


# The contribution of laparoscopic distal pancreatectomy videos on YouTube to the learning curve in the COVID-19 pandemic

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## Abstract

There is no standardization in videos uploaded to Youtube. Were the videos capable of contributing to adequate technical quality and surgical training? We are aiming to answer these questions in this paper. It is a cross-sectional study. In January 2022, we searched the Youtube platform using the keyword “distal pancreatectomy.” The substantiality, transparency, reliability, quality, popularity and educational values of the video content were evaluated after exclusion criteria. These parameters were evaluated using we the modified Journal of American Medical Association benchmark criteria, Global Quality Score (GQS), Video Power Index, modified laparoscopic pancreatectomy scoring system. The videos uploaded after the pandemic had a statistically significant higher GQS score ( $P < .001$ ). Video Power Index, like GQS, had a statistically significant difference before and after the pandemic. ( $P = .046$ ). There was no significant difference in the evaluation of the reliability and substantiality. Until the development of Youtube videos is completed, peer-reviewed, more reliable and content-rich online education platforms should be preferred in the first place. Care should be taken to watch selected videos on Youtube videos.

**Abbreviations:** GQS = Global Quality Score, LPSS = laparoscopic pancreatectomy scoring system, VPI = Video Power Index.

**Keywords:** distal pancreatectomy, learning method, Youtube

## 1. Introduction

Many solid or cystic, endocrine or exocrine tumors that require surgery can develop in the pancreas. The most common of these is pancreatic adenocarcinoma, which ranks fourth in cancer-related deaths in the United States.<sup>[1]</sup> Masses in the pancreas are mostly treated surgically. Surgical preference is currently shifting from conventional methods to laparoscopy. Laparoscopic surgery has advantages such as shorter hospital stay, less post-operative pain, and less bleeding. However, laparoscopic surgery is more difficult to learn than the conventional method due to its 2-dimensional nature and lack of depth perception. Although its use has become widespread in many centers today, its use continues for diseases that require experience and have a longer learning curve, such as pancreatic surgeries. It is used less frequently in daily practice, except in hepato-pancreatico-biliary centers with larger volumes. For this reason, interest in different training methods such as animal laboratories, simulation trainings, video learning is increasing, especially by young surgeons. In particular, the closure during the pandemic process has revealed the importance of video platforms. The most accessible platform is Youtube.

Youtube is a video sharing and social media platform owned by Google today. There are 2 billion views per day and over 1 billion hours of videos are watched on the platform. Youtube is

free, easily accessible, and 500 hours of new video are uploaded every minute.<sup>[2-4]</sup> As it is in all sectors, its popularity is increasing in the medical community, especially since it is accessible from many places (computer, tablet, smart phone). In addition, visual and audio media have started to be used more by surgeons, especially in terms of surgical techniques. This is thought to increase learning ability.<sup>[5,6]</sup> However, there is no standardization in these videos uploaded to Youtube. Were the videos capable of contributing to adequate technical quality and surgical training? We are aiming to answer these questions in this paper.

## 2. Material and Methods

It is a cross-sectional study. While creating the database, Youtube, an open online access platform, was used. According to Youtube's fair use rules works of commentary, criticism, research, teaching, or news reporting are considered fair use. No studies have been conducted on patients. Therefore, no ethics committee application was made. In January 2022, we searched the Youtube platform using the keyword “distal pancreatectomy.” We sorted the videos by upload date. In total, 439 videos were found. We excluded open surgeries, robotic surgeries, and non-operative videos such as congress presentations,

*The Contribution of LDP Videos on YouTube.*

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*The datasets generated during and/or analyzed during the current study are publicly available.*

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patient experiences, lectures, animal surgeries, commercials, and animations. Additionally, we filtered short videos because we think videos longer than 10 minutes are more educational. The remaining videos were reviewed by a surgical oncology and general surgery specialist experienced in laparoscopic surgery in his daily practice.

The parameters that were reviewed in video analysis include; duration and type of surgery, the date of upload, the title and the language of the video, the number of views, visual quality, clinical information, preoperative radiological assessment, statement of trocar placements and camera angle, insufflation pressure, surgeon and patient positioning, the method of specimen removal, the presence of complications, and pathology records. The substantiality, transparency, reliability, quality, popularity and educational values of the video content were evaluated.

