

# Progressive Surgical Autonomy Observed in a Hand Surgery Resident Clinic Model

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**OBJECTIVE:** Resident clinics (RCs) are intended to catalyze the achievement of educational milestones through progressively autonomous patient care. However, few studies quantify their effect on competency-based surgical education, and no previous publications focus on hand surgery RCs (HRCs). We demonstrate the achievement of progressive surgical autonomy in an HRC model.

**DESIGN:** A retrospective review of all patients seen in a weekly half-day HRC from October 2010 to October 2015 was conducted. Investigators compiled data on patient demographics, provider encounters, operational statistics, operative details, and dictated surgical autonomy on an ascending 5 point scoring system.

**SETTING:** A tertiary hand surgery referral center.

**RESULTS:** A total of 2295 HRC patients were evaluated during the study period in 5173 clinic visits. There was an average of 22.6 patients per clinic, including 9.0 new patients with 6.5 emergency room referrals. Totally, 825 operations were performed by 39 residents. Trainee autonomy averaged 2.1/5 (standard deviation [SD] = 1.2), 3.4/5 (SD = 1.3), 2.1/5 (SD = 1.3), 3.4/5 (SD = 1.2), 3.2/5 (SD = 1.5), 3.5/5 (SD = 1.5), 4.0/5 (SD = 1.2), 4.1/5 (SD = 1.2), in postgraduate years 1 to 8, respectively. Linear mixed model analysis demonstrated training level significantly effected operative autonomy ( $p = 0.0001$ ). Continuity of care was maintained in 79.3% of cases, and patients were followed an average of 3.9 clinic encounters over 12.4 weeks.

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**CONCLUSIONS:** Our HRC appears to enable surgical trainees to practice supervised autonomous surgical care and provide a forum in which to observe progressive operative competency achievement during hand surgery training. Future studies comparing HRC models to non-RC models will be required to further define quality-of-care delivery within RCs. (J Surg Ed ■■■■-■■■. © 2017 Published by Elsevier Inc. on behalf of the Association of Program Directors in Surgery)

**KEY WORDS:** surgical education, hand surgery, resident clinic, operative autonomy

**COMPETENCIES:** Patient Care, Medical Knowledge, Practice Based Learning and Improvement, Systems Based Practice, Professionalism, Interpersonal Communication Skills

## INTRODUCTION

The definition of quality medical education has been a subject of investigation since the Flexner Report was introduced at start of the 20th century.<sup>1-3</sup> A more recent paradigm shift toward competency-based education—in the age of restricted duty hours—has catalyzed refinement of the definition of academic quality by plastic surgical training programs and the Accreditation Council of Graduate Medical Education (ACGME).<sup>4-10</sup> Critics argue that achieving traditionally time-based proficiency in surgical autonomy is threatened by time restrictions.<sup>7,11-15</sup> This has called for an increased focus on “milestone” training, which requires documentation of progressive educational achievement.<sup>16-32</sup>

In an effort to describe competency-based training goals, the ACGME, American Board of Plastic Surgery, and the

American Board of Orthopedic Surgery, undertook joint initiatives, called The Plastic Surgery Milestone Project (PSMP) and the Orthopedic Surgery Milestone Project (OSMP).<sup>16,17,26,31</sup> These projects are intended to provide a “framework for assessment of the development of the resident physician in key dimensions of the elements of physician competency,” such as “independently perform (ing) routine... (and) complex procedures.”<sup>26,31</sup> Despite these laudable efforts, evidence for an expected rate of achievement of operative autonomy remains sparse, especially in the field of hand surgery.<sup>19,27,32-35</sup>

Resident clinics (RCs) have been employed in plastic surgery for cosmetic (CRC) training in effort to augment educational opportunities while delivering quality cosmetic surgical care.<sup>28,36-44</sup> These CRCs aim to provide “the opportunity for a (resident) surgeon to gain independent experience,” act as primary care providers, build sustained patient relationships, and follow through with plans of care.<sup>43</sup> Our institution recently reported a similar model that suggests general plastic surgery RCs catalyze the achievement of educational milestones in patient care by providing greater opportunities for operative autonomy and continuity of care.<sup>45</sup> However, reports are lacking for similar RCs in hand surgery (HRCs), a critical component of both the PSMP and OSMP.

Our program incorporates a weekly half-day HRC into curriculum, which cares predominantly for trauma and other emergency room referral patients. Senior residents in hand surgery make clinical decisions under the supervision of board-certified plastic surgery faculty members with Certificates of Added Qualification in hand surgery. Attending physicians ultimately take responsibility for all care delivered but allow significant autonomy in both the clinic consultation and operative intervention commensurate to the trainee's demonstrated level of capability and independence.

We offer the first demonstration of progressive surgical autonomy in an HRC model. We feel this establishes an evidence-based method for the documentation of residents' progress in hand surgical patient care.<sup>16,17,26,31</sup>

## METHODS

### Clinic Design

Hand RC is a weekly half-day clinic supervised by board-certified plastic surgical faculty members with Certificates of Added Qualification in hand surgery. One junior and one senior resident typically attend HRC along with one attending surgeon. The function of HRC is overseen by senior residents in ACGME-accredited independent plastic surgery and orthopedic surgery training programs. The attending supervising HRC does not typically engage in direct patient contact unless requested by the patient or resident personnel. Attending surgeons staff hand clinic an average of once per month. Plastic surgery residents rotate on hand for 2 months in each of postgraduate years (PGYs) 6 through 8. Orthopedic residents rotate on hand for 1 month in intern year, 2 months during PGYs 2 and 4, and have opportunities to participate intermittently in each of PGYs 3 and 5.

Virtually, all aspects of patient care are executed by residents including: obtaining history and physical examination information, interpretation of radiographic imaging, clinical care decision-making, patient consent, written and dictated clinical documentation, financial coding, scheduling, and associated administrative tasks. Operations scheduled from HRC are typically performed by 1 or more residents—often those that interacted with that patient in HRC. Residents act as the primary surgeon with graduated autonomy granted as deemed appropriate by the attending hand surgeon.

### Chart Review

Investigators conducted a retrospective review of all HRC patients seen from October 1, 2010 to October 1, 2015. Patient data was collected from Erlanger Medical Center records, including: patient demographics, referral source, diagnosis (International Classification of Disease/ICD,

**TABLE 1.** Dictated Resident Autonomy Score Scale

Autonomy Score	Dictated Phrase for Attending's Role	Clinical Significance of Attending Involvement
5	“Available”	Highest resident autonomy, case discussed before and after procedure with attending
4	“Present for critical portions”	Attending not present for the majority of the procedure, present and advises during key steps
3	“Scrubbed for critical portions”	Attending not present for portions of the procedure, scrubbed for and directs key steps
2	“Present for entire”	Attending advises entire operation, scrubbed for a portion of the operation
1	“Scrubbed for entire”	Lowest resident autonomy, attending is scrubbed and directs entire operation

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