Research Article

Pamukkale Medical Journal
doi:https://dx.doi.org/10.31362/patd.1098531

Educational quality of YouTube videos on external versus endoscopic dacryocystorhinostomy surgery

Eksternal ve endoskopik dakriyosistorinostomi cerrahisinde YouTube videolarının eğitim kalitesi

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Posted date:04.04.2022 Acceptance date:29.07.2022

Abstract

Purpose: To evaluate whether there is a difference in surgical training quality between endoscopic and external dacryocystorhinostomy (DCR) surgery videos on YouTube with the Laparoscopic Surgery Video Training Guide (LAP-VEGaS) video evaluation tool.

Matherials and methods: A comprehensive search was carried out on YouTube, using the following terms "DCR, External Dacryocystorhinostomy, Endoscopic Dacryocystorhinostomy''. Videos with 100 or more views were recorded. The number of views, age, number of likes, number of dislikes, number of comments, length, type of surgery, view ratio, like ratio, viewer interaction, and video power index were recorded. Two researchers independently assessed the videos for surgery educational quality according to LAP-VEGaS video assessment tool.

Results: After exclusion criteria, 74 out of a total of 108 videos were included in the study (27: external DCR, 47: endoscopic DSR). After the LAP-VEGaS evaluation, 30 (40.5%) of the videos were found to be of high quality and 44 (59.5%) were of low quality. External DCR videos were statistically significantly more high-quality videos than endoscopic videos (p=0.046). The average LAP- VEGaS score of external DCR videos was 10.65±2.98, and the mean LAP-VEGaS score of endoscopic DCR videos was 8.44±3.70, and the difference between them was statistically significant (p=0.009). Videos performed by ophthalmologists are statistically significantly higher quality videos according to LAP- VEGaS video assessment tool analysis (p=0.017). Concerning the selection of low and high quality videos, there was a significant agreement between two observers (kappa score 0.775).

Conclusions: Most of the DCR videos on YouTube are significantly lacking in case presentations, treatment options, and intraoperative and postoperative complications. In the future, we think that evaluating surgical videos on open access platforms such as YouTube with standard guidelines before they are published, and going through a review process may help increase the educational value of video materials.

Key words: YouTube, external dacryocystorhinostomy, endoscopic dacryocystorhinostomy, nasolacrimal duct obstructions, LAP-VEGaS video assessment tool.

Tukenmez Dikmen N, Dikmen B. Educational quality of YouTube videos on external versus endoscopic dacryocystorhinostomy surgery. Pam Med J 2023;16:13-22.

Öz

Amaç: YouTube'daki endoskopik ve eksternal dakriyosistorinostomi (DSR) cerrahi videoları arasında cerrahi eğitim kalitesinde fark olup olmadığını Laparoskopik Cerrahi Video Eğitim Kılavuzu (LAP-VEGaS) video değerlendirme aracı ile değerlendirmek.

Gereç ve yöntem: YouTube'da "DSR, Eksternal Dakriyosistorinostomi, Endoskopik Dakriyosistorinostomi" terimleri kullanılarak kapsamlı bir arama yapıldı. 100 veya daha fazla izlenen videolar kaydedildi. Videoların izlenme sayısı, beğeni sayısı, yorum sayısı, video uzunlukları, ameliyat şekli, ameliyatı yapan cerrah, izlenme oranı, beğenme oranı, izleyici etkileşimi ve video güç indeksi kaydedildi. Dakriyosistorinostomi konusunda deneyimli iki araştırmacı, videoları LAP-VEGaS video değerlendirme kılavuzuna göre cerrahi eğitim kalitesi açısından değerlendirdi.