For the assessment of the substantiality of the video we formed a laparoscopic pancreatectomy scoring system (LPSS) (Table 1). This type of scoring system is not found common in the literature, we modified the scoring system of Zhang et al<sup>[7]</sup> using our clinical experience and distal pancreatectomy surgery.

We planned to use the Journal of American Medical Association benchmark criteria for the quality, transparency and reliability of the videos.<sup>[8]</sup> But since the videos were uploaded to the same website, the “disclosure and currency” values for each video would be the same. For this reason, reliability was checked with the parameters of “authorship” and “attribution.” Videos with specified institutions, sources, authors and references were considered “More reliable.”

Global Quality Score (GQS) was used in order to reveal the relation of videos with educational value defined by Bernard et al<sup>[9]</sup> (poor quality, very unlikely to be of any use to patients; poor quality but some information present, of very limited use to patients; suboptimal flow, some information covered but important topics are missing, somewhat useful to patients; good quality and flow, most important topics covered, useful to patients; excellent quality and flow, highly useful to patients).

We measured the popularity of videos using the Video Power Index (VPI). For the calculation, we first calculated the video like rate with the formula “Like\*100/(Like + Dislike)” and the view rate with the formula “Number of Views/ Days.” VPI, on the other hand, was calculated with the formula “Like Rate \* View Rate/100.”<sup>[10,11]</sup>

The onset of the pandemic was accepted as March 2020, the date declared by the World Health Organization, and the data obtained were compared according to the period before and after the pandemic.

The conformity of the data to the normal distribution was evaluated with the Shapiro–Wilk test. Frequency (percentage) values were given for categorical variables and median (minimum-maximum) values were given for numerical variables. Chi-square test and Fisher’s exact test were used to compare categorical variables groups. Numerical variables were compared using the Mann–Whitney *U* test. The relationship between GQS and LPSS and VPI was evaluated by Spearman correlation analysis.

The data was evaluated with the IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. IBM Corp program, Armonk, NY.

**Table 1**  
LPSS criteria’s and its results.

Criteria's	Options	Point	Results	
			n	%
Uploaded by	MD	1	73	84
	Others	0	13	15
HD visual quality	Yes	1	40	46
	No	0	46	54
Audio/Subtitles	Available	1	53	61
	Unavailable	0	33	39
Is the video title self-explanatory?	Yes	1	63	73
	Unavailable	0	23	27
Clinical informations	Available	1	51	59
	Unavailable	0	35	41
Preoperative radiological assessment	Available	1	48	55
	Unavailable	0	38	45
Position of the patient	Available	1	29	33
	Unavailable	0	57	67
Position of the surgeon	Available	1	23	26
	Unavailable	0	63	74
Placements of trocars	Available	1	35	40
	Unavailable	0	51	60
Intraabdominal pressure	Available	1	1	1
	Unavailable	0	87	99
Camera angle	Available	1	9	10
	Unavailable	0	77	90
The method of specimen removal	Available	1	72	83
	Unavailable	0	14	17
Management of complications	Available	1	6	7
	Unavailable	0	80	93
Pathology records	Available	1	28	32
	Unavailable	0	58	68
Results	Available	1	21	24
	Unavailable	0	65	76

HD = high definition, MD = medical doctor.

### 3. Results

After inclusion and exclusion criteria, 86 videos were included in the study and analyzed. The average video duration was 28 minutes (range 10–176.25). While spleen-sparing distal pancreatectomy was performed in 34 patients, distal pancreatectomy combined with splenectomy was performed in 52 patients. 53 videos were uploaded in the pre-pandemic period. The number of videos uploaded after March 2020 was 33. The distribution of the data used in the LPSS calculation is as in the table (Table 1).

While the median LPSS was 6 and mean LPSS was 6.35 in the pre-pandemic period, it was calculated as 6 and 6.51, respectively, in the post-pandemic period. There was no significant difference in statistical analysis ( $P = .816$ ). While the median GQS score was 2 before and 4 after the pandemic, the averages were 2.32 and 3.33, respectively. The videos uploaded after the pandemic had a statistically significant higher GQS score ( $P < .001$ ). VPI, like GQS, had a statistically significant difference before and after the pandemic. ( $P = .046$ ). There was no significant difference in the evaluation of the reliability of the videos before and after the pandemic. Details of the statistical analysis of the videos before and after the pandemic are given in Table 2.

