INTERNATIONAL COUNCIL of OPHTHALMOLOGY

International Council of Ophthalmology's Ophthalmology Surgical Competency Assessment Rubric (ICO-OSCAR)

The International Council of Ophthalmology's "Ophthalmology Surgical Competency Assessment Rubrics" (ICO-OSCARs) are designed to facilitate assessment and teaching of surgical skill. Surgical procedures are broken down to individual steps and each step is graded on a scale of novice, beginner, advanced beginner and competent. A description of the performance necessary to achieve each grade in each step is given. The assessor simply circles the observed performance description at each step of the procedure. The ICO-OSCAR should be completed at the end of the case and immediately discussed with the student to provide timely, structured, specific performance feedback. These tools were developed by panels of international experts and are valid assessments of surgical skill.

ICO-OSCAR Instructor Directions

1. Observe resident vitrectomy surgery.
2. Ideally, immediately after the case, circle each rubric description box that you observed. Some people like to let the resident circle the box on their own first. If the case is videotaped, it can be reviewed and scored later but this delays more effective prompt feedback.
3. Record any relevant comments not covered by the rubric.
4. Review the results with the resident.
5. Develop a plan for improvement (e.g. wet lab practice/tips for immediate next case).

Suggestions:

- If previous cases have been done, review ICO-OSCAR data to note areas needing improvement.
- If different instructors will be grading the same residents, it would be good that before starting using the tool they grade together several surgeries from recordings, so they make sure they are all grading in the same way.

ICO-Ophthalmology Surgical Competence Assessment Rubric: Vitrectomy (ICO-OSCAR:VIT)

Resident: _____ Assessor: _____ Year of Training: _____ Date: _____

Surgical Step		Novice (score = 2)	Beginner (score = 3)	Advanced Beginner (score = 4)	Competent (score = 5)	Not applicable. Done by preceptor (score= 0)
1	Draping	Unable to start draping without help.	Drapes with minimal verbal instruction. Incomplete lash coverage or unable to keep out moisture from viewing lens.	Lashes mostly covered, drape at most minimally obstructing view. Lid speculum in good position with good exposure. Moisture collects minimally on viewing lens.	Lashes completely covered and clear of incision site, drape not obstructing view. Lid speculum maintains good exposure and there is little to no moisture on viewing lens apparatus.	
2	Trocar placement - positioning	Unable to create wounds at correct distance for phakic or pseudo/aphakic eyes. Conjunctiva is not adequately displaced. Trocars are closer than “10 and 2” o’clock. Dominant hand is used to place all 3 trocars.	Creates wounds 3.0mm (pseudo/ aphakic) or 3.5mm (phakic) from the limbus. Conjunctiva is not adequately displaced some of the time. Trocars are at least “10 and 2” o’clock apart. Dominant hand is frequently used to place all 3 trocars.	Creates wounds 3.0mm (pseudo or aphakic) or 3.5mm (phakic) from the limbus while adequately displacing conjunctiva. Counter-traction is adequate some of the time with a second instrument. Trocars are placed comfortably for proper access to the macula or pathology, at least “10 and 2” o’clock apart. Right hand is used to place right side trocars and left hand is used to place left side trocars most of the time.	Consistently creates wounds 3.0mm (pseudo or aphakic) or 3.5mm (phakic) from the limbus while adequately displacing conjunctiva Right hand is used to place right side trocars and left hand is used to place left side trocars every time.	
3	Trocar placement – beveled wounds	Unable to create beveled wounds in normotensive eyes and normal scleral thickness. The globe is severely torqued or rotated.	Inconsistently creates beveled wounds in normotensive eyes and normal scleral thickness. The globe is somewhat torqued or rotated.	Smoothy creates beveled wounds in normal eyes but has difficulty with low-pressure eyes or thick sclera and often causes torqueing or globe rotation.	Consistently creates beveled wounds even in low-pressure eyes or thick sclera with minimal torqueing or globe rotation.	