Bulgular: Dışlama kriterlerinden sonra toplam 108 videodan 74'ü çalışmaya dahil edildi (27: Eksternal DSR, 47: Endoskopik DSR). LAP-VEGaS değerlendirmesi sonucunda videoların 30'unun (%40,5) yüksek kaliteli, 44'ünün (%59,5) ise düşük kaliteli videolar olduğu tespit edildi. Eksternal DSR videoları, endoskopik videolardan istatistiksel olarak anlamlı derecede daha yüksek kaliteli videolar idi (p=0,046). Eksternal DSR videolarının ortalama LAP-VEGaS skoru 10,65±2,98, endoskopik DSR videolarının ortalama LAP-VEGaS skoru 8,44±3,70 idi ve aralarındaki fark istatistiksel olarak anlamlıydı (p=0,009). Oftalmologlar tarafından yayınlanan videolar, LAP-VEGaS video değerlendirme aracı analizine göre istatistiksel olarak anlamlı derecede daha kaliteli videolardı(p=0,017). Düşük ve yüksek kaliteli videoların seçimiyle ilgili olarak, iki gözlemci arasında önemli derecede uyum olduğu görüldü (kappa puanı 0,775)**.**

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Sonuçlar: YouTube'daki popüler DSR videolarından çoğu sunum, tedavi seçenekleri, intraoperatif ve postoperatif komplikasyonlar açısından önemli ölçüde eksiktir. Gelecekte cerrahi videoların YouTube gibi açık erişim platformlarında yayınlanmadan önce hakem inceleme sürecinden geçirilmesinin videoların eğitsel değerinin artmasına yardımcı olabileceğini düşünmekteyiz.

Anahtar kelimeler: YouTube, eksternal dakriyosistorinostomi, endoskopik dakriyosistorinostomi, nazolakrimal kanal tıkanıklıkları, LAP-VEGaS video değerlendirme aracı.

Tükenmez Dikmen N, Dikmen B. Eksternal ve endoskopik dakriyosistorinostomi cerrahisinde YouTube videolarının eğitim kalitesi Pam Tıp Derg 2023;16:13-22.

Introduction

Nasolacrimal duct obstructions are characterized by epiphora and recurrent acute dacryocystitis attacks. The treatment of chronic dacryocystitis is surgical, and the main purpose of surgery is to create a permanent passage between the lacrimal sac and the nasal cavity.

Dacryocystorhinostomy(DCR) has been used for over a century for the treatment of nasolacrimal duct obstruction. External DCR, first described by Toti in 1904 [1], remains the gold standard as a highly successful surgical method [2].

Caldwell [3] first described the endonasal (non-endoscopic) approach in 1893. However, this approach fell out of favor because of the difficult visualization of endonasal anatomy with instrumentation at the time. Modern endoscopic transnasal DCR was described by McDonogh and Meiring in 1989 [4].

Endoscopic approaches for the lacrimal system are increasingly used compared to previous years. Technological advances in endoscopic devices are increasing success in intranasal endoscopic DCR, and with increasing experience, success rates have recently begun to approach external DCR [5-7].

Radical changes took place in surgical training in the last two decades due to technological innovations. There are countless education applications, e-books, journals, guidelines, and videos available online. Many surgical procedure videos, which are easily accessible on the Internet, have become a preferred educational resource for most surgeons in preparation for surgery. Senior surgeons and residents frequently watch surgical videos available on the World Wide Web to review rarely performed surgeries, review some technical details, and see how other colleagues work [8, 9]. It has been reported that YouTube is the most frequently used video source to prepare for surgery and to watch rare surgery videos [10, 11].

Especially because of the COVID-19 pandemic, not performing elective surgeries in many clinics, postponing non-emergency operations and all physicians having to deal with only COVID-19 patients outside their own branches within the scope of combating COVID-19; especially, it has greatly hampered the surgical training of surgical residents. In this sense, online videos have actually become an even more important training material for assistants in terms of surgical training.

However, surgical videos on YouTube, the most used online video resource, are uploaded without quality assessment for peer review process or content [10, 11]. The popularity rate is not based on whether the surgical steps and methods in the videos are given accurately and clearly; It is determined according to non-academic parameters such as the number of views and number of comments. The quality of YouTube surgical video content has been questioned more recently as it is more widely used for educational purposes.

