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Original Article

The use of Online Videos for Vitreoretinal Surgery Training: A Comprehensive Analysis

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Abstract

Objectives: The current study aimed to test the quality and educational utility of the videos of retinal detachment surgery available on YouTube.

Methods: YouTube was searched using the keywords "retinal detachment, retinal detachment surgery" in October 2019. The steps of pars plana vitrectomy surgery were standardized according to the literature. The videos were evaluated in a blinded fashion by two retina specialists with the use of the Modified DISCERN, Health on the Net Foundation (HON) code, the Journal of American Medical Association (JAMA) checklist, and the Global Quality Score (GQS).

Results: A total of 125 videos were reviewed. The total surgery score was 3.11 (2.16–3.67 IQR), and the most commonly shown surgical stages were photocoagulation and core vitrectomy (n = 99 [79.2%] and n = 97 [77.6%], respectively). In the multivariate linear regression model, the duration of video (minutes) (β- Coefficient 0.033, p<0.001), the HONcode score (β-Coefficient 0.310, p=0.005), and GQS (β-Coefficient 0.768, p<0.001) were associated with better educational content, whereas JAMA and Modified DISCERN scores were not.

Conclusion: So far, the educational value of YouTube videos has been unsatisfactory. Assessing the videos using tools such as HONcode, video duration and GQS may provide better educational perspective to ophthalmology trainees.

Keywords: Retina, Surgery, Video, Vitreoretinal, YouTube

Introduction

Retinal detachment is defined as separation of the sensory retina from the underlying retinal pigment epithelium. There are three diverse types of retinal detachment including rhegmatogenous, tractional, and exudative. Rhegmatogenous retinal detachment is the most common form of retinal detachment, with a prevalence of approximately 1 in 10,000 people per year (1). Treatment strategies include pneumatic retinopexy, scleral buckling surgery, and pars plana vitrectomy (2). The guidelines for retinal detachment surgery state that the choice of the surgical approach is usually left at the discretion of the attending surgeon (2).

Successful vitreoretinal surgery is closely related to the surgeon's experience and their level of training. Unfortunately, adequate surgical experience for the treatment of retinal detachment cannot be gained during residency, which is associated with heavy workload, low number of cases in clinical practice, and limited duration and content of educational courses (3,4). Subsequently, the training process for vitreoretinal surgery is mostly completed after residency

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under the guidance of retinal surgery specialists. During vitreoretinal training period, classical textbooks and scientific articles are other educational resources. Furthermore, online videos are used as additional options for learning purposes, particularly given the limited number of patients and depending on the mentor experience (5).

YouTube is a video hosting website that provides free video-streaming, with over a billion hours of videos watched every single day, and its videos have been viewed billions of times (6). For example, Dr. Najeeb's YouTube videos have been watched more than 59 million times (7). Although YouTube contains thousands of medical videos, only a few can be regarded as reliable sources, which are of great importance in terms of utility and educational quality of their contents (8,9). However, there are no qualified measurement tools or scales for the assessment of the veracity of the information delivered by these videos and their educational content and quality, nor is there descriptive ophthalmology research that evaluates YouTube videos collectively using tools such as the Journal of American Medical Association (JAMA) benchmark criteria, Health on the Net Foundation (HON)code, Modified DISCERN, and Global Quality Score (GQS) (10-13).

To the best of our knowledge, this is the first study to analyze videos on the pars plana vitrectomy for the treatment of retinal detachment. Our study aimed to evaluate the educational quality and utility of the pars plana vitrectomy surgery videos available on YouTube with the use of assessment tools including the Modified DISCERN quality scoring system, JAMA benchmark criteria, HONcode, and GQS.

Methods

YouTube (www.youtube.com) was searched using the keywords "retinal detachment" and "retinal detachment surgery." Videos containing information on pars plana vitrectomy were identified on October 15th, 2019. No personal Google or YouTube account was used for video search. Google and computer caches were cleared to prevent misdirection. Studies of Internet search engines have shown that over 90% of search engine users click on a result shown on the first three pages of results (12).

