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Reliability of laparoscopic lateral suspension videos on YouTube platform

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ABSTRACT

Objective: YouTube is one of the most popular websites globally and its content is not limited to entertainment. The aim of this study is to evaluate the reliability, quality and quantity of information and surgical steps in YouTube videos about laparoscopic lateral suspension with mesh for the surgical treatment of pelvic organ prolapse (LLS).

Material and Methods: A search on YouTube was performed with the key words; " laparoscopic lateral suspension'', ''lateral suspension ", '' pelvic organ prolapse surgery'', ''POPS with mesh'', ''Pelvic Organ Prolapse Suspension''. Each video was further analysed in terms of reliability, quality and quantity of information.

Results: A total of 44 videos were evaluated after excluding 36 of the 88 videos associated with LLS. According to the usefulness score, the videos were divided into two groups. 61.4%(n=27) of the videos were in GroupI (not useful and slightly useful) and 38.6% (n=17) were in GroupII (useful and very useful). There was no difference between the groups in terms of video length, number of views, number of likes, number of dislikes, number of comments and number of subscribers. A Spearman's rank correlation analysis found no correlation between the usefulness score and like ratio, views ratio, like / view rate, like/subscriber rate, view/subscriber rate, VPI rates.

Conclusion: Since the videos uploaded to YouTube do not pass a preliminary examination, their reliability is low even if they are uploaded by health professionals. There is no relationship between quantitative information of the LLS videos and the usefulness scores of the videos.

Keywords: Laparoscopic Lateral Suspension (LLS), Quality Information, Quantitative Information YouTube

INTRODUCTION

Theoretical and visual education in the medical field, especially in surgical branches, came from the master-apprentice relationship, academic journals, textbooks, articles describing clinical experience, review articles, meta-analyses and case presentations (1). The Internet has begun to change and overcome previous education restrictions with sharing information globally regardless of time zone (2, 3).

The recent growth of social media platforms has greatly increased surgeons' access to visual learning and monitoring of operations they've never done before (1).

One of the most widespread Internet-based visual information and entertainment platforms, YouTube (www.youtube.com) has more than 2 billion video views every day (4). Surgical practice videos related to many specialities and procedures are shared on this platform. YouTube has become an important source of visual information for medical students, residents, and even surgical professionals (1).

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For the first time, Keelan et al. (5) reported on the quality of YouTube videos regarding immunization in 2007 and later, many researchers have conducted research on the reliability of YouTube videos such as endometrioma cystectomy, prostate cancer, bariatric surgery, tonsillectomy, vaginismus and hysterectomy (1, 6-10). Although these studies have analysed the accuracy of YouTube videos, debates continue regarding the reliability of these videos due to the diversity of sources and lack of peer-reviews (7, 11, 12). In our study, we aimed to review the videos that give information about the treatment of pelvic organ prolapse laparoscopically by using Lateral Polypropylene Mesh (Laparoscopic lateral suspension with mesh (LLS).

MATERIAL and METHODS

An observational study was planned on 21 March 2021.A search on YouTube was performed with the key words; “laparoscopic lateral suspension’’, ‘’lateral suspension ", ‘’ Pelvic Organ Prolapse Suspension surgery’’, ‘’POPS with mesh’’, ‘’Pelvic Organ Prolapse Suspension’’ and‘’ Pelvic Organ Prolapse Surgery (POPS) with Lateral Mesh ‘’. Top 50 videos were included using each keyword.

Being in a language other than English, presentations without audio or written information, and duplicated videos were excluded from the study. The videos were ranked by relevance according to the current YouTube default, and two researchers (E.E., E.E.D.) with experience in LLS surgery evaluated the videos.

The source of the videos was recorded as Doctors or Practitioners (D/P), Hospitals or Clinics (H/C), Medical Website or TV Channel (M/T), and Commercial Website or Civilians (C/I).

Compiled YouTube video data: the number of days since the upload date of the videos, the length and number of views of the videos, likes, dislikes, comments and subscribers were recorded. Quantitative information of the videos was obtained as like/ view, like/subscriber, view/subscriber, like ratio (like *100/ [like + dislike]), view ratio (number of views/days), and Video Power Index (VPI; like ratio * view ratio/100) were calculated (13).