Despite its widespread use and popularity among physicians, a standard method for evaluating YouTube® medical videos for accuracy and reliability has not been established [10, 12]. However, an international committee recently published the Laparoscopic Surgery Video Training Guide (LAP-VEGaS) video assessment tool, a recommended checklist for obtaining high-quality educational videos that can improve surgical training [13, 14]. Subsequently, it was used and validated in many publications analyzing surgical videos on YouTube for quality assessment and reliability [14-17].

The aim of this study is to objectively analyze the quality of the videos on YouTube as an educational tool that has grown in popularity especially during the COVID-19 pandemic in learning how to perform dacryocystorhinostomy surgery, which is an important step in eye and ear nose throat surgery assistant training. In addition, it is to evaluate whether there is a difference between surgical videos explaining the endoscopic and external DCR approach in terms of surgical training quality in regards to the LAP-VEGaS video assessment tool.

Matherials and methods

A comprehensive search was carried out on YouTube (https://www.youtube.com), using the following terms "Dacryocystorhinostomy, DCR, External dacryocystorhinostomy, Endoscopic dacryocystorhinostomy." The YouTube database was queried by clearing the entire search history and without any user login. Videos shown for all keywords as of January 24, 2021 were sorted by view count from search settings, and those with 100 or more views were recorded. Ethics committee approval was not required as the study was in an observational design using only publicly available data.

Only surgical procedure videos were evaluated, excluding patient experience, TV shows, theoretical lessons, etc. Videos using non-English language, videos shorter than 1 minute, duplicated videos, videos about revision surgery and videos not related to the subject were determined as exclusion criteria (Figure 1). After the exclusion criteria, a total of 74 out of 108 videos, 27 of which were external DCR surgery videos and 47 of them were endoscopic DCR surgery videos, were included in the study. All selected videos were evaluated by an ophthalmologist (NTD) and ear, nose and throat (ENT) doctor (BD) experienced in DCR operations independently and blindly.

Video uploader (surgeon or others), surgeon (ophthalmologist or ENT doctor), surgical technique (external DCR or endoscopic DCR), number of views, video age (days from upload to January 24, 2021), number of comments, number of likes, number of dislikes, video duration (minutes), image quality were recorded. Additionally, presence of narrator's voice, music, and subtitles were noted.

Furthermore, view ratio (number of views/number of days since upload), like ratio (number of likes x 100/[like + dislike]), viewer interaction ([number of likes - number of dislikes] / total number of views x 100) and video power index (VPI; like ratio x view ratio/100), which shows the popularity of a video, defined by Erdem and Karaca [18] were calculated.

Assessment of educational quality

An international committee recently published the LAP-VEGaS video assessment tool, a recommended checklist for obtaining high-quality educational videos that can improve surgical training. LAP- VEGaS video assessment tool includes nine line items with every item being scored from 0 (the item not present in the video) to 2 (the item extensively presented in the video), with a total marking score ranging from 0 to 18. A total score of ≥11 at the LAP-VEGaS video assessment tool has been recommended to define a high-quality video (Table 1) [14].

Each video selected in our study was scored by 2 independent surgeons using the LAP-VEGaS surgical video quality assessment tool. According to the mean scores of the two surgeons, the videos were divided into 2 groups in terms of educational quality as high quality videos (≥11 LAP-VEGaS score) and low quality videos (<11 total LAP-VEGaS score).

Statistical analysis

All statistical analyses were carried out using SPSS (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.). For all tests, $p<0.05$ was considered statistically significant. Frequency, percent, mean ± SD, median, and range were used to describe the data. Compliance to normal distribution was investigated with Kolmogorov–Smirnov and Shapiro Wilk tests. Normally distributed (parametric) independent groups were compared using independent groups t-test, while independent groups not showing normal distribution (nonparametric) were compared using the Mann-Whitney U test. Inter-rater reliability between physicians was calculated using Cohen's kappa coefficient. Categorical variables were compared using a chi-square test