The search yielded 125 pars plana vitrectomy videos in total. All relevant videos were selected and evaluated according to the information on retinal detachment surgery. Only the videos uploaded in English were included, and duplicate videos were evaluated only once. Videos consisting of several parts of pars plana vitrectomy surgery were evaluated as one video. All videos were reviewed by two independent ophthalmologists (IKK, ED). In case of a disagreement between the raters, evaluation was completed by a third ophthalmologist (VA).

Exclusion Criteria

Videos that were completely irrelevant (e.g., music videos), animated videos, videos with non-English content, videos shorter than 30 seconds, and duplicate videos were excluded. Videos shared by healthcare professionals and institutions were classified as individual, hospital, health company, website, and university. Additional information about videos such as comments, view count, video duration (minutes), likes, dislikes, and the video upload date were recorded.

The videos were evaluated in a blinded manner by two retina specialists with the use of the Modified DISCERN, HONcode, JAMA benchmark criteria as well as the GQS (10-13). Video duration, information about the uploader, types of videos (live or animated, with or without subtitles), consistency between subtitles and the video, number of views, number of likes, dislikes, and comments were all taken into consideration. Additionally, patient data (age and sex) and etiology of retinal detachment were recorded (Fig. 1).

Total Surgery Score

To standardize the stages of pars plana vitrectomy surgery, the Ryan's Retina textbook, 6th edition was used as a reference (14). According to the textbook, retinal detachment surgery is divided into 11 surgical steps. Each surgical step was assigned a score of 1 point and the score for each sub-surgical step was calculated by dividing the relevant main surgical step score by equal subscores. The main surgical steps checklist was used to score the steps performed, missed, and the informative value of the steps (Supplemantary Table 1). While scoring, main and sub-surgical steps were analyzed based on quantal responses (positive, 1 point; negative, 0 point). The scores for each main surgical step and pars plana vitrectomy procedure were summed up to obtain total surgery score.

HONcode

The HON encourages the dissemination of quality health information for patients, healthcare professionals, and general public. Since 1996, it has been making efforts to facilitate access to the most recent medical data through the use of the internet. The HONcode is a system created by the HON in order to increase the reliability and transparency of the health-related and medical information available on the Internet. Studies have shown that the websites that adhere to the HONcode principles deliver health information of good quality to healthcare consumers (15,16). We used eight of the original HONcode principles to evaluate the quality of the videos. All surgical steps in the videos were scored separately based on adherence to each principle (1: yes; 0: no) and the total HONcode score was recorded (Supplementary Table 2).

