention especially when considering invasive intervention such as surgery.
- Opportunity for greater focus; risk of greater cost if dues and meetings are instituted
- One-day meeting is fine, could be adjusted over time to meet demand.
Geriatric patients need specialists from every discipline of surgery, in addition to nonsurgical specialties. So, the interest in geriatrics is not uniform to 1 discipline; it is more a “state of mind.” This is not the nidus of a specialty but more analogous to a clinical community. Dixon et al.

defined a clinical community as a “group of people” who work together by networks “whose members are interdependent in the sense that they share common commitments.” Originally described for health care quality improvement initiatives, one can imagine a geriatric surgical community comprising multispecialty physicians and ancillary personnel who manage patients and others who commit to create a community of action.

Membership of a geriatric surgical clinical community should include all the members described earlier and include other portions of health care for the aged including the physical plant personnel to help him for prevention environment and accessibility. We have successfully established clinical communities within a health care system, and we have regular face-to-face and virtual meetings.

As the GS community develops across disciplines, we advance the science of GS. Although we now are beginning to understand risk, some areas to focus on include:

1. Develop a simple preoperative evaluation tool that includes new metrics, such as frailty, morphometric measures, and tests of cognition;
2. Standardized education of geriatric principles to residents and practicing surgeons (eg, prevention and treatment of postoperative delirium and subtle signs of dementia);
3. Increased focus on multidisciplinary care at meetings, such as the American College of Surgeons Annual Clinical Congress, where multiple specialties congregate;
4. Partnering with nurses in our hospitals by supporting establishment of Nurses Improving Care for Health System Elders certification to improve geriatric care;
5. Generate new evidence of benefits of dedicated geriatric consultation services or a geographically separate unit within the hospital; and
6. Study the utility of interventions, both inside and outside the hospital, on patient outcomes.

References