IVORY Guidelines (Instructional Videos in Otorhinolaryngology by YO-IFOS): A Consensus on Surgical Videos in Ear, Nose, and Throat

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Objectives/Hypothesis: Otolaryngology instructional videos available online are often of poor quality. The objective of this article was to establish international consensus recommendations for the production of educational surgical videos in otolaryngology.

Study Design: DELPHI survey.

Methods: Twenty-seven international respondents participated in this study from 12 countries. Consensus was reached after three rounds of questionnaires following the Delphi methodology. The proposals having reached the 80% agreement threshold in the third round were retained.

Results: The main recommendations are as follows: 1) Ethics: patients must be anonymized and unrecognizable (apart from plastic surgery if necessary). A signed authorization must be obtained if the person is recognizable. 2) Technical aspects: videos should be edited and in high-definition (HD) quality if possible. Narration or subtitles and didactic illustrations are recommended. 3) Case presentation: name of pathology and procedure must be specified; the case should be presented with relevant workup. 4) Surgery: surgical procedures should be divided into several distinct stages and include tips and pitfalls. Pathology should be shown if relevant. Key points should be detailed at the end of the procedure. 5) Organ-specific: type of approach and bilateral audiometry should be specified in otology. Coronal plane computed tomography scans should be shown in endonasal surgery. It is recommended to show pre- and postoperative videos in voice surgery and preoperative drawings and photos of scars in plastic surgery, as well as the ventilation method in airway surgery.

Conclusions: International recommendations have been determined to assist in the creation and standardization of educational surgical videos in otolaryngology and head and neck surgery.

Key Words: Video, guideline, educational, teaching, otorhinolaryngology, ear, nose, and throat.

Level of Evidence: 5

INTRODUCTION

Educational surgical videos are becoming key to prepare students for the operating theater. Educational videos have been shown to increase surgical skills and, as such, are increasingly included in the resident curriculum to expedite the training of young surgeons.[1–10] Many different video platforms exist, the most used being YouTube, but also specialized surgery-orientated platforms or online medical journal platforms.[4,10–12] Educational surgery videos that are available online are too often of insufficient quality and are rarely peer reviewed.[5,11,13–16] Guidelines are available for other specialties, such as general surgery, to help improve the quality of the videos, but none are available in otorhinolaryngology.[17,18] Our specialty is well suited to the creation of surgical videos, particularly when using endoscopes or microscopes in otology, rhinology, or laryngology, as first-person surgical films are readily available. Also, the great variety of specificities within each subspecialty should be taken into account during video editing. The objective of this study was to reach a consensus among an international sample of respondents on key aspects of surgical videos for otorhinolaryngology, with a particular emphasis on enhancing the educational nature of these videos.

MATERIALS AND METHODS

An international consensus committee was selected to include representatives of all inhabited continents, age groups, and ear, nose, and throat (ENT) subspecialties, ranging from pediatrics, otology, head and neck surgery, endonasal surgery, laryngology, facial plastics to robotics, as a Young Otolaryngologists of the International Federation of Otorhinolaryngological Societies (YO-IFOS) initiative. A total of 27 international respondents participated in this study, six each from France and from the United States, three from Canada, two each from South Africa, India, and the United Kingdom, and one each from the Netherlands, Brazil, Australia, Italy, Ukraine, and China. The majority of participants (56%) were YO-IFOS members.

A steering subcommittee comprised of five YO-IFOS members (F.S., S.P., J.M., N.F., N.T.), selected initial propositions based on personal experience, video guidelines of major journals, and a literature review.[3,5,10,12–15,17–23] A Delphi questionnaire was created, and the propositions were reviewed online by the entire consensus committee in three rounds. Blinded feedback was shared among respondents between each round, and the respondents were able to suggest new propositions at the end of round 1. The Delphi method is widely accepted to reach consensus among a panel of experts.[24,25]

Propositions were excluded after round 1 if they did not reach a 30% agreement threshold. The other propositions were revised according to feedback. Propositions were excluded after round 2 if they did not reach the 80% agreement threshold and could not be rewritten or modified according to respondents' feedback. Propositions were excluded after round 3 if

they did not reach the 80% agreement threshold. Accepted and excluded propositions are reported in the Results section, and respondents' feedback from all three rounds in the Discussion section.