The reliability of the videos was evaluated with a predefined "health videos usefulness score" that evaluates the presentation of information on causes, symptoms, diagnosis, treatment and recovery for a particular health issue (14). The variables were scored as follows: 0, not mentioned; 1, mentioned briefly; and 2, described in details. The evaluation was according to not useful (0), slightly useful (1–3), useful (3–7) and very useful (7–10) in total scoring (**Table-1**). All videos were divided into two groups; not useful and slightly useful (GroupI), useful and very useful (GroupII).

Table1. Usefulness score criteria

Score criteria
Cause
Symptoms
Diagnosis
Treatment
Recovery

Surgical analysis

Videos describing the same surgical steps were followed (15, 16). First step; endoscopically creating anterior dissection of the vesicovaginal space to the lowest possible point. Second step; insertion of a T or V-shaped mesh consisting of a central rectangle (approximately 4 - 6 cm) and two long side arms (approximately 2*18 cm) in the abdomen. Third step; fixation of the mesh from the center to the dissected area with taker and/or suture. Fourth step; creating a retroperitoneal canal by making a 3 mm skin incision 2 cm above the iliac crest and 4 cm behind the anterior superior iliac spine on both sides. Fifth step; pulling the mesh arms from the retroperitoneal canal created and releasing them to provide tension with retroperitoneal fibrosis.

Statistical analysis

Statistical analysis was performed using SPSS Version 20 (SPSS, Inc., Chicago, IL). Continuous variables were given as mean ± standard deviation, while categorical ones were given as number and percentage (%). The kappa coefficient was used to evaluate the agreement between two independent reviewers. The normality was tested with the Shapiro-Wilk Test. The Mann–Whitney U test was used for comparison of ordinal variables or continuous variables that did not fit a normal distribution. The independent t- test was used to compare continuous variables with normal distributions. The Pearson Chi-Square and Fisher’s Exact Test were used to analysing the crosstabs. In all analyses, $p < 0.05$ was taken to indicate statistical significance.

RESULTS

A total of 44 videos on lateral suspension were evaluated. Sixty-one percent (61.4%, n=27) of the videos were Group I (not useful and slightly useful), thirty-eight percent (38.6%, n=17) were Group II (useful or very useful).

Total video analysis and features are summarized in **Table-2**. The mean numbers (mean ± SD (min-max) of video length(sec.), number of views, likes, dislikes, comments and subscribers were 632.8 ± 569.9 (77-3035), 1790.8 ± 3749.2 (16-22849), 10.9 ± 9.5 (0-33), 1.0 ± 2.2 (0-9), 1.0 ± 2.2 (0-9), 5839.3 ± 23549.3(5- 153000) respectively.

Video content and usefulness criteria for LLS are summarized in **Table 3**. A statistical difference was observed between groups in terms of cause, symptoms, diagnosis, treatment, and recovery, which constitute the usefulness criteria (p=0.001, p=0.041, p=0.001, p=0.047, p= 0.001, respectively). Only one of the videos was performed as robotic surgery. There was no statistical difference in terms of skin incision site on the abdomen (p= 0.052). As the mesh material used, polyethylene (mesitylene) was used in only one of the videos.

The method used more frequently in GroupI than GroupII in the fixation of the mesh material was saturation (66.7%, 35.3%), and a statistical difference was observed between the groups (p=0.042). The most commonly used fixation method in Group II was taker (41.2%). However, no difference was observed between the groups (p=0.103).

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A Spearman's rank correlation analysis found no correlation between the usefulness score and like ratio, views ratio, like / view, like/subscriber rate, view/subscriber, VPI rates (**Table4**).

There was a negative correlation between the length of the videos and the view /subscriber ratio (r= - 0.433, p= 0.003). Negative correlation was observed between day of the upload and like ratio (r= -0.310, p= 0.041), like/ view (r = -0.648, p = 0.001) of the videos.