4	Infusion placement	Connects the infusion to the inferotemporal cannnula without checking positioning.	Visualizes the cannula tip but does not observe its position while turning on infusion, risking infusion into subretinal space or cannula touching the crystalline lens. Ensure the infusion line is fluid-filled before it is turned on.	Visualizes the cannula while turning on infusion: being sure the tip did not reposition to subretinal space or touch the crystalline lens most of the time. Unable to identify situations when a 6mm infusion tip or anterior chamber maintainer is needed.	Uses a 6 mm infusion tip or anterior chamber maintainer as needed.	
5	Instrument positioning	Vitrector or light pipe tips are not first held and visible at the pupillary edge. Instruments are frequently aimed too anteriorly or posteriorly. Touch-down retinal contusions are common.	Vitrector or light pipe tips are deeper than mid vitreous before core vitrectomy is begun. There is hesitation and light pipe often shines into the crystalline lens. There may be touch-down retinal contusions.	Vitrector and light pipe tips are safely in mid vitreous before core vitrectomy is begun. Instruments are frequently but inconsistently angled 45 degrees or toward the optic nerve to avoid damage to peripheral structures. The light pipe rarely shines into crystalline lens.	Vitrector and light pipe tips are just visible at the pupillary edge at start of surgery. Peripheral structures are avoided with proper 45 degree positioning during start of surgery.	
6	Core vitrectomy	The vitrector or light pipe is advanced immediately into mid vitreous without cutting. The light pipe often does not illuminate the vitreous that is cut.	The learner needs reminders to clear the vitreous near the cannulas first before beginning the core vitrectomy. The light pipe does not consistently illuminate the vitreous being cut.	A local vitrectomy is performed near the cannulas before beginning core vitrectomy. The light pipe is sometimes advanced unnecessarily into the vitreous cavity causing focal illumination. The vitrector is advanced as needed to cut vitreous.	A local vitrectomy is consistently performed under the cannulas to avoid vitreous reflux through the cannulas or vitreo-retinal traction. The light pipe is held to create wide-field illumination of the retina and rarely is advanced into the vitreous cavity.	

7	Create or confirm a PVD	Does not use vacuum to lift the edge of the vitreous insertion at the optic nerve.	The vitrector is set to aspirate and the port is placed over the optic nerve but not at the vitreous insertion. Vacuum is not at maximum before the vitrector is pulled away. Does not aspirate in other directions over the optic nerve.	Vitreous is engaged at the optic nerve head. Vacuum is frequently not at maximum before the vitrector is pulled away. Is not always successful in aspirating in several different directions. Does not consistently observe peripheral vitreous for movement nor peripheral retinal tears.	Vacuum is built up to maximum; is able to visualize and engage the edge of the vitreous prior to pulling away. The vitreous is engaged 0.5DD away if it cannot be engaged directly over the optic nerve head. Aspirates successfully in several different directions. Consistently observes peripheral vitreous for movement and peripheral retinal tears and engages cutter as soon as peripheral traction detected.	
8	Peripheral vitrectomy	The vitrector or light pipe encounter the crystalline lens or peripheral retina. Does not utilize fast cut rates for peripheral shaving. In phakic patients – the vitrector crosses the midline often.	The vitrector and light pipe are not consistently held at appropriate distance from crystalline lens and peripheral retina but promptly readjusts with verbal or visual reminders. Needs prompting to use fast cut rate for peripheral shaving. Needs occasional reminders to not cross midline in phakic patients.	Fast cut rate is used for safe removal of peripheral vitreous with assistance of wide-field lens. Learner is aware of when to switch sides in a phakic patient to avoid toucing crystallie lens.	Fast cut rate is used for safe removal of peripheral vitreous with assistance of wide-field lens or simulates shaving mode by consistently reducing aspiration as the probe moves more peripherally.	
9	Subretinal fluid drainage	Will often engage retinal edges during aspiration, frequently requiring reflux mode. Does not use low or steady vacuum rate to avoid enlarging retinal opening.	Uses soft tip or vitrector to aspirate subretinal fluid. Often engages retinal edges during aspiration briefly and must be prompted to use reflux. Needs reminder to use low or steady vaccum.	Some times engages retinal edges during aspiration and needs few reminders to reflux tissue.	Consistently uses soft tip cannula or vitrector probe to aspirate subretinal fluid safely without engaging retinal edges. Refluxes tissue unprompted.	
10	Use of surgical adjuncts/dyes	Does not know/understand the appropriate use of triamcinolone, vital dyes and liquid perfluorocarbons.	Needs reminder to use triamcinolone for PVD induction, vital dyes for membrane peeling, or liquid perfluorocarbons for posterior pole stabilization of retinal detachments.	Sometimes uses the surgical adjuncts, but needs assistance with optimal timing and use.	Consistently uses surgical adjuncts in appropriate dose, concentration and timing.	