This study did not require institutional review board approval, as no experimental or human study was undertaken.

RESULTS

All respondents completed all three Delphi rounds. Respondents' years of surgical expertise and subspecialty areas of expertise are reported in Figures 1 and 2. Concerning surgical videos, 23 respondents (85%) answered

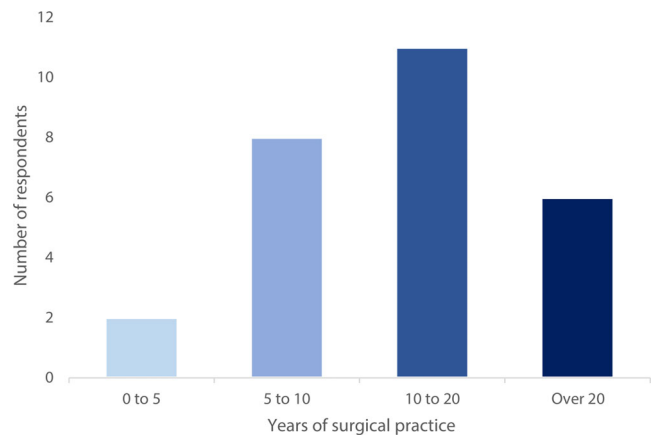Fig. 1. Respondents' years of surgical practice. Description of the 27 respondent's years of surgical practice. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]
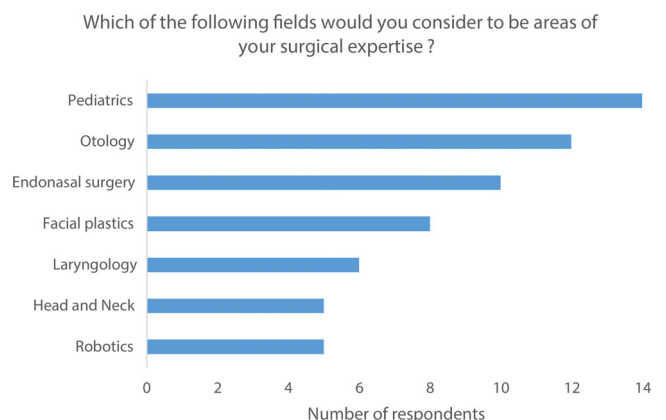

Fig. 2. Respondents' fields of surgical expertise. All 27 respondents were asked to report their field of surgical expertise. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

TABLE I.
Consensus IVORY Guidelines.