Table 2. Video analysis of the Laparoscopic Lateral Suspension in regards

	GroupI (n=27)	GroupII (n=17)	Total (n=44)	P value
Videos	61.4 %	38.6 %	100 %	
Source				
Surgeon/practitioner (S/P)	25 (92.6%)	16 (94.1%)	41 (93.2%)	0.159
Hospital/free clinic (H/C)	2 (7.4%)	1 (5.9%)	3 (6.8%)	
Medical website/ TV canal (M/T)				
Commercial websites/civilians (C/I)				
Time passed since video upload (days)	1311.7 ± 1159.5 (180-5110)	1090.2 ± 870.6 (90-2555)	1226.2 ± 1052 (90-5110)	0.514
Video length (sec.)	695.9 ± 604 (77-3035)	532.6 ± 511.7 (197-2400)	632.8 ± 569.9 (77-3035)	0.158
Number of views	1945.8 ± 4597.9 (16-22849)	1544.6 ± 1821.2 (32-6197)	1790.8 ± 3749.2 (16-22849)	0.691
Number of likes	9.8 ± 9 (0-33)	12.7 ± 9.1 (0-30)	10.9 ± 9.5 (0-33)	0.205
Number of dislikes	1.2 ± 2.6 (0-9)	0.7 ± 1.14 (0-3)	1.0 ± 2.2 (0-9)	0.634
Number of comments	1.4 ± 2.6 (0-9)	0.4 ± 0.87 (0-3)	1.0 ± 2.2 (0-9)	0.470
Number of subscribers	7004 ± 29245.1 (5- 153000)	3988.2 ± 9731.6 (11-35500)	5839.3 ± 23549.3 (5- 153000)	0.781
Like ratio	94.4 ± 12.6 (50-100)	96.1 ± 5.0 (84-100)	95.1 ± 10.3 (50-100)	0.420
Views ratio	1.19 ± 1.81 (0.4 - 8.9)	1.19 ± 0.88 (0.5- 3.4)	1.19 ± 1.51 (0.4 – 8.9)	0.201
Like/view	0.02 ± 0.02 (0-0.07)	0.02 ± 0.03 (0-0.12)	0.021 ± 0.025 (0- 0.12)	0.595
Like/subscriber	0.17 ± 0.52 (0-2.6)	0.2 ± 0.4 (0- 1.2)	0.18 ± 0.47 (0-2.6)	0.562
View/ subscriber	88.5 ± 400 (0-2077.1)	24.9 ± 79.2 (0-329.5)	64 ± 316.4 (50-100)	0.727
VPI (Video Power Index)	1.0 ± 1.4 (0-7.4)	1.2 ± 0.7 (0.3- 3)	1.1 ± 1.2 (0-7.4)	0.099
Total score	1.44 ± 0.69 (0-3)	5.4 ± 0.7 (4-10)	2.9 ± 1.19 (0-10)	< **0.001***

*Statistical significance was defined as p < 0.05. NS: Not Significant (p > 0.05).

Table 3. Surgical step of the LLS in regards to usefulness criteria.

		GroupI (n=27)	GroupII (n=17)	P value
Usefulness scores	Cause / indication	1 (0-2) 15 (55.6%)	2 (0-2) 17 (100%)	0.001*
	Symptoms/ Surgical Option	1 (0-2) 3 (85.2%)	2 (0-2) 17 (100%)	0.041*
	Diagnose /Benefit	1 (0-2) (2.3%)	2 (0-2) 16 (94.1%)	< 0.001*
	Treatment /Postoperative Life	0	1 (0-2) 2 (11.8%)	0.047*
	Recovery / Complication	0	1 (0-2) 5 (29.4%)	0.001*
Type of surgery	Laparoscopic	26 (96.3%)	17 (100%)	0.319
	Robotic	1 (3.7%)	0	
Vesicovaginal dissection	Yes	27 (100%)	17 (100%)	NS
	No	0	0	
Prepared Mesh	Polypropylene	27 (100%)	16 (94.1%)	0.162
	Polyethylene (Mersilene)	0	1 (5.9%)	
Mesh fixation	Suture	18 (66.7%)	6 (35.3%)	0.042*
	Taker	5 (18.5%)	7 (41.2%)	0.103
	Both	4 (14.8%)	2 (11.8%)	0.772
	Non-information	0	1 (5.9%)	0.162
Skin incision	Yes	2 (4.5%)	5 (29.4%)	0.054
	Non -information	25 (92.6)	12 (70.6%)	
Mesh arm station	Free	27 (100%)	15 (88.2%)	0.144
	Fix	0	2 (11.8%)	
Indication	Cuff Prolapse	13 (29.5%)	9 (52.9%)	NS
	Hysteropexy	1 (3.7%)	1 (5.9%)	
	Hysteropexy +cystocele	12 (44.4%)	7 (41.2%)	
	Cystocele	1 (3.7%)	0	

*Statistical significance was defined as p < 0.05. NS: Not Significant (p > 0.05).

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Table 4. Spearman correlation analysis between the usefulness score and video interest rates of viewers.
*Statistical significance was defined as p< 0.05.