Table 1. LAP-VEGaS video assessment tool

Item description	Not presented (0)	Presented, partially (+ 1)	Presented, completely (+ 2)
Authors and Institution information. Title of the video including name of the procedure and pathology treated	☐	☐	☐
Formal presentation of the case, including patient details and imaging, indication for surgery, comorbidities and previous surgery. Patient anonymity is maintained	☐	☐	☐
Position of patient, access ports, extraction site and surgical team	☐	☐	☐
The surgical procedure is presented in a standardised step by step fashion	☐	☐	☐
The intraoperative findings are clearly demonstrated, with constant reference to the anatomy	☐	☐	☐
Relevant outcomes of the procedure are presented, including operating time, postoperative morbidity and histology when appropriate	☐	☐	☐
Additional graphic aid is included such as diagrams, snapshots and photos to demonstrate anatomical landmarks, relevant or unexpected finding, or to present additional educational content	☐	☐	☐
Audio/written commentary in English language is provided	☐	☐	☐
The image quality is appropriate with constant clear view of the operating field. The video is fluent with appropriate speed	☐	☐	☐

Results

After entering our keywords on YouTube and determining a minimum limit of 100 views, 108 videos appeared in the first scan. After the predefined exclusion criteria, 34 videos were eliminated, and the remaining 74 videos were analyzed in detail (Figure 1).

After the LAP-VEGaS evaluation, 30 (40.5%) of the videos were found to be of high quality and 44 (59.5%) of them were of low quality. Of the 74 dacryocystorhinostomy videos, 27 were performed with external DCR technique, and 47 were performed as endoscopic DCR.

When low and quality videos were analyzed according to the type of surgery performed, it was seen that there was a statistically significant difference between the groups. Surgical videos describing the external DCR approach were found to contain statistically significantly more high-quality videos than endoscopic DCR videos according to the LAP-VEGaS video assessment tool (p=0.046) (Table 2). Supporting this, the average LAP- VEGaS score of external DCR videos was 10.65±2.98, and the mean LAP-VEGaS score of endoscopic DCR videos was 8.44±3.70, and the difference between them was statistically significant (p=0.009) (Table 3).

41 of the cases were performed by an ophthalmologist, 28 by an ENT surgeon, and in 2 cases by both an ENT and an ophthalmologist. There was no surgeon information in 3 of the videos. Of the 41 cases performed by ophthalmologists, 18 were low and 23 high quality videos. Of the 28 cases performed by ENT doctors, 21 were found to be of low quality, and 7 of them were of high quality videos. When we compared low and high quality videos to the surgeon who performed the surgery, there was a statistically significant difference between the surgical branches (p=0.017). Videos performed by ophthalmologists are statistically significantly higher quality videos according to LAP- VEGaS video assessment tool analysis (p=0.017).

The average scores of the 9 questions in the LAP- VEGaS video assessment tool are presented in Table 4. When we considered

Table 2. Comparison of low and high quality videos in regards to video parameters investigated

n (%) / Mean±SD		Low-quality videos (n:44, 59.5%) n (%) / Mean±SD	High-quality videos (n:30, 40%)	*p* value
Uploader	*Surgeon*	34 (59.6%)	23 (40.4%)	0.95
	Others	10 (58.8%)	7 (41.2%)	
Narrator's Voice	*No*	40 (85.1%)	7 (14.9%)	**<0.001**
	Yes	4 (14.8%)	23 (85.2%)	
Music	*No*	26 (57.8%)	19 (42.2%)	0.714
	Yes	18 (62.1%)	11 (37.9%)	
Image quality	*Low quality*	6 (54.5%)	5 (45.4%)	
	Medium quality	25 (62.5%)	15 (37.5%)	0.56
	High quality	13 (56.5%)	10 (43.4%)	
Subtitles	*No*	38 (62.3%)	23 (37.7%)	
	Yes	6 (46.2%)	7 (53.8%)	0.28
Type of surgery	*External DCR*	12 (44.4%)	15 (55.5%)	
	Endoscopic DCR	32 (68%)	15 (31.9%)	**0.046**
Surgeon performing the operation	*Ophthalmologist*	18 (43.9%)	23 (56.1%)	
	Otolaryngologist	21 (75%)	7 (25%)	**0.017**
	Both	2 (100%)	0 (0%)	
Number of view		13050.70±5100.70	16994.73±5824.84	0.278
Number of like		36.30±9.78	164.63±86.89	0.186
Number of dislike		3.70±1.21	5.70±2.1	0.366
Number of comment		5.77±2.79	16.97±12.46	0.435
Video length (sec.)		460.82±68.05	506.87±70.05	0.205
Time passed since video upload (days)		1996±171.32	1643.73±166.21	0.161
View ratio		5.086±1.644	9.168±2.891	**0.019**
Like/subscriber		0.240±0.006	0.107±0.046	0.086
Like/view		0.007±0.0015	0.009±0.0017	0.053
VPI		4.88±1.45	8.40±2.83	0.280
Like ratio		85.13±4.32	86.41±5.01	0.864
Viewer Interaction		0.684±0.157	0.942±0.174	0.60