No.	Statements	Agreement (%)
Section A: Ethics		
1.	The name of the patient should not be mentioned, and medical data should be anonymized. Patients should not be recognizable (blur or obscure patient eyes, tattoos, or any other distinctive feature), unless these features are relevant (i.e., facial plastic surgery).	100
2.	Patient consent should be obtained, specifying if the film may be shared on social media, websites, or during conferences. Depending on local legislation, this may not be necessary if the video does not contain any personal identifiable information.	92.6
3.	Relevant conflict of interest disclosure and sponsors (if any) should be reported if the video promotes a product or device.	100
Section B: Technical aspects		
4.	High-definition (720p or over), good-quality videos are recommended.	85.2
5.	Background noise, music, or commentary/discussions from the original video recording should be omitted.	92.6
6.	Edited videos, less than 10 minutes long, showing all key aspects of a procedure and excluding irrelevant footage, are recommended.	100
7.	Intelligible narration (voiceover) and/or closed captions are recommended (English for international audiences).	92.6
8.	Didactic illustrations (e.g., drawings, arrows, overlays) are recommended, especially to show and explain anatomy.	92.6
9.	When available, peer review of the video is recommended before publication, assessing the procedure (e.g., scientific validity, safety) as well as the quality of educational editing.	88.9
Section C: Case presentation		
10.	Title page should indicate the name of the procedure performed and of the pathology, and the main operator name, institution (if any), and country.	88.9
11.	Brief presentation of relevant patient medical history is recommended (age and sex of the patient and sidedness of the disease should be indicated if relevant).	92.6
12.	Relevant preoperative workup should be shown. Imagery should be explained by arrows/overlays.	88.9
Section D: Surgical procedure		
13.	It is recommended to specify patient setup or positioning on the operating table if these are nonstandard or procedure specific.	96.3
14.	Specific or novel surgical instruments or devices used during the film should be identified.	100
15.	If an endoscope is used, angle, diameter, and length should be specified.	88.9
16.	It is recommended that the film be divided in clearly identified surgical steps.	85.2
17.	Relevant pathology shown during the film should be identified and named. A picture of the specimen (with ruler) may be included if applicable.	88.9
18.	For each phase of the procedure that is commented, highlighting specific surgical risks and tips to avoid them is recommended.	88.9
19.	Final key points and take-home messages are recommended.	96.3
Section E: Organ specific		
20.	Otology: It is recommended to report preoperative audiometry (including contralateral ear) and imaging (CT scan) when relevant.	92.6
21.	Otology: The type of approach used should be specified (if not filmed).	100
22.	FESS: When preoperative imagery workup is available, it is recommended to show the CT scan, especially coronal planes (plus any other relevant imagery).	96
23.	Airway surgery: If available, it is recommended to report preoperative data on voice (e.g., quality, vocal cord mobility), breathing (e.g., dyspnea, tracheostomy), and eating (e.g., aspiration, gastrostomy).	85.2
24.	Airway surgery: It is recommended to specify perioperative ventilation method (e.g., tracheostomy, tube size, spontaneous, use of laser).	91.7
25.	Vocal cord surgery: It is recommended to include preoperative and postoperative films.	87
26.	Plastic surgery: Pre- and postoperative photos/videos of scars or healed wounds are recommended.	100
27.	Plastic surgery: It is recommended to show preincision drawings of flaps and reconstructive planning.	100
28.	Cosmetic surgery: If relevant, subjective patient expectations should be discussed in relation to surgical planning.	81.5

CT = computed tomography; FESS = functional endoscopic sinus surgery; IVORY = Instructional Videos in Otorhinolaryngology by Young Otolaryngologists of the International Federation of Otorhinolaryngological Societies.

that they themselves participated in the creation, editing, or publishing of ENT surgical videos, 24 (89%) that they themselves used surgical videos to learn or view novel surgical techniques, and 24 (89%) that they themselves used surgical videos to teach surgical techniques.

Of the 65 initial propositions in round 1, 28 propositions were included in the final guidelines and are reported in Table I. Mean agreement rate was 92.6% ± 5.5. The following key features were considered mandatory (over 80% of agreement): procedure and pathology

should be indicated in the video title (100%), anatomical structures should be identified (96%), narration or captions should be included (89%), patient consent is required (85%), main operator name and institution should be indicated (81%), and relevant patient history should be reported (81%) (Fig. 3). Some propositions were excluded as they did not reach consensus (Table II). Of those, six propositions were eliminated after round 1, 11 after round 2, and two after round 3.

DISCUSSION

An international consensus committee, with 27 respondents from 12 countries, was able to reach consensus for 28 propositions, thus establishing the IVORY guidelines (Instructional Videos in Otorhinolaryngology [ORL] by YO-IFOS), for educational surgery videos in otorhinolaryngology. Throughout the three Delphi questionnaire rounds, respondents were able to share feedback on the propositions.