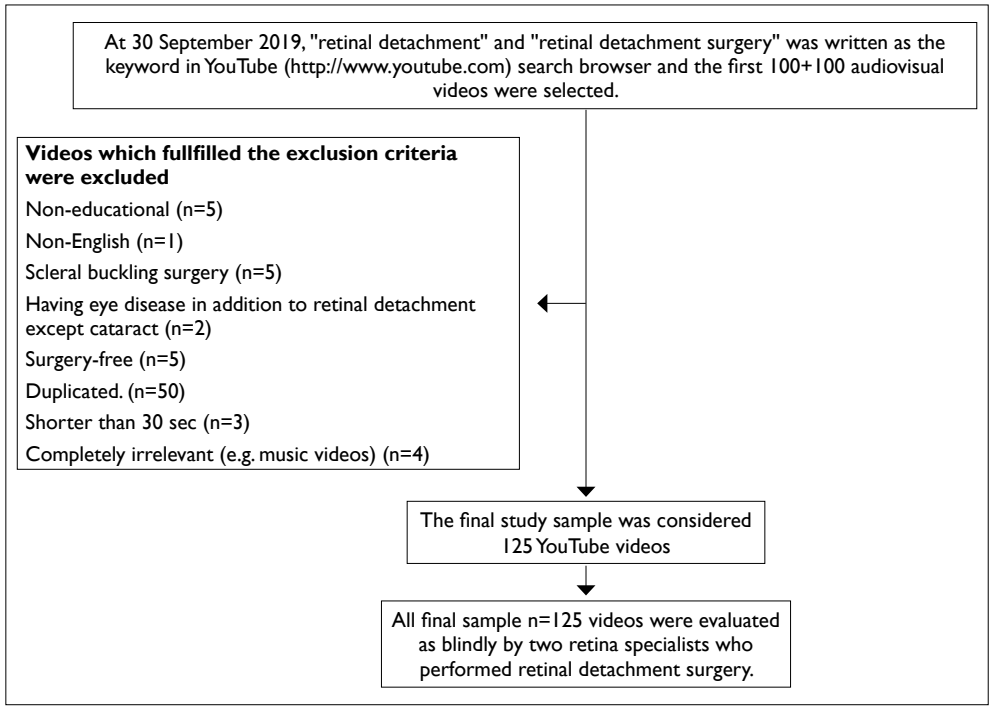

Figure 1. Consort flow diagram.

Supplementary Table 1. General Principles and Techniques of Vitreoretinal Surgery in Retinal Detachment (Scoring: 1 point for each Yes, 0 points for each No)

1- Patient Selection for Primary Vitrectomy
2- Vitrectomy System Management
3- Anesthesia Induction
4- Sclerotomies
   - o Transconjunctival sutureless technique
   - o Trocar placement
   - o Infusion control
5- Vitreous Removal
   - o Core Vitrectomy and Posterior vitreous detachment
   - o Vitreus Shaving
6- Principles of Vitrectomy Surgical Techniques
   - o Lens management
   - o Removal of epiretinal and subretinal membranes
   - o Hemostasis
7- Retinopexy
   - o Retinotomy-Retinectomy
   - o Fluid–Air Exchange
   - o Heavy liquid and Fluid- Air Exchange
8- Photocoagulation/Cryopexy of the Retinal Tear
9- Tamponade Selection
   - o Air -Gas Exchange
   - o Air–Silicone Exchange
   - o Perfluorocarbon–Silicone Oil Exchange
10- Subconjunctival Pharmacotherapeutics
11- Positioning After Surgery

JAMA Benchmark Criteria

The JAMA benchmark criteria were published in 1997 in the JAMA as a tool for the qualitative assessment of the websites for the presence of authorship, attribution, currency, and disclosure (11) (Supplementary Table 3).

Modified DISCERN Quality Scoring System

The DISCERN is an instrument constructed to provide users with a reliable way to measure the quality of written health information. Based on a 5-point scale, all videos were further evaluated for reliability and integrity. The reliability of the information was scored from 1 to 5 (reliability score) based on five questions (adapted from the original DISCERN system), as shown in Supplementary Table 4 (12).

GQS Description

All videos were also assessed using the GQS. The quality of the videos was rated on a 5-point scale. The same scale was also used for evaluating the quality and quantity of information delivered by the videos (13) (Supplement Table 5).

Statistical Analysis

The R statistics 3.2.2 (Vienna), "Hmisc," "rms" software package was used for statistical analysis. Descriptive statistics were summarized as mean±standard deviation for continuous data with a normal distribution and median and interquartile range (IQR) for the variables with a non-normal distribution. The frequency and percentage were provided for categorical data and the chi-square test was used to compare these parameters.