	Useful score		views		Views		Like/view		Like/subscriber		View/ subscriber		VPI	
	rho	*p*	*rho*	*p*	*rho*	*p*	*rho*	*p*	*rho*	*p*	*rho*	*p*	*rho*	*p*
Useful Score	1	-	0.047	0.764	-0.082	0.597	0.164	0.288	0.151	0.329	0.160	0.299	0.091	0.558	0.190	0.217
Length	-0.224	0.145	-0.131	0.395	0.033	0.832	0.012	0.939	0.233	0.187	-0.208	0.176	**-0.433**	**0.003***	0.051	0.743
Day Upload	-0.091	0.556	**0.757**	**0.001***	**-0.310**	**0.041***	0.183	0.233	**-0.648**	**0.001***	-0.197	0.200	0.176	0.256	0.113	0.466

DISCUSSION

The source of the videos uploaded on YouTube is important. Most of the videos uploaded about bariatric surgery were evaluated by Erdem et al, D/P (39%) and M/T (45%); most of the videos uploaded about endometriosis surgery were evaluated by Kaya et al, D/P (82%) and H/C (11%) and they evaluated the sources of helpful and unhelpful videos alike (1, 7). Lee et al reported that most of the videos about gallstone disease were uploaded by M/T (23%) and C/I (48.9%), but helpful videos were uploaded by D/P and MT (14). Accordingly, Erdem et al. reported that the total videos they evaluated (78.3%), and Frongia et al reported that the total videos (71.8%) they evaluated as useful or very useful, and they both argued that this was because most of the video sources were uploaded to D/P (1,17).

In many studies, it has been reported that the videos uploaded by health professionals are important, but the rate of usefulness of uploaded videos to be considered useful is low.

It has been shown that 29% of the videos about anorexia (18), 37.95% of the videos about breast self-examination (19), 24% of the videos about inflammatory bowel disease (20), 30.7% of the videos about lingual orthodontic treatment (21), 30% of the videos about rheumatoid arthritis (22) and 25% of the videos about vaginismus were evaluated as useful (9).

Another study looking at laparoscopic cholecystectomy showed that the highest-ranked videos after a search on YouTube showed the optimal surgical technique, but half of the videos exhibited unsafe maneuvers and only 10% were reliable videos (23). A study, rating 32 videos demonstrating the surgical technique of urethral sling procedures found that none of the videos showed a complete list of predetermined surgical steps (24). In another study with endometriosis surgery, videos were shown to be only 20% useful or very useful (7). Our study was generally compatible with other studies, the source of the total videos was D/P and 38.6% of them were observed as useful or very useful.

Sood et al. regarding kidney stones (26) and Sahin et al. regarding retinitis pigmentosa (25) reported that videos which were useful or very useful were viewed significantly higher than 'not useful or slightly useful' videos. Butler et al. found a weak correlation between the usefulness score and the number of video views (28). On the contrary, 'not useful or slightly useful' videos about breast self-examination and gallstone disease were reported to be watched more than useful videos, which Lee et al. attributed to the long duration of useful videos (14, 19). Also, Biggs et al. reported less frequent viewing of rhinosinusitis videos that were scored to be useful but had longer duration (27). In video analysis studies about bariatric surgery and endometriosis, there was no correlation between usefulness score and video length (1, 7). A study on thyroid surgery suggested that the number of views is not related to the quality of the videos and that this will show videos' popularity or videos may be ad-supported (11). Several studies found no association between Quantitative information of videos and the number of likes or dislikes (1, 14, 29). A study about videos describing the management of prostate cancer on YouTube found a significant negative correlation between scientific quality and contribution of viewers (30). In our study, we could not find a relationship between usefulness score and quantitative

information of videos, but the number of views was positively correlated with time passed since video upload, but negative correlation was observed in the rate of likes.

It has been reported that laparoscopic surgery videos are more useful for doctors (31). Kaya et al. showed that Robotic surgery is more educational in endometriosis surgery (7). In our study, robotic surgery as a surgical method was used in only one video and it was classified in the not useful group.

The limitations of our study; It is not possible to measure the interest and knowledge level of the users; however, it cannot be determined whether the videos that the users access meet needs in their education.

CONCLUSION

YouTube videos are inevitably used as complementary tools in surgical training. However, even if the uploaded videos are uploaded by healthy professionals, the overall rate of useful videos is low. We think that useful videos are not related to quantitative information of video, therefore have to be watched based on keyword relevance priority. Research in this area is still in its initial phase and needs new points of views.

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