

# Evaluation of Strabismus Surgery in University of Colorado Ophthalmology Residents

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## Background

- Assessing and evaluating clinical and surgical competencies are pivotal to improving resident education.<sup>1</sup>
- The ACGME requires that residents complete a minimum of 10 strabismus surgery cases in order to graduate.<sup>2</sup>
- The International Council of Ophthalmology's Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR) was established to assess surgical competency.
  - The ICO-OSCAR rubric consists of 17 surgical steps rated on a scale from 2-5, with 2 considered "novice" and 5 considered "competent".<sup>3</sup>
  - The rubric was validated by Motley and colleagues.<sup>4</sup>
- The Modified rubric used by the University of Colorado includes the following changes:
  - Four additional pre-operative and post-operative steps.
  - Expert level on the Likert scale, to allow raters to recognize attending-level performance.

	Novice (score = 1)	Beginner (score = 2)	Advanced Beginner (score = 3)	Competent (score = 4)	Expert (score = 5)	Not applicable (score = 0)
<b>Preoperative Evaluation</b>						
Surgical Planning	Is unable to come up with the appropriate plan for surgery	Is able to create a plan, but is unable to explain why	Is able to create a surgical plan, but struggles to give an appropriate explanation	Is able to formulate an appropriate plan that is similar to the attending	Creates the appropriate plan that matches the attending, and able to explain why	
Consent	Is unable to give all the risks, benefits, and alternatives without instruction.	Gives the risks of the surgery to the patient. Uses some appropriate terminology on the consent form. Will use abbreviations inappropriately. Does not explain this to the patient in non-medical terms.	Gives the risks, benefits, and alternatives. Lists some of the risks on the consent form. Sometimes uses the appropriate terminology on the consent form. Explains some risks in non-medical terms.	Gives the risks, benefits, and alternatives. Lists all risks on the consent form. Will use appropriate terminology. Explains some risks in non-medical terms.	Consents the patient appropriately. Gives the risks, benefits, and alternatives. Lists all the risks on the consent form. Uses the appropriate terminology on the consent form. Explains all information to the patient in non-medical terms.	

Figure 1. Portion of the University of Colorado Modified Rubric. The rest can be seen in the Appendix.

## Purpose

To evaluate proficiency in strabismus surgery among University of Colorado ophthalmology residents using a modified strabismus surgery evaluation rubric.

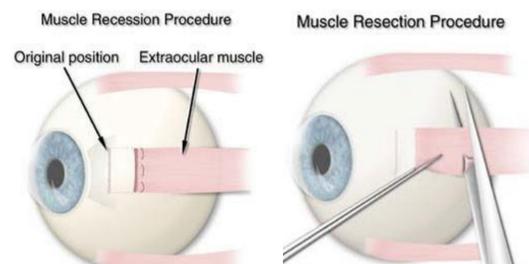


Figure 2. Illustration of strabismus repair.

## Methods

The Modified Strabismus Surgery Evaluation Rubric was created to augment the validated ICO-OSCAR: strabismus tool (see **Appendix**).  
 -Assesses residents in 21 pre-op, surgical, and post-op steps based on a Likert scale of 1 (novice) to 5 (expert).

Evaluations completed by 5 University of Colorado attending physicians for residents on their pediatrics rotation at CHCO.  
 -Rubrics were completed directly following surgery.  
 -109 total evaluations between 9 residents.

Scores for each individual step were compiled and analyzed using MATLAB and Excel.  
 -Proficiency defined as scoring a 4 on the Likert scale for 2 consecutive cases.  
 -Dictation step was often missing and thus was excluded from the analysis

This prospective evaluation was approved by the Colorado Multiple Institutional Review Board.