Supplementary Table 2. HONcode score (1 point for each Yes, 0 points for each No)

Number	Criteria
1	Any medical or health advice given in the video must come from a qualified health professional unless it is clearly stated that the information does not come from a qualified health source.
2	The information provided in the videos must be designed to support the patient's self-management but is not meant to replace a patient–physician relationship.
3	The information in the video maintains the right to confidentiality and respect of the individual patient featured.
4	Each video contains references to source data on information presented or contains a specific HTML link to source information.
5	Each video containing claims on the benefits or performance of specific, skills/ behaviors, interventions, treatments, products, and so on must be supported by evidence through references or HTML links.
6	The video must provide the viewer with contact information, or a Web site link to more information.
7	Any individual or organization that contributes funds, services, or material in the posted video must be clearly identified in the video or video description.
8	If advertisement supports funding to the video or the video's developers, it must be clearly stated. Included advertising must be clearly differentiable to the viewer: There should be a clear difference between the advertising material and the educational material in the video

Supplementary Table 3. JAMA Benchmark Criteria (1 point for each Yes, 0 points for each No)

Authorship	Authors and contributors, their affiliations, and relevant credentials should be provided
Attribution	References and sources for all content should be listed clearly, and all relevant copyright information should be noted
Disclosure	Website "ownership" should be prominently and fully disclosed, as should any sponsorship, advertising, underwriting, commercial funding arrangements or support, or potential conflicts of interest
Currency	Dates when content was posted and updated should be indicated

Supplementary Table 4. Modified DISCERN (1 point for each Yes, 0 points for each No)

Assessment of reliability of useful videos on retinal detachment surgery found on YouTube
Reliability of information (1 point for each Yes, 0 points for each No)
1. Are the aims clear and achieved?
2. Are reliable sources of information used? (i.e., publication cited, speaker is board-certified ophthalmologist)
3. Is the information presented balanced and unbiased?
4. Are additional sources of information listed for patient reference?
5. Are areas of uncertainty mentioned?

Supplementary Table 5. Global Quality Score (GQS) criteria used to score the quality of videos on retinal detachment surgery on YouTube.

1- Poor quality, very unlikely to be of any use to patients
2- Poor quality but some information present, of very limited use to patients
3- Suboptimal flow, some information covered but important topics missing, somewhat useful to patients
4- Good quality and flow, most important topics covered, useful to patients
5- Excellent quality and flow, highly useful to patients

A correlation test was applied for HONcode, JAMA, Modified DISCERN, total surgery score, and the number of methods demonstrated in the textbook. Pearson's test was applied for data with a normal distribution, and if not, the Spearman correlation test was used. Cronbach's alpha values were analyzed for inter-rater assessments including HONcode, modified- DISCERN, JAMA, GQS scores, and total surgery score.

To avoid multiplicity, it was considered that it would be more appropriate to use the linear regression model instead of multiple t-tests since it would demonstrate the actual importance of independent variables. On the linear regression model, the most informative parameter (according to retinal surgery steps outlined in Ryan's Retina textbook) was included in the model as a dependent numerical variable. Independent variables were HONcode, JAMA, Modified DISCERN

and GQS, likes, dislikes, and video duration. The statistical significance was considered at $p<0.05$.

Results

A total of 125 videos were included in this study. Eighty-eight (70.4%) of all videos were uploaded by a physician on their own. Among these videos, 15 (12%) were uploaded on their hospital website, 5 (4%) on university websites, 9 (7.2%) on behalf of health companies, and 8 (6.4%) were uploaded on several medical websites. The number of views was 985 (271–4388 IQR), the number of likes was 8 (2–21 IQR), and the number of dislikes was 0 (0–1 IQR). The number of live surgery videos was 113 (90.4%). The sex of the patients was disclosed in 14 of the videos in which half of the patients (7 patients) were females. Age of the patients appeared only in 14 videos. Overall GQS was 2.5 (2–3 IQR). The number of YouTube videos referring to 6 or more surgical steps (as described in Ryan's Retina textbook) was 34 (27.2%). Other results are presented in Table 1.