11	Endolaser application	Keeps laser probe too close or too far from retina. Laser spots are intense or not visible. Cannot safely perform laser application to peripheral retina. Cannot perform laser with non-dominant hand.	Laser spots are variable in intensity. Has difficulty in application to peripheral retina. Has difficulty with non-dominant hand.	Laser spots are uniform in intensity and spacing most of the time. Can apply laser to peripheral retina; may have difficulty with superior retinal periphery, occasionally touches lens. Uses non-dominant hand for peripheral retinopexy with some difficulty.	Can apply laser to peripheral retina, without causing lens touch. Can use non-dominant hand for peripheral retinopexy without difficulty..	
12	Air fluid exchange	Is able to initiate aspiration of superficial fluid through vitrector or extrude through soft tip cannula while infusing air. Unable to follow the level of fluid down to optic nerve safely due to poor visibility from air bubbles.	Is able to initiate aspiration of fluid through vitrector or extrude through soft tip cannula while infusing air. Unable to follow the level of fluid down to optic nerve safely due to poor visibility from air bubbles. Will frequently traumatize retina or optic nerve during poor visibility.	Is able to hold position or follow the fluid level to optic nerve despite poor visualization most of the time. Will occasionally traumatize retina or optic nerve during poor visibility.	Is able to dry the posterior pole safely without engaging retina or optic nerve during poor visibility. Is able to adjust extrusion power or air infusion pressure for different scenarios.	
13	Sclerotomy closure	Does not remove cannulas from the same direction they were placed at start of surgery. Does not use caution to keep intraocular pressure stable during removal. Cannot list indications for suturing sclerotomies.	Inconsistently removes cannulas from same direction as placement. Does not use caution to keep intraocular pressure stable during removal. Cannot identify when there is wound leak.	The conjunctiva is replaced to original location. Uses caution to keep intraocular pressure stable during removal of cannulas. Sutures sclerotomies closed when there is a wound leak.	The conjunctiva is replaced to original location and intraocular pressure remains stable. Efficiently and effectively sutures sclerotomies closed when there is a wound leak.	
14	Use of endotamponade	Does not know or is not aware of the appropriate use of tamponade agents.	Is aware of endotamponade agents but needs prompting for understanding the appropriate choice, timing and volume. Needs assistance with proper venting techniques to maintain optic nerve perfusion and keeping eye normotensive.	Is able to choose appropriate tamponade agent at the appropriate time, but needs assistance to recognize optimal fill. Needs minimal assistance with venting to maintain optic nerve perfusion while keeping eye normotensive.	Is able to use appropriate endotamponade agents at appropriate dose and time. Understands the end-point of optimal fill to avoid endotamponade entry into the anterior chamber or ineffective fill while maintain optic nerve perfusion.	

