Evaluation of the Plastic Surgery In-Service Training Exam: Lower Extremity Questions

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OBJECTIVE: To facilitate the training of plastic surgery residents, we analyzed a knowledge-based curriculum for plastic and reconstructive surgery of the lower extremity.

DESIGN: The Plastic Surgery In-Service Training Exam (PSITE) is a commonly used tool to assess medical knowledge in plastic surgery. We reviewed the lower extremity content on 6 consecutive score keys (2008-2013). Questions were classified by taxonomy, anatomy, and subject. Answer references were quantified by source and relative year of publication.

RESULTS: Totally, 107 questions related to the lower extremity (9.1% of all questions) and 14 questions had an associated image (13.1%). Questions required decision making (49%) over interpretation (36%) and direct recall (15%) skills ($p < 0.001$). Conditions of the leg (42.1%) and thigh (24.3%) constituted most of the questions. Subject matter focused on flap reconstruction (38.3%), nerve injury (8.4%), and congenital deformity (6.5%). Analysis of 263 citations to 66 unique journals showed that *Plastic and Reconstructive Surgery* (54.9%) was the highest yield primary source. The median year of publication relative to PSITE administration was 6 (range: 1-58) with a mode of 2 years. *Plastic Surgery* by Mathes et al. was the most referenced textbook (21.9%).

CONCLUSIONS: These data establish a benchmark for lower extremity training during plastic surgery residency. Study efforts focused on the most common topics and references will enhance trainee preparation for lower extremity PSITE questions. (J Surg Ed 72:875-881.

KEY WORDS: education, examination, curriculum, residency, foot, PSITE

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COMPETENCIES: Medical Knowledge, Patient Care, Practice-Based Learning and Improvement

INTRODUCTION

The Plastic Surgery In-Service Training Exam (PSITE) is a yearly multiple choice examination taken by plastic surgery residents in the United States. As a governing body of plastic surgery education, the American Society of Plastic Surgeons (ASPS) writes PSITE questions each year via a rigorous peer review process. PSITE scores facilitate resident evaluation against a national norm and allow programs to identify deficiencies in residency curricula.[1] Despite its ubiquitous presence in plastic surgery residency programs in the United States, there have been no published studies analyzing PSITE content.

The PSITE comprises 4 distinct sections: comprehensive, hand and lower extremity, craniomaxillofacial, and breast and cosmetic. The lower extremity is a particularly difficult area to gain adequate clinical exposure during plastic surgery residency, yet residents must demonstrate competency in this area before graduating.[2] Plastic surgery programs do not have dedicated foot and ankle services like their orthopedic counterparts do; hence, plastic surgery residents must learn lower extremity surgery as part of other rotations. The additional pressures of resident work-hour limitations[3] and the mandate for integrated training in plastic surgery[4] will challenge program directors to redesign efficient curricula for plastic surgery residents.

To facilitate training during plastic surgery residency, we sought to elucidate a knowledge-based curriculum for plastic and reconstructive surgery of the lower extremity. This study analyzes PSITE questions addressing the lower extremity over a 6-year period. We elucidate (1) the percentage of dedicated questions, (2) distribution of question taxonomy, (3) anatomical locations, (4) subject matter, and (5) referenced journals and textbooks. Plastic surgery trainees can use these data to determine high-yield topics and literature, thereby facilitating the development of a corpus of medical knowledge during residency training. Furthermore, program directors and faculty can use these results to ensure that core topics in lower extremity surgery are adequately taught during plastic surgery residency.

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METHODS

Content Analysis

Digital copies of PSITE syllabi were reviewed for years 2008 through 2013, for which approval by the institutional review board was not required. Questions, answers, and referenced sources were reviewed for the 6 examinations. Questions testing any aspect of lower extremity surgery were included in this study. A 6-year period was selected to reflect a plausible experience of test taking during plastic surgery residency. A database was created that included variables for each question obtained after thorough review and consensus of authors. Questions determined to be of poor statistical performance and not scored by the ASPS were excluded from analysis.

Each question was categorized into 1 of the 3 levels in an educational taxonomy model.[5] Level I (recall) questions require the recollection of facts without interpretation. Level II (interpretation) questions test the ability to translate medical information into a specific diagnosis. Level III (decision-making) questions test clinical management abilities by having examinees select the best next step in treatment. Each question level invokes a corresponding 1-, 2-, or 3-step cognitive process, such that Level III questions require the greatest cognitive effort.

Questions were further classified by the clinical setting of the question vignette. The categories were clinic, emergency department or trauma, operating room or perioperative, intensive care unit, and not-applicable. Answers were categorized by concentration: pathology or anatomy, diagnoses, or interventions. In cases where answers spanned multiple concentrations, a single category was chosen based on most of the available options. Categories for anatomical focus and subject matter were selected by consulting question categories on the American Council of Academic Plastic Surgeons (ACAPS) website[6] and plastic surgery textbooks.[7,8] Anatomical categories were defined from distal to proximal: toe, foot, ankle, leg, knee, thigh, groin, or nonapplicable. Subject categories were flaps, nerve injury, congenital, lymphedema, amputation, fracture, ulcer, contouring, grafts, infection, thermal injury, skin laceration, cancer, or other. Given the focus of wound coverage on lower extremity plastic surgery, flaps and grafts were further elucidated. The presence of imaging studies was classified by type and quantified.

Answer keys were reviewed for the most frequently referenced literature sources. We noted the average number of primary literature sources referenced per question. The relative year of publication for each referenced source was recorded relative to the year of PSITE administration.

Statistical Analysis

Question characteristics were tabulated by year and presented as means. Trends in the proportion of questions by category were analyzed via chi-square goodness of fit test. Differences within each category were evaluated with

TABLE 1. Characteristics of Lower Extremity Questions

	Questions, No.							
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**Total**	**Average (%)**
Total	195	196	200	194	194	195	1174	196 (100)
Lower extremity	11	23	18	15	20	20	107	17.8 (9.1)
Section								
Hand and lower extremity	3	17	10	11	10	16	67	11.2 (62.6)
Comprehensive	7	5	8	3	9	4	36	6.0 (33.6)
Breast and cosmetic	1	1	0	1	1	0	4	0.7 (3.7)
Imaging								
Photograph	1	2	3	2	0	4	12	2.0 (11.2)
Radiograph	0	2	0	0	0	2	4	0.7 (3.7)
Taxonomy								
I (Recall)	3	3	0	1	2	7	16	2.7 (15.0)
II (Interpretation)	4	7	10	6	7	5	39	6.5 (36.4)
III (Decision making)	4	13	8	8	11	8	52	8.7 (48.6)
Question vignette								
Clinic	6	7	4	7	9	7	40	6.7 (37.4)
ED/trauma	2	7	7	4	4	3	27	4.5 (25.2)
OR/perioperative	2	4	6	3	4	5	24	4.0 (22.4)
ICU	0	0	0	0	0	1	1	0.2 (1.0)
N/A	1	5	1	1	3	4	15	2.5 (14.0)
Answer foci								
Pathology/anatomy	4	11	5	4	6	10	40	6.7 (37.4)
Diagnoses	1	2	4	4	6	5	22	3.7 (20.6)
Interventions	6	10	9	7	8	5	45	7.5 (42.0)

ED, emergency department; OR, operating room; ICU, intensive care unit; N/A, not-applicable.