Table 1. Baseline characteristics of YouTube videos. Academic: Associate Professor or Professor

Variables	N=125
Mean Duration (Seconds)	277 (169-534)
Mean Duration (Minutes)	4.37 (2.49-8.54)
Video source	
1 Individual	88 (70.4%)
2 Hospital	15 (12%)
3 University	5 (4%)
4 Health company	9 (7.2%)
5 Website	8 (6.4%)
Patient sex, n=14 (only for videos disclosing sex)	7 F (50%)
Number of views	985 (271-4388)
The length of time the video stayed on YouTube (weeks)	124 (65-220)
Likes	8 (2-21)
Dislikes	0 (0-1)
Etiology (indefinite)	66 (52.8 %)
Comments	1 (0-5)
Surgery and subtitle concordance	55 (44%)
Surgeon (Academic)	11 (8.8%)
Type of video (live surgery)	113 (90.4%)
Frequency of subtitle	53 (42.4%)
Age (only for videos disclosing age) (n=14)	45.3±20.6
Global Quality Score	2.5 (2-3 IQR)

The median Modified DISCERN score was 1 (0–2 IQR). The question that received the highest number of positive answers was "Are the aims clear and achieved?," which were available in 52 videos (41.6%). The median JAMA score was 2 (1.5–2 IQR). The statement that received the highest score was "Currency ensures that website developers provide dates when the content is posted and then updated" which was available in 124 videos (99.2%). The median HONcode score was 2 (1.5–3 IQR). The statement that received the highest "Yes" response was "The information in the video maintains the right to confidentiality and respect of the individual patient featured" which was available in 119 videos (95.2%) (Table 2).

The total surgery score based on Ryan's textbook was 3.11 (2.16–3.67 IQR), and the most commonly presented surgical steps were photocoagulation and core vitrectomy (n=99 [79.2%] and n=97 [77.6%], respectively), and the steps least presented were infusion control and administration of pharmacotherapy (n=1 [0.8%] each). The data for other parameters are shown in Table 3.

Cronbach's α method was used for Inter-rater Reliability analysis. Cronbach's α values for DISCERN, JAMA, and HONcode scores and total surgery score were 0.935, 0.893, 0.917, 0.953, respectively (Supplementary Table 6).

Correlation analysis showed a positive correlation between JAMA and HONcode scores, and between JAMA and modified DISCERN scores (r: 0.409, $p<0.001$ and r: 0.535, $p<0.001$, respectively). Supplementary Table 7 shows other parameters. Total surgery-score versus HONcode and GQS score is shown as a flexplot (Fig. 2a and b).

The total surgery score was the primary parameter by which teaching and training features of the videos were scored in accordance with the steps described in Ryan's Retina textbook. The parameters predicting the total surgical score were analyzed in a multivariate Linear Regression model. The video duration (minutes) (α-Coefficient 0.033, $p<0.001$), HONcode score (α-Coefficient 0.310, $p=0.005$) and GQS (α-Coefficient 0.768, $p<0.001$) were statistically significant, but other parameters (such as JAMA score and modified-DISCERN score) included in the model were not (Table 4).

Discussion

The results of this study demonstrated that the overall score (as assessed by HONcode, GQS, and video duration) of the videos related to the retinal detachment surgery was significantly associated with the educational content (α-Coefficient 0.310, $p=0.005$, α-Coefficient 0.768, $p<0.001$, α-Coefficient 0.033, $p<0.001$, respectively).