As a result of the Spearman Correlation analysis performed to evaluate the relationship between LPSS and VPI, a positive correlation was found between LPSS and VPI,  $r(84) = 0.27$ ;  $P = .014$ . There was also a positive correlation between GQS and VPI,  $r(84) = 0.29$ ;  $P = .007$ .

### 4. Discussion

Distal pancreatectomy is most commonly performed due to space-occupying formations in the pancreatic body and tail. It is a technically difficult surgery due to the retroperitoneal location of the pancreas, vascular variations, and close proximity to vascular structures and other organs. For this reason, it is recommended that pancreatic surgery be performed in experienced centers with high volume.<sup>[12]</sup> We examined distal pancreatectomy videos in our study because it is a difficult surgery, performed in few centers and in low volume.

Many methods have been described for distal pancreatectomy, including conventional, laparoscopic and robotic. Laparoscopic distal pancreatectomy has been shown to be feasible and safe.<sup>[13]</sup> Laparoscopic surgery for distal pancreatectomy has many advantages over conventional surgery.<sup>[14,15]</sup> However, the laparoscopic method is more difficult to learn and has a longer learning curve than open surgery. Fung et al reported the learning curve of laparoscopic distal pancreatectomy as 17 cases in their systematic review.<sup>[16]</sup> It is obvious that it will take a long time to reach this number for surgeons working in centers with low patient volume and young surgeons.

Such reasons have pushed surgeons to search for new ones. In the studies conducted by Bass et al and Pugh et al, it was shown that trainee surgeons could not perform laparoscopic surgery in sufficient numbers.<sup>[17,18]</sup> It is widely accepted that surgeons should develop new and innovative surgical training methods outside the operating room in order to shorten the learning curve and further increase patient safety.<sup>[19–21]</sup>

Today, with the developing technology, online education platforms play an important role in education. The medical field is also affected by these developments. Even in surgical branches where the master-apprentice relationship is important, some of the training can be done online. Especially young surgeons working in centers with low patient volume use online platforms frequently to increase their education level. Among these video platforms, the most frequently used 1 is Youtube.<sup>[5,22]</sup> Celentano et al showed that 86.7% of surgical residents routinely watch surgical training videos. He stated that 1 of the 2 most widely used sources for online surgical videos is Youtube.<sup>[22]</sup> However, as there may be uploads to Youtube for very different purposes, the uploads are not subject to referee control.<sup>[23]</sup> Many studies have emphasized the poor quality of Youtube videos.<sup>[23,24]</sup> However, we think that the video quality may increase with the increasing technological opportunities and the increasing importance of the surgeons uploading the videos to online platforms. We thought that the video quality on Youtube may have increased in many ways, especially since the lockdown during the pandemic pushed us to online training. For this reason, we wanted to evaluate them and have an idea about whether the videos can be used for education.

We used videos longer than 10 minutes in our study. Previous studies on online training videos have shown that longer videos are more comprehensive and useful.<sup>[25,26]</sup> We think that the video content of videos with a duration of less than 10 minutes is weak because it will not be possible to give comprehensive LPSS criteria in short videos. This would not serve our study. We know that very long videos can also be boring.

In order to evaluate the substantiality of the video content, we adapted the scoring system developed by Zhang et al for distal pancreatectomy.<sup>[7]</sup> In this way, we wanted to evaluate the quality of video content more objectively. In the modification of the parameters, distal pancreatectomy surgery was considered as a whole. Important parameters such as clinical information about the patient, preoperative radiological assessment, position of the patient and the surgeon, trocar placements, camera angle, complication management, the method of specimen removal, were chosen, not just the type of the surgery. In this way, the videos can be used as a guide for surgeons using online educational resources. Having all this data in an educational video will increase the usefulness of the video.

The LPSS median score of the videos was 6. There was no difference before and after the pandemic. In addition, in our study, we found that the content scores of the videos were low in line with the literature. In studies comparing YouTube with other platforms, similar scores assessing the quality of video content were found to be higher on other platforms.<sup>[27,28]</sup> Again, in the reliability evaluation, there was no difference between video reliability before and after the pandemic. We think that the reasons why there is no difference for both parameters are that the platform is free, it has an open access structure, there is no limit for uploading videos and the videos are not reviewed by a referee. In addition, we attribute the fact that the surgeons who upload the videos want to show their own surgical skills rather than training, they mostly want to show this procedure to the patients, and some of the uploads are done by companies and institutions. GQS was used for the training levels of the videos.