	Global Indices					
15	Microscope handling (confocality)	Unable to use foot control for X-Y movement.	Makes frequent errors while performing X-Y movement; Does not tilt the eye to ease access to the area of interest.	Performs X-Y movement consistently when needed; Finds difficulty in centration while performing peripheral vitrectomy.	Consistently couples X-Y and ocular movements to aid easy access to the area of interest.	
16	Lens Viewing system	Is not aware of the different viewing systems available	Is aware of available lens viewing systems, but not aware of the differences. Is able to choose appropriate lens with prompting.	Is aware of different lens viewing systems and is able to consistently choose appropriate lens with minimal prompting.	Is able to choose the appropriate lens and can change lenses mid-surgery depending on circumstances.	
17	Vitrectomy console	Lacks knowledge of different fluidic parameters in the console system. Does not make appropriate changes to the parameters of fluidics: infusion pressure, vacuum, cutting rate.	Recognizes there are different parameters and settings on the console, but is not able to explain influences or make changes in fluidics without help.	Makes necessary changes in fluidics parameters while performing different stages of surgery most of the time.	Consistently makes necessary changes in fluidics parameters while performing different stages of surgery.	
18	Direction of vitrector port	The port is not always safely engaged in vitreous. There is some difficulty rotating the port to reach vitreous from any angle. The vitrector does not travel in the direction of the port (port faces nasal and vitrector travels temporally) which may cause vitreous pulling or traction and retinal tears. The port faces the retina and may engage retina.	The port is not always safely engaged in vitreous. There is some difficulty rotating the port to reach vitreous from any angle. The vitrector does not travel in the direction of the port (port faces nasal and vitrector travels temporally) which may cause vitreous pulling or traction and retinal tears. The port faces the retina and may engage retina.	The port is safely engaged in vitreous most of the time. The vitrector travels in the direction of the port most of the time. There is some difficulty rotating the port to reach vitreous from any angle. The port is positioned sideways to avoid facing the retina but may occasionally engage retina.	The port is safely engaged in vitreous at all times. The vitrector travels in the direction of the port to avoid vitreous traction and there is no pulling of vitreous. The port can be rotated competently to reach vitreous from any angle. The port is positioned sideways consistently to avoid facing the retina and does not engage retina.	
19	Efficiency	The vitrector port is engaged in vitreous less than 50% of the time, often cutting infusion fluid.	The vitrector port is engaged in vitreous 50% of the time, often cutting infusion fluid.	The vitrector port is engaged in vitreous most of the time. Is able to efficiently cut vitreous with minimal to moderate engagement of infusion fluid.	Consistently has the vitrector port engaged in vitreous. Is able to efficiently cut vitreous with minimal engagement of infusion fluid.	

20	Illumination	Light pipe is frequently advanced too far into the eye, causing unnecessary focal illumination. Light illuminates areas not being vitrectomized. Frequently shines light pipe directly at the macula. Does not maneuver the light pipe to avoid glare from the vitrector. Does not adjust illumination intensity when needed.	Light pipe is frequently advanced too far into the eye, causing unnecessary focal illumination. Light illuminates areas not being vitrectomized. Frequently shines light pipe directly at the macula. Does not consistently maneuver the light pipe to avoid glare from the vitrector. Does not adjust illumination intensity when needed.	The illumination yields broad wide field illumination but often converts to focal illumination by advancing light pipe. Light may not illuminate the area that is being vitrectomized but will correct with visual or verbal reminders. Avoids shining light pipe directly at the macula most of the time. Can maneuver the angle of the light to avoid glare from the vitrector most of the time or with prompting. Reduces or increases illumination intensity appropriately when needed with some prompting.	The illumination yields broad wide field illumination consistently and can convert to focal illumination by advancing light pipe only when needed and avoids focal light on the macula. Is able to illuminate necessary pathology without engaging crystalline lens or retina. Can maneuver the angle of the light to avoid glare from the vitrector every time. Reduces or increases illumination intensity appropriately when needed consistently.	

Comments:

Golnik, KC, Law, J, Ramasamy, K, Mahmoud, T, Okonkwo, O, Singh, J, Arevalo, JF. The Ophthalmology Surgical Competency Assessment Rubric for Vitrectomy. Retina 2017 Sept; 37(9): 1797-1804.