Table 2. Modified DISCERN, JAMA, and HONcode adherence results in reviewed videos (Total n=125)

Modified DISCERN	
Aim clear	52 (41.6%)
Sort of information	9 (7.2%)
Balanced and Unbiased	34 (27.2%)
Additional source	18 (14.3%)
Discern Areas	28 (22.4%)
Discern Total	1 (0-2)
JAMA	
Authorship	93 (74.4%)
Attribution	7 (5.6%)
Currency	124 (99.2%)
Disclosure	3 (2.4%)
JAMA Total	2 (1.5-2)
HONcode	
1 Any medical or health advice given in the video must come from a qualified health professional unless it is clearly stated that the information does not come from a qualified health source.	63 (50.4%)
2 The information provided in the videos must be designed to support the patient's self-management but is not meant to replace a patient–physician relationship.	119 (95.2%)
3 The information in the video maintains the right to confidentiality and respect of the individual patient featured.	0
4 Each video contains references to source data on information presented or contains a specific HTML link to source information.	10 (8%)
5 Each video containing claims on the benefits or performance of specific, skills/ behaviors, interventions, treatments, products, and so on must be supported by evidence through references or HTML links.	7 (5.6%)
6 The video must provide the viewer with contact information, or a Web site link to more information.	28 (22.4%)
7 Any individual or organization that contributes funds, services, or material in the posted video must be clearly identified in the video or video description.	0
8 If advertisement supports funding to the video or the video's developers, it must be clearly stated. Included advertising must be clearly differentiable to the viewer: There should be a clear difference between the advertising material and the educational material in the video	61 (48.8%)
Honcode total	2 (1.5-3)

Table 3. Presence of Retinal detachment surgery steps as described in Ryan's Retina textbook

Surgery	
1-Patient Selection for primary vitrectomy	20 (16%)
2-Vitrectomy	17 (13.6%)
3-Anesthesia	3 (2.4%)
4-Sclerotomy	
a.Transconjunctival	48 (37.5%)
b.Trocar	37 (28.9%)
c.Infusion control	1 (0.8%)
5-Vitreous removal	
a. Core vitrectomy and posterior vitreus detachment	97 (77.6%)
b.Vitreous Shaving	81 (64.8%)
6 Principles of Vitrectomy Surgical Techniques	
a. Lens Management	29 (23.2%)
b. Epiretinal and Subretinal membranes	50 (40%)
c. Hemostasis	11 (8.8%)
7-Retinopexy	
a. Retinotomy-Retinectomy	35 (28%)
b. Fluid-Air Exchange	56 (44.8%)
c. Heavy Liquid and Fluid exchange	40 (32%)
8-Photocoagulation/Cryopexy of the Retinal Tear	99 (79.2%)
9-Tamponade Selection	
a.Air-Gas Exchange	32 (25.6%)
b.Air-silicone exchange	36 (28.8%)
c.Perfluorocarbon	9 (7.2%)
10-Subconjunctival Pharmacotherapeutics	13 (10.4%)
11-Positioning After Surgery	1 (0.8%)
Total surgery score	3.11 (2.16-3.67 IQR)

Table 4. Multivariate linear regression

Predictor	**β coefficient**	**CI**	**p**
JAMA total score	-0.161	-0.640, 0.318	0.507
HONcode total score	0.310	0.096, 0.523	0.005
Modified DISCERN, total score	-0.020	-0.243, 0.202	0.855
Global Quality score, total	0.768	0.493, 1.04	<0.001
Likes	-0.003	-0.008, 0.001	0.150
Dislikes	0.029	-0.038, 0.096	0.389
Video duration (minutes)	0.033	0.014, 0.052	<0.001

Dependent variable: total surgery score; Independent variables: JAMA, HONcode, Modified DISCERN, Global quality score, likes, dislikes, video duration (minutes).

Supplementary Table 6. Reliability Analysis (inter-rater agreement)

Parameters		Cronbach's α
Modified DISCERN Total 1	Modified-Discern Total 2	0.935
JAMA 1	JAMA 2	0.893
HONcode 1	HONcode 2	0.917
Total Surgery Score 1	Total Surgery Score 2	0.953
Global Quality Score 1	Global Quality Score 2	0.911