Patient consent was an important issue (reaching a 92.6% agreement rate) and should ideally be obtained before surgery. Many comments were, however, made regarding variable international legislation, and that in most endoscopic or microscopic videos, no identifiable feature may be present. Some respondents argued that consent was not strictly necessary in videos where the patient was anonymized and not recognizable at any point in the video. Others were more cautious and stressed that consent should always be obtained regardless given the potential for widespread, and potentially
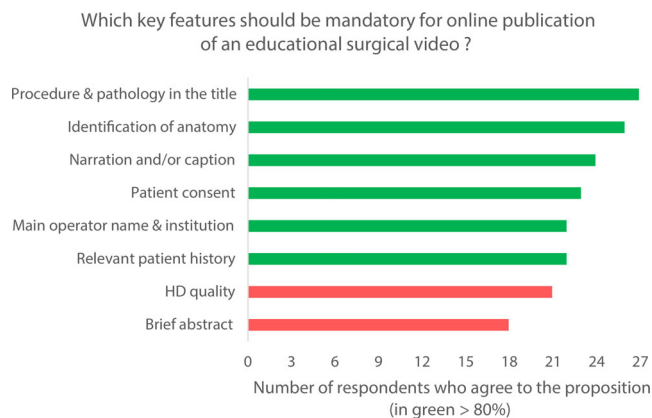

Fig. 3. Mandatory features for online publication of an educational video in ear, nose, and throat (ENT). Respondents were asked which features should be mandatory in an educational video in ENT. Propositions in green reached consensus (over 80% agreement), whereas those in red did not. HD = high definition. [Color figure can be viewed in the online issue, which is available at www.laryngoscope.com.]

TABLE II.
Statements That Did Not Reach Consensus.

Rejected Statements	Agreement (%)	Round of Exclusion
Presentation of the position of the surgical team, scrub nurse, anesthetic team around the surgical table is required.	7.4	1
Video should include information on anesthesiology: ASA score, body mass index, type of drugs, blood pressure objective.	11.1	1
Experience of the main operator (e.g., number of previous procedures, number of years of surgical experience, position) should be indicated.	18.5	1
It should be indicated if the video has been shown at a national/international meeting.	22.2	1
It should be indicated if the video was filmed during a live broadcast or masterclass.	29.6	1
It should be specified if surgery is performed by a trainee (in which case specify experience of trainee in given procedure).	29.6	1
It is recommended to discuss alternative strategies versus current strategy.	37	2
Fast forward or slow speed is not recommended.	51.9	2
Open surgery: type of camera used (e.g., GoPro, overhead) should be specified.	58.3	2
In case of malignant specimen: it is recommended to share the detailed histopathology report (e.g., number of lymph nodes, extent of resection, margins).	59.3	2
Full unedited videos may be useful for educational purposes.	63	2
It is recommended that operative times be specified.	63	2
It is recommended to report usual follow-up (frequency–clinical and/or imagery).	66.7	2
It is recommended to report surgical outcomes and results.	74.1	2
Means to contact the corresponding author should be indicated or made available through the video platform.	77.8	2
Head and neck/plastics: It is recommended to specify suture and needle type or size.	77.8	2
Indication of the year in which the procedure was performed is recommended.	77.8	2
When possible, video counts (e.g., number of views, likes for audit and to assess popularity) and moderated comments (for feedback on the video and interaction with trainees watching it) should be made available on the web platform.	74.1	3
It is recommended to publish a brief abstract with the video. Key references are welcome if relevant.	77.8	3

Round of exclusion corresponds to the Delphi questionnaire round after which the proposition was excluded, not reaching the agreement threshold (30% after round 1, 80% after rounds 2 and 3), and not being modifiable following respondents' feedback (concerning rounds 1 and 2).
ASA = American Society of Anesthesiologists.

uncontrollable, dissemination. Videos are never entirely anonymous, as surgeon, institution, and procedure are often reported. Skin color or minor anatomical features (e.g., shape of tragus, nostril) may also help identification. Patients, or their close family, may be able to recognize themselves, in which case the surgeon may be held accountable if no consent was obtained. This point of view was captured by one of the respondents' comments that "the patient may be more identifiable than we realize." Pediatric otolaryngologists called for extra caution concerning children, as it is preferable that they be not recognizable regardless of parents' consent. Ideally, videos of pediatric facial plastic surgery would be made available offline or be login-protected rather than be made freely available online.