VPI: Video Power Index

Table 3. Comparison of total LAP-VEGaS scores according to the type of surgery

	Surgical Type	Mean	Std. Deviation	Std. Error Mean	*p* value
Total LAP-VEGaS score	External DCR	10.65	2.987	0.575	**0.009**
	Endoscopic DCR	8.44	3.703	0.540	

Table 4. Average score and inter-observer kappa scores for each item in the LAP-VEGaS video assessment tool

LAP-VEGaS Items	Mean ± SD	Kappa coefficient (κ)
1-Authors and Institution information	1.29±0.726	0.741
2-Formal presentation of the case, including patient details and imaging, indication for surgery, comorbidities and previous surgery	0.32±0.639	0.758
3-Position of patient, access ports, extraction site and surgical team	1.36±0.660	0.534
4-The surgical procedure is presented in a standardised step by step fashion	1.79±0.397	0.506
5-The intraoperative findings are clearly demonstrated, with constant reference to the anatomy	1.11±0.820	0.544
6-Relevant outcomes of the procedure are presented, including operating time, postoperative morbidity and histology when appropriate	0.20±0.368	0.480
7-Additional graphic aid is included such as diagrams, snapshots and photos to demonstrate anatomical landmarks, relevant or unexpected finding, or to present additional educational content	0.35±0.666	0.647
8-Audio/written commentary in English language is provided	1.16±0.887	0.804
9-The image quality is appropriate with constant clear view of the operating field. The video is fluent with appropriate speed	1.60±0.503	0.640

all the questions one by one, it was observed that there was a moderate and significant agreement among the observers (kappa score ranged from 0.48 to 0.80 and $p<0.001$). The two observers made the same decision 97.6% when specifying low quality videos and 78.1% when selecting high quality videos. It was observed that there was a significant agreement between the two observers in the selection of low and high quality videos (kappa score 0.775 and $p<0.001$).

When we analyze the people who uploaded the videos; It was observed that 57 of 74 videos were uploaded by surgeons / doctors and 17 by other groups. When we analyzed the low and high quality videos according to the uploader, there was no statistically significant difference ($p=0.95$). Considering the presence of the narrator voice, it was significantly higher in the high-quality group compared to the low-quality group (85.2% vs. 14.8%, $p<0.001$) (Table 2).

The relationship of the technical properties of videos with respect to the low and high quality videos, according to the LAP-VEGaS video evaluation tool, is presented in Table 2. In regards to the interest of the viewers and technical video analysis only the view ratio was statistically significant in terms of low and high quality videos ($p=0.019$).

The most useful videos based on the criteria set in this study are summarized in Table 5 with URLs provided.

Discussion

Online surgical training videos have become an important source of information, presenting the steps and different techniques of surgical procedures from the surgeon's perspective. In this special period, we live in, the learning curve of surgical training can be shortened more effectively with visual didactic resources compared to written sources [19, 20]. Besides, social media is an undeniably important advertising portal for professional healthcare professionals. As a result, there has been a significant increase in the number of online surgical videos recently [21].