YouTube is one of the richest resources of video collections for educational purposes, which provides open access to videos free of charge (17,18). For surgical trainees and practicing surgeons, online surgery videos are still preferred before case evaluation, and one of the most frequently used online information sources is YouTube (19). Given that trainee surgeons should acquire knowledge of, and skill in each step of surgery throughout the training process, our study paid attention to individual scoring for each step and presentation of all steps in the videos to achieve educational integrity. It has been emphasized in previous studies that current evaluation systems may not reflect the actual video evaluation results and that current evaluation methods are the result of subjective evaluation (20). Hence, different results were obtained as a result of each study. Therefore, in the current study, a total surgery scoring was made for each video, and the predictive value of the scoring methods (HONcode, JAMA benchmarks, modified DISCERN, and GQS) was used to evaluate the video training was checked for the prediction of the total surgery score.

In the current study, the number of videos shared to display individual skills and surgical performance was more than those of academic and university origin (n=11). However, unlike the results of previous studies regarding the educational content of videos, no significant difference was noted between the two groups (21,22). Unlike other studies, in the current study, the presence of surgical steps was scored and all surgical steps were evaluated for each video.

The number of YouTube videos covering the 6 or more steps (as described in Ryan's Retina textbook) was 34 (27.2%). Furthermore, the assessment of the videos indicated that several steps in the eye surgery were almost absent. The control of sclerotomy infusion and pharmacotherapy was shown only in one video.

Evidence from the literature confirms that multimedia-oriented learning is advantageous to have an understanding of the complex temporal and spatial events (18). While most of the content has been uploaded for educational purposes, some may be uploaded for advertising purposes, which should also be taken into consideration while approaching to

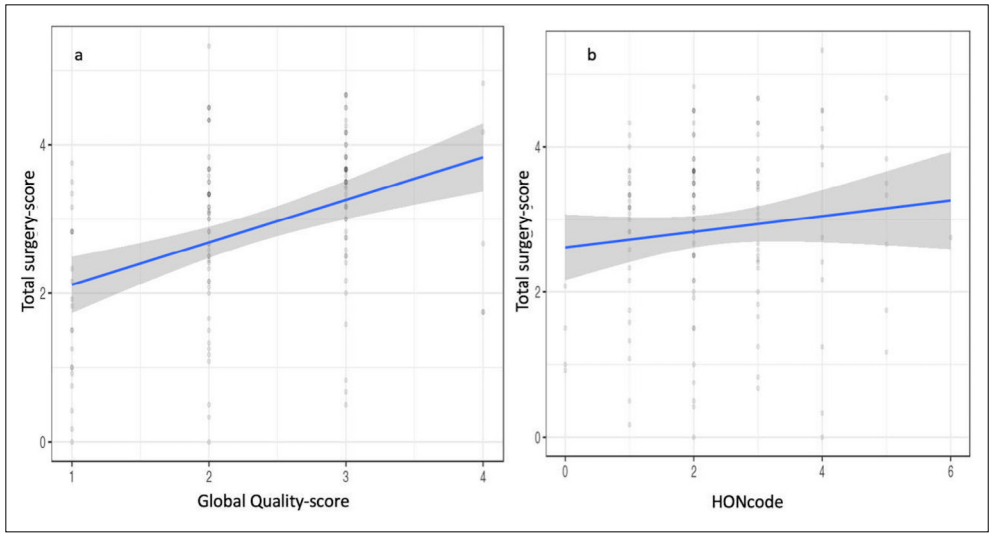

Figure 2. HONcode and Global quality score flexplot.