Full nonedited videos were not recommended by respondents (reaching 63% agreement), as they risk drowning out relevant teaching points and losing the viewer's engagement. All respondents agreed (100%) that videos should be edited to be under 10 minutes long (although some preferred even shorter, to-the-point videos). However, some respondents pointed out that full-length videos could be useful to show the management of surgical complications. Also, concerning short procedures, full-length commented videos could also be of interest showing all details of the procedure.

No consensus was reached regarding video speed. Although it is generally recommended to show key elements of a procedure at normal speed, fast forward, or 2× speed, may be useful in some instances to show multiple and repetitive gestures, when showing the entire step is important for the comprehension of the surgery (e.g., laryngeal cleft sutures). Likewise, slow speed may be useful to better explain subtle pathology or gestures (e.g., pediatric endoscopy with a rapid rate of respiration or placing of microvascular sutures).

Unless a surgical video is focused on results, respondents felt that surgical videos should be focused on the technique, and that results were not mandatory (74.1% to report surgical outcomes). Although the outcome of a patient shown in a surgical video may be interesting, it was not required, as only a statistically significant rate of success would be relevant to validate a technique.

It is important to note that poorly resourced developing-world centers have a wealth of skilled surgeons and diverse pathology and should still be able to contribute. Although high-definition (HD)-quality videos are recommended (85.2% agreement) and ideally 1,080p or over, it is important to bear in mind that in certain contexts, all that is available for recording is a smartphone or an out-of-date video system. Also, in case of emergency or minimal resource settings, such videos could be acceptable as long as the pathology and management are visible.

Concerning video output, only one proposition about web platforms reached consensus (no. 9 recommending that videos be peer reviewed before being published online, 88.9% agreement). Although the authors considered that peer review should be preferred when possible, they acknowledged that the most popular video platforms are nonreviewed, making video guidelines all the more relevant. Major issues arose concerning comments on web platforms, questioning who might moderate the comments and according to which guidelines. It seems important that such comments not become too time consuming or expose surgeons or institutions to perhaps malicious criticism they cannot defend or counter, especially if the video is published on widely available social media platforms. For similar reasons, respondents thought it was important to indicate the primary surgeon's name (no. 10, 88.9% agreement), but not how to be contacted (77.8% agreement). Use of social media video counts to assess popularity was also not recommended (although not advised against), as it has been repeatedly shown that such data are not associated with educational or scientific value of the individual video.[10,16,21,26]

The following consensus recommendations seem to be of paramount importance as they have repeatedly been statistically associated with higher-quality surgical videos in the literature: short edited videos (no. 6, 100% agreement), narration (no. 7, 92.6% agreement), didactic illustrations and emphasis on anatomy (no. 8, 92.6% agreement), identification of key surgical steps (no. 16, 85.2% agreement), and discussion of tips and pitfalls (no. 17, 88.9% agreement).[1,4,5,7,8,12,19] It would be interesting in a subsequent study to review current online surgical videos to see how many meet the consensus criteria.

We hope that these guidelines help facilitate the peer-review process of video platforms or medical journals by helping authors focus on key video editing issues before submission. However, only seven of the propositions reached a 100% agreement consensus, emphasizing the fact that reviewers should not unnecessarily reject videos that do not fully comply with these recommendations, especially older videos and developing-world videos of great educational interest. Also, due to the multiple heterogenous subspecialties of otolaryngology, it is possible that with time, more detailed recommendations may emerge from subspecialty fields that address more specific details relevant to each area.

CONCLUSION

A consensus was reached concerning 28 items, thus enabling us to establish the IVORY guidelines (Instructional Videos in ORL by YO-IFOS), for educational surgery videos in otorhinolaryngology. Procedure and pathology in the video title, identification of anatomical features, added narration and/or captions, patient consent, and main operator name and institution were identified as the main features for an educational video. We hope that by publishing video guidelines established by an international sample of experienced otolaryngologists and adapted to our specialty and its subspecialties, the quality and educational value of teaching videos may be improved. These guidelines may also facilitate the peer-review process by helping authors better prepare their videos prior to video submission.

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