## Results

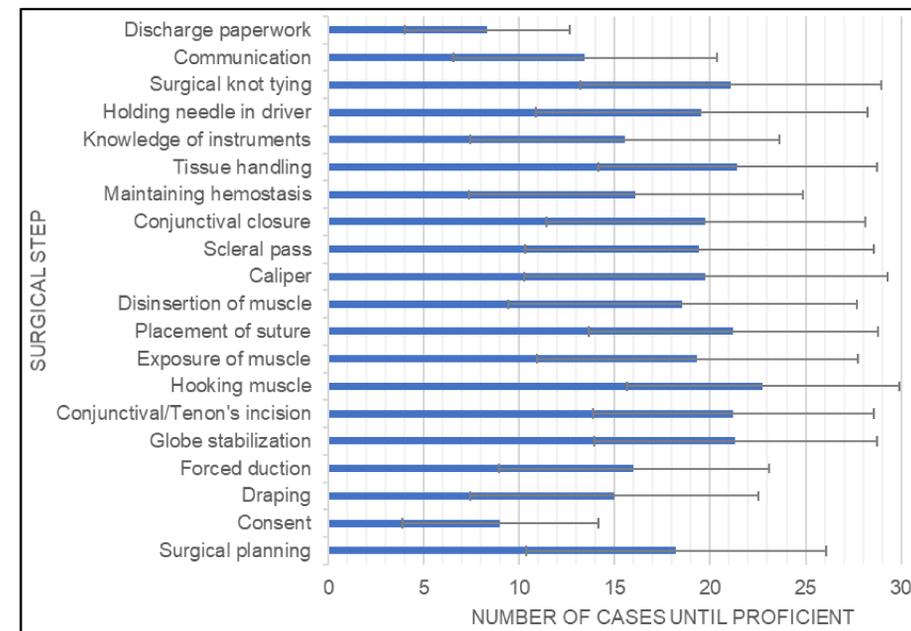


Figure 2. Mean number of cases until proficient. Error bars represent standard deviation.

### Population:

- 9 second-year ophthalmology residents, following exclusion of residents with less than 10 completed evaluations.
- Residents performed a minimum of 28 cases and maximum of 56 cases (median 41) during their 10-week pediatric rotation.
- 30% of cases performed were evaluated using the modified rubric

Number of cases until proficient in all steps ranged from 10-26 cases for the cohort included in the analysis.

Residents required 20 cases (on average) to achieve proficiency in all surgical steps.

**Strongest overall steps:**  
 -consent  
 -discharge paperwork

**Strongest surgical steps:**  
 -forced duction test  
 -knowledge of surgical instruments  
 -maintaining hemostasis

**Weakest step:**  
 -hooking the rectus muscle

## Discussion

### Conclusions

This evaluation provides new information regarding strengths, weaknesses, and proficiency in strabismus surgery that can be utilized by both the University of Colorado program and others to improve ophthalmology resident training.

### Limitations

- Small sample size of 9 residents, with evaluations completed for only 30% of their cases.
- Time-consuming to complete a full rubric for every case – might not anticipate a higher percentage of participation.
- Results might not be generalizable to other residency programs.

### Future Directions

- Larger cohort within our own institution would allow us to more confidently implement change to the strabismus surgery training at the University of Colorado.
- Multi-institutional analysis would be necessary to influence resident strabismus training on a national scale.

## References

1. Golnik KC. Resident competence assessment: Best practices. *J Curr Ophthalmol*. 2016;28(2):53-54. <https://doi.org/10.1016/j.jocoo.2016.04.003>.
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3. Golnik KC, Motley WW, Atilla H, et al. The ophthalmology surgical competency assessment rubric for strabismus surgery. *J AAPOS*. 2012 Aug;16(4):318-21. <https://doi.org/10.1016/j.jaapos.2012.04.005>.
4. Motley WW, Golnik KC, Anteby I, et al. Validity of ophthalmology surgical competency assessment rubric for strabismus surgery in resident training. *J AAPOS*. 2016 Apr;20(2):184-5.

Figure 2. AAPOS. (2014). *Strabismus Surgery*. [digital image]. Retrieved February 15, 2021 from AAPOS: <https://aaapos.org/glossary/strabismus-surgery>.

## Appendix



<https://sites.google.com/view/emily-swensons-capstone-extras/home>