Supplementary Table 7. Correlations among HONcode, JAMA, Modifiye Discern, Total Surgery Score

	HONcode	JAMA	Modified DISCERN	Total Surgery Score
JAMA	0.409***		-	-
Modified DISCERN	0.631***	0.535***	-	0.055
Total surgery score	0.155	0.017	0.055	-

these videos as educational tools. Therefore, rigorous peer review is of vital significance for special educational quality and experience. Although there is no established system for evaluating the educational quality of videos uploaded to the internet environment, we used four checklists (HONcode, JAMA benchmarks, modified DISCERN, and GQS) for analysis. However, the checklists are mostly directed at evaluating the internet content to be used by health consumers (patients), which might have caused a limitation to the current study. In other studies, video evaluation was made according to the HONcode, JAMA benchmarks, modified DISCERN, and GQS checklist produced for health consumers, and this is not only a limitation for our study but a general problem of video evaluation process (21-23). Therefore, in our current study, video evaluation was tried to be done with total surgery score scoring and as a result, the video duration (minutes) (α-Coefficient 0.033, p<0.001), HONcode score (α-Coefficient 0.310, p=0.005), and GQS (α-Coefficient 0.768, p<0.001) were significant for predicting the total surgery score (Table 4).

Our study demonstrated that videos uploaded to YouTube are not always of educational quality (the total surgery score 3.11 [2.16–3.67 IQR]). Hence, one understands that, when searching a source like YouTube for information, it is a mixed bag of goods, which is often not sufficient. It is not reasonable to expect YouTube to edit and make a peer review for all surgical videos since this process requires physicians with surgical experience whose time is at a premium. Yet, with the use of some assessment instruments (e.g., HONcode, video duration, GQS) more instructional videos could be identified. In addition, presentation of only one section of the entire surgical procedure may be more beneficial for master surgeons who have completed their training rather than inexperienced vitreoretinal students. Since each stage of the surgical maneuver may not be known by the trainees from the beginning to the end, watching the whole sequence of the surgical intervention may complicate the process for surgeons at the learning phase, and may also cause misinterpretation. Therefore, to contribute to satisfactory training of these trainees, the standardized online videos with the use of specialized tools such as HONcode, JAMA, DISCERN, and GQS may be helpful for educational purposes. Otherwise,, when one needs to search educational videos of high quality that have gone through a peer-review process, multiple journals that have high-quality peer review often offer videos of surgeries as online supplementary material, and video reports of some digital ophthalmology journals are also available. Thus, it is easier for the trainee VR surgeons to search through the videos provided by their peers in recognized and official sources.

Limitations

There are a number of limitations of the study. The major limitation of the study is the lack of a specific YouTube scoring system and another limitation is the absence of description of the steps of retinal surgery according to a reference textbook. Ryan's Retina textbook was used as the main reference textbook for the manuscript but other sources could be used for the description of the surgical steps to identify correct steps of surgery in the retina surgery videos. YouTube is not the only online resource for videos for training and analyzing the content of only YouTube videos has limited interest to expert vitreoretinal surgeons. There are other multiple websites and organizations such as AAO, ASRS that provide educational videos. Also, several other video channels such as Dailymotion, or EyeTube featuring specific eye videos need to be considered as supplementary materials. Another important limitation of online video training is also that the assessment does not involve postoperative follow-up.

Conclusions

YouTube contains a variety of high-quality videos related to retinal detachment surgery. The educational value of these videos generally remains unsatisfactory. Therefore, it may not be appropriate to use YouTube as an educational resource. The current study demonstrated that the videos assessed by certain instruments (e.g., HONcode, video duration, and GQS) may provide better educational content for ophthalmology trainees and help them enhance their surgical experience. However, most ophthalmology societies as well as vitreoretinal societies including the American Academy of Ophthalmology have a lot of surgical videos available, targeted at specific issues and such videos can be used in order to save time. Further studies may be useful to promote/produce videos with high educational quality and pave the way for methodological consensus.

Disclosures

Ethics Committee Approval: Istanbul Health Sciences University, Ümraniye Training and Research Hospital, Clinical Research Ethics Committee, Ethics committee approval dated 24/12/2020 and numbered B.10.1.TKH.4.34.H.GP.0.01/402.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship Contributions: Involved in design and conduct of the study (IK); preparation and review of the study (IK, VA, ED); data collection (ED, IK, VA); and statistical analysis (IK).

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