

# Microsurgical Training: Achieving Surgical Competencies at Each Stage of Residency

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The authors have no financial interests to disclose



# Background

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- ❧ Surgical training for ophthalmology residents across the United States varies with regard to standards of and methods by which surgical competency is achieved.
- ❧ While the Accreditation Council for Graduate Medical Education (ACGME) delineates the specific types of surgeries and how many of them must be performed by residents prior to graduation, most programs do not have an established surgical curriculum.
- ❧ Using a survey, we evaluated different modalities used for teaching surgery in ophthalmology residencies across the United States

# Purpose

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- ❧ How many Ophthalmology residency programs across the United States have an established microsurgical curriculum?
- ❧ If a program has an established microsurgical curriculum what methods are employed in their programs?
- ❧ If a program did not have an established microsurgical curriculum what methods are employed to teach residents surgery?
- ❧ According to PGY 4 residents: what methods did they find most helpful in preparing for surgery?
- ❧ Did residents in programs with established microsurgical training programs operate earlier in their training?
- ❧ How are residents evaluated on surgical training and when?

# Methods

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- ✧ Using the Qualtrics survey program, we generated and distributed a survey to both residents and program directors at ophthalmology residency training programs across the United States.
- ✧ Responses were kept anonymous and the data was analyzed using descriptive statistics.

# Results

How many Ophthalmology residency programs across the United States have an established microsurgical curriculum?

66.7% of program directors (n=12) and 32.9% of residents (n=24) who answered the question, said that their program have an established microsurgical curriculum

Resident responses according to PGY year of training

Year In Training	Frequency
PGY2	18
PGY3	30
PGY4	32

Size of the residency class

Number of residents in each class	Program Directors	Residents
2	2	4
3-4	10	33
5-6	5	34
7 Or more	6	9
Total	23	80

# If a program has an established microsurgical curriculum what methods are employed?

## Program Directors and Residents

Elements of Curriculum	Program Directors	Residents
Observing cases	75.0%	37.5%
Assisting on cases	75.0%	37.5%
Wet lab- defined curriculum	75.0%	75.0%
Wet lab- self-study	50.0%	41.7%
Wet lab- direct teaching with faculty member	91.7%	87.5%
Eye simulator	50.0%	16.7%
Lectures	75.0%	58.3%
Other:		
• Kitaro dry lab system	8.3%	
• Microsurgical video conference	8.3%	

# If a program did not have an established microsurgical curriculum what methods were employed to teach residents surgery?

## Program Directors

Observing cases	100.0%
Assisting on cases	100.0%
Wet lab- self-study	83.3%
Wet lab- direct teaching with faculty member	83.3%
Instructional videos	100.0%
Instruction manual	16.7%
Eye Surgical Simulator	50.0%

# According to PGY 4 residents: what methods did they find most helpful in preparing for surgery?

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☞ 30 PGY 4 residents responded

☞ Methods used

☞ Surgical instructional videos 73.3%

☞ Attending instruction in wet lab 30%

☞ Attending instruction in the operating rooms 93.3%

☞ Surgical simulator 20%

☞ Self instruction in the wet lab once a week 3.3%



# Did residents in programs with established microsurgical training programs operate earlier in their training?

**WITH** microsurgical curriculum:

	<i>What PGY level did you log your FIRST Phacoemulsification as a primary surgeon?</i>		
	PGY 2	PGY 3	PGY 4
Resident	22.5%	57.7%	19.7%
Director	11.8%	76.5%	11.8%

p=0.361

**WITHOUT** microsurgical curriculum

	<i>What PGY level did you log your FIRST Phacoemulsification as a primary surgeon?</i>		
	PGY 2	PGY 3	PGY 4
Resident	16.7%	56.2%	27.1%
Director	16.7%	83.3%	0.0%

p=0.319

# How are residents evaluated on surgical training?

☞ At what stage during microsurgical training are the residents evaluated?

PGY 2	72.2%
PGY 3	83.3%
PGY 4	88.9%

☞ What methods are used to evaluate the residents?

Unstructured/Informal feedback	88.9%
Structured feedback	77.8%
No evaluation	11.1%
Watching resident's surgical videos	61.1%
Conferences to evaluate resident's surgical videos	50.0%

# Conclusion/ Limitations

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- ☞ Direct surgical experience, supervised, and unsupervised wet lab times were the predominantly preferred methods of gaining surgical competency across all programs surveyed .
- ☞ Residents in programs with an established surgical curriculum began gaining surgical experience earlier in their training than those without structured curricula.
- ☞ Majority of surgical experience was acquired during the PGY 4 across all programs regardless of the presence of a microsurgical curriculum
- ☞ Limitations of our study can be attributed to the number and anonymity of responses and the inability to compare program director and resident surveys limiting the ability to directly compare certain aspects of the data.

# References

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- ☞ Accreditation Council for Graduate Medical Education. Review committee for Ophthalmology. Required minimum number of procedures for graduating residents in Ophthalmology, <http://www.acgme.org/acgmeweb/ProgramandInstitutionalGuidelines/SurgicalAccreditation/Ophthalmology.aspx>
- ☞ Lee et al. The Iowa ophthalmology wet lab curriculum for teaching and assessing cataract surgical competency. *Ophthalmology* 2007
- ☞ Taylor et al Microsurgical lab testing is a reliable method for assessing ophthalmology residents' surgical skills. *British Journal of Ophthalmology* 2007;91:1691-1694
- ☞ Fisher et al. Development and face and content validity of an eye surgical skills assessment test for ophthalmology residents. *Ophthalmology* 2006
- ☞ Creners SL et al. Objective assessment of skills in intraocular surgery ( OASIS). *Ophthalmology* 2005; 112(7): 1236-1241
- ☞ Cremers SL. Global rating assessment of skills in intraocular surgery (GRASIS). *OPHTHALMOLOGY* 2005; 112(10): 1655-1660
- ☞ Pilling et al. Strabismus surgical skills assessment tool: Development of a surgical assessment tool for strabismus surgery training.. *Ophthalmology* 2010: 273-278
- ☞ Rogers et al. Impact of structured surgical curriculum on ophthalmic resident cataract surgery complication rates. *Journal of Cataract and Refractive Surgery* 2009; 35:1956-1960