In our study, we found that GQS increased statistically significantly in the post-pandemic period. However, the total mean value was found to be 2.7 and was low in line with the literature. In the literature, the education level of Youtube videos is generally low as well. In the study conducted by

**Table 2**  
Details of statistical analysis.

Variables	Before the pandemic (n = 53)	After the pandemic (n = 33)	P value
LPSS*	6 (0–13)	6 (1–13)	.816
GQS*	2 (1–4)	4 (1–4)	<.001
VPI*	0.22 (0.00–13.30)	0.38 (0.07–14.11)	.046
Reliability			1000
Less reliable	8 (%15.1)	5 (%15.2)	
More reliable	45 (%84.9)	28 (%84.8)	

\* Median (minimum-maximum).

GQS = Global Quality Score, LPSS = laparoscopic pancreatectomy scoring system, VPI = Video Power Index.

Rodriguez et al, it was shown that GQS is similar to other similar educational level assessment scores and the scores for Youtube are low.<sup>[29]</sup> The shift of education to online platforms due to the lockdown during the pandemic process may be the reason for the increase in the GQS value in our study. Again, in this process, we think that the GQS score has increased due to the fact that the videos uploaded to Youtube are physicians and organizations that attach importance to education. As a matter of fact, in the literature, we see that the scores of the videos uploaded by the medical doctor are higher.<sup>[30]</sup> Another parameter is VPI. This parameter is used to assessment of popularity of videos. During the pandemic, video popularity has increased. In accordance with the literature used in our studies, although it is lower than the platforms<sup>[28]</sup> the popularity of Youtube videos of their use in the pandemic process. This made us think it was about the platform being free, easy to access and coming from everyone. In the study of Mangan et al, although the educational level and reliability of the videos uploaded by the medical doctor were found to be higher, it was seen that the more popular videos were uploaded by non-medical Youtube channels. We think that this is due to the fact that YouTube is a platform that's been also used by people who are not from medical background.<sup>[31]</sup>

Popularity of a video could mean that it could have more preferred, quality content. We also analyzed this in our study. Therefore, we evaluated the correlations between VPI and LPSS and GQS. Both parameters correlated with VPI. As a result, the fact that the video content is substantial and reliable is a factor that increases the popularity of the video. It was found similarly in studies in the literature.<sup>[29,30]</sup>

In general, we can say that distal pancreatectomy surgery videos on Youtube have become better after the pandemic. Although the content substantiality of the videos has not increased, we see that the education levels and popularity have increased. Although Youtube is still behind compared to other platforms, the post-pandemic process is promising. For this reason, we believe that the quality will increase with the surgeons paying more attention to this platform over time. In addition, the videos of sites that have been peer-reviewed and passed editorial control until then can be preferred in terms of online education. If Youtube is to be preferred, selected videos should be preferred because the analyzes of selected Youtube videos were found to be as high quality as other platforms.<sup>[30]</sup>

Since there is no other study related to distal pancreatectomy, we could not compare it with a similar study. This can be considered as the missing aspect of our study. In addition, the fact that this study evaluates only 1 type of surgery and only 1 video platform can be considered as another limitation. Since Youtube is a constantly evolving and changing platform, there may be videos added or deleted after the start date of the study. Due to the country location, different content may appear as a result of the search. Our study is valuable in terms of specifying the aspects that need attention of online video training and will shed light on young surgeons in this respect. It is the first study that we know of to video analysis of pancreatic surgery. It also evaluates content, popularity, reliability and education level, not a single parameter.

## 5. Conclusion

Distal pancreatectomy videos uploaded to Youtube have become more popular in the post-pandemic period and their education levels have increased. But videos are still weak in content and their credibility is not enough. Until the development of Youtube videos is completed, peer-reviewed, more reliable and content-rich online education platforms should be preferred in the first place. Care should be taken to watch selected videos on Youtube videos.

## Author contributions

Kamil Erozkán contributed to the actual design of the research, the definition of search formulas, the acquisition of relevant data, and the writing of the original article. Ali Ekrem Unal and Serdar Culcu are responsible for the review of the included studies and extracted data and final results. Selim Tamam contributed half of the data analysis and explanation, and finally determined the outline of the article. All authors have approved the final version.

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