In the present study, we wanted to evaluate the quality of DCR videos on YouTube in terms of surgical training. For this purpose, we used the LAP-VEGaS video assessment tool, a validated evaluation tool that has been used in many publications before [14-17].

Of the 74 videos we reviewed, 44 are of low quality, and 30 are of high quality. Similar to our study, it has been shown in the literature that the education quality of online videos on YouTube is low. In a study by Luu et al. [16], they evaluated neck dissection videos on YouTube with LAP-VEGaS video assessment tool from an educational point of view and found only 3 of the 34 videos to be of high quality and the others of low to medium quality. In another study evaluating the educational quality of "YouTube" videos for facelift, it was found that YouTube

Table 5. The URLs and basic characteristics of the 10 most useful videos based on the LAP-VEGaS guidelines

Video Name/ Link	Surgeon	Total LAP-VEGaS Score	Surgical Type	Likes	Dislikes	Views
1-Endoscopic dacryocystorhinostomy https://www.youtube.com/watch?v=Ov6o5I45pS8	ENT	16	Endoscopic	22	2	984
2-EXTERNAL DACRYOCYSTORHINOSTOMY (DCR): AVOIDING COMPLICATIONS IN A COMPLICATED CASE- WATERING IN EYES https://www.youtube.com/watch?v=mZmdycDDWmA	EYE	16	External	9	0	507
3-External Dacryo-Cysto-Rhinostomy (DCR) by Dr Vidushi Sharma Pandey SuVi Eye Inst. Kota India https://www.youtube.com/watch?v=Csfldpc7k4c	EYE	14.5	External	168	4	19512
4-External Dacryocystorhinostomy (DCR) Full HD - Dr Akshay G. Nair at Advanced Eye Hospital (AEHI) https://www.youtube.com/watch?v=CG02p93Lonc	EYE	14.5	External	434	3	19387
5-Endoscopic DCR, 9mm LacriCATH®, by David I. Silbert, MD FAAP https://www.youtube.com/watch?v=WuukLpmiSxM	EYE	14.5	Endoscopic	22	3	4582
6-SurgTech Endonasal DCR https://www.youtube.com/watch?v=z7cbC7lMNfg	ENT	14	Endoscopic	55	0	7856
7-Endoscopic Dacryocystorhinostomy: Made It Easy	EYE	14	Endoscopic	24	2	2422
8-Endoscopic Ultrasonic Dacryocystorhinostomy for Recurrent Dacryocystitis following Rhinoplasty https://www.youtube.com/watch?v=3A7zN5TrigY	ENT	14	Endoscopic	5	0	1903
9-Bloodless Dacryocystorhinostomy (DCR) Surgery https://www.youtube.com/watch?v=_7qQLGpW9ro	EYE	13.5	External	2548	59	151745
10-External DCR - How to Get it Right? https://www.youtube.com/watch?v=mxEvnZvxYyM	EYE	13.5	External	533	30	60652

videos were insufficient in discussing the basic criteria, especially in terms of preoperative / postoperative points such as indications, patient selection and possible complications [22]. Chapman et al. [17] evaluated laparoscopic sleeve gastrectomy online videos using LAP-VEGaS guidelines, showing that 89% of the videos met less than half of all criteria.

Compared to the type of surgery performed, the proportion of high quality videos in external DCR videos was statistically significantly higher. When we compare low and high quality videos with the operating surgeon, the videos containing the surgeries performed by the ophthalmologists are statistically significantly higher quality videos compared to the videos

made by otolaryngologists compared to LAP-VEGaS video assessment tool. When we look at the comparative publications on DCR, ophthalmologists mostly prefer external DCR for nasolacrimal duct occlusions, while otolaryngologists prefer the endoscopic approach because they are more familiar with endoscopic instruments [23, 24]. According to the result of our study, we can say that external DCR videos on YouTube are better in terms of surgical training. As a matter of fact, when we look at the most useful links according to LAP-VEGAS criteria, we can see that there are more external DCR surgery videos (Table 5).

LAP-VEGaS video assessment tool takes 9 items into consideration while evaluating videos educationally. When we look at the ratio of the videos to present these titles sufficiently, it was observed that the videos mostly cover the 4th and 9th items (average score: 1.79±0.39, 1.60±0.50 respectively) The videos included the least information for the 6th and 2nd items (0.20±0.36 and 0.32±0.63, respectively). In the second question of the LAP-VEGaS video evaluation tool, the detailed presentation of the patient such as surgery indication, accompanying comorbidities, imaging results of the case, if any, are questioned. In the 6th item, the duration of the operation, postoperative morbidity and the relevant results of the procedure are expected. This is where the surgical videos on YouTube are lacking in surgical training. It is important not only the operation part, but to make the diagnosis correctly and to evaluate the results correctly, that is, to give pre-operative and post-operative processes as a whole. In literature, it has been emphasized that the same points are missing in the videos on YouTube [22, 25].

The presence of narrators' voice in videos was found to be significantly higher in high quality videos. The accompaniment of the narrator's voice in the surgery videos increases the training quality of the videos as it provides the audience with the opportunity to provide additional information about the surgery.

When we compared low and high quality videos according to their technical features, there was only a significant difference in the viewer ratio. There was no significant difference between the two groups in terms of the number of views, likes, dislikes, comments, video duration, video age, VPI, etc. Similarly, Deal et al. [26] evaluated 160 videos of cholecystectomy surgery, they could not find a relationship between high quality videos and the number of views or likes.

In studies conducted by different disciplines, there was no correlation between the educational quality of the videos and the popularity parameters in YouTube such as the number of views and the number of likes [14, 27, 28]. The fact that a video is watched too many times on YouTube or gets a lot of likes does not relate to the usefulness of the video or the objective quality. Especially for residents who are new to the subject, this situation should not be ignored as it causes incomplete and incorrect learning.

We have some limitations in this study. First, the video evaluation process is subjective. However, 2 different observers evaluated all the videos blindly and independently. This weak point was tried to be minimized by achieving a significant level of agreement among the observers. This study analyzed videos that were available on YouTube at a single time point, but due to the nature of YouTube content may change over time. Although the LAP-VEGaS video evaluation tool we used lastly was prepared primarily for laparoscopic surgeries as understood from its name; Afterwards, it was also preferred in publications examining the education quality of endoscopic and open surgeries and its validity was approved [15-17]. For this reason, we did not see any problem in using this scale in this study. Finally, while YouTube is not the primary surgical training platform for physicians, it is the most frequently referenced online video platform given its popularity and ease of access.

The LAP-VEGaS guidelines have been created to help standardize and validate surgical videos. In our study, we found that popular YouTube videos on DCR surgeries were significantly lacking in terms of case presentation, treatment options, intraoperative and postoperative complications, and all information about the healing process. However, we found that external DCR videos are more instructive than endoscopic videos in terms of training quality.

These videos, which are used as a source of information, should be recorded by more qualified professionals and their contents should

be presented objectively with all information about all treatment options, complications, and the healing process. In the future, we think that evaluating surgical videos on open access platforms such as YouTube with these guidelines before they are published and going through a standard review process may help increase the educational value of the video materials.

Conflict of interest: No conflict of interest was declared by the authors.

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Acknowledgements: The authors would like to thank MD. Cihan Buyukavsar for his assistance in statistics.

Compliance with ethical standards: Ethics committee approval was not required as the study was in an observational design using only publicly available data.

Contributions of the authors to the article

N.T.D. and B.D. constructed the main idea and hypothesis of the study. N.T.D. and B.D. developed the theory and edited the material method section. N.T.D. and B.D. jointly evaluated the data in the results section. The discussion section of the article was written by N.T.D., which was reviewed, corrected and approved by B.D. In addition, all authors discussed the entire study and approved the final version.