



Educational value of YouTube Surgical Videos of Thulium Laser Enucleation of The Prostate (ThuLEP): the quality assessment

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Background: To assess the educational value of YouTube surgical videos of thulium laser enucleation of the prostate (ThuLEP).

Methods: A comprehensive search of “ThuLEP” or “thulium laser enucleation of the prostate” was performed on YouTube on October 31, 2020. According to the LAParoscopic surgery Video Educational GuidelineS, we created a checklist to assess the educational value of these videos. The checklist included 20 options. Each option represented one point. The total score was the sum of all the points. The higher score represents the higher educational value.

Results: A total of 70 videos were included. The average number of views were 1,366 (range, 11–30,884). The mean video length was 16.59 mins (range, 1.20–70.35 mins). Only 22.9% (16/70) videos had audio or/and written commentary in English language. Although 67.4% (47/70) videos were present step by step, only 21.4% (15/70) videos did the detailed explanation of critical steps. The mean score of the videos was 5.5 points (range, 1–15). No videos met all the points of the checklist. The mean percentage conformity of the videos was 28% (range, 5–75%). The educational score of the videos had no significant positive correlation with the number of views.

Conclusions: The majority of ThuLEP videos on YouTube platform have low educational value. Videos often lack important and detailed explanations about surgical procedures. The ThuLEP learner should watch these videos selectively. These findings remind us that a global effort should be made to improve the educational value of YouTube surgical videos, and more reporting guidelines about urological endoscopic surgery are still needed.

Keywords: Benign prostatic hyperplasia; thulium laser enucleation of the prostate; quality assessment; surgical education; YouTube

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Introduction

Surgical videos are a very important educational tool for medical students, residents, trainees and senior surgeons. With the development of the internet, high-definition video recording and portable electronic devices, online surgical videos are becoming useful medical education resources (1,2). Videos containing pictures and words/audio may help beginners to learn and understand complex surgical procedures (1). YouTube is the most widely used video platform in preparation for surgical procedures (3,4).

In 2010, Thulium laser enucleation of the prostate (ThuLEP) was first reported by Herrmann *et al.* as an enucleating technique for benign prostatic hyperplasia (5). ThuLEP is primarily focused on mechanical blunt dissection of the transitional zone (5,6). Some studies have shown that approximately 30 cases may be sufficient to overcome the learning curve with the help of a simulator (7-9).

Numerous ThuLEP surgical videos have been uploaded to the YouTube platform by individual surgeons, academic societies, hospitals or commercial companies. Due to a lack of peer review and quality assessment, the educational value of these videos remains uncertain. The high educational quality of videos can facilitate learning, whereas the poor educational quality of videos may mislead learners. Studies have shown that trainees preferred videos with rich educational content (4).

A consensus statement about how to report a laparoscopic surgical video for educational purposes known as the LAParoscopic surgery Video Educational Guidelines (LAP-VEGaS) has been published (10). However, guidelines for reporting educational videos of urological endoscopic surgeries are lacking.

The purpose of this study is to assess the educational value of YouTube surgical videos of ThuLEP. Moreover, this study may promote the creation of an ideal educational video checklist for ThuLEP surgery. We hypothesize that the number of views may not be related to the educational value of the video. This study will also help beginners identify valuable ThuLEP videos from the YouTube platform.

Methods

This study focused on the evaluation of public-domain videos on ThuLEP surgery. Therefore, no ethical approval is required. A comprehensive search was performed on YouTube (<https://www.youtube.com>) on October 31, 2020 using the search terms “thulium laser enucleation of the

prostate” and “ThuLEP”. The videos were collected by one author based on the following inclusion criteria: enucleation of the prostate must be performed using a thulium laser, live surgery recorded by endoscopic camera (no schematized video, cartoon, or multiple surgeries), professional videos made by professionals (not promotional videos or commercial advertisements), and commentary in English language. Any video that did not meet these inclusion criteria was excluded.

Given the lack of guidelines for reporting educational videos of urological endoscopic surgeries, we created an evaluation checklist. According to the LAP-VEGaS practice guidelines (10), two expert surgeons in our center who have experience with greater than 100 cases of ThuLEP surgery created the checklist (*Table 1*). The checklist included the essential educational contents to be shown in videos, such as authors' information, case presentation, demonstration of the critical procedures, outcomes and image quality of videos (low: 480p resolution, moderate: 720p resolution, high: 1080p resolution). We referred to the structure of the LAP-VEGaS Practice Guidelines, which mainly included five categories and 20 items. Two surgeons discussed each item and made a final decision together. The major differences between the LAP-VEGaS and ThuLEP checklists were demonstration of the surgical procedure and procedure outcomes. The critical domains of the surgery referred to the techniques reported by Herrmann *et al.* (5,11). The reporting checklist included 20 options. Each option represented one point. The total score was the sum of all the points. A higher score represents a higher educational value.

All videos were first reviewed for inclusion criteria by the first author. The baseline characteristics of the included videos were collected. Then, two surgeons who created the checklist simultaneously evaluated conformity to the reporting checklist. Two surgeons simultaneously viewed the videos and made the final decision together for each option of the checklist. The playback speed could be two times for videos longer than 30 min.

Statistical analysis

Data analysis was performed with SPSS Statistics (Version 22 for Windows, IBM Corporation). Continuous variables are presented as the mean, ranges, and standard deviation (SD). Pearson's correlation coefficient was used to evaluate the correlations among variables. Correlation is significant at the $P < 0.05$ level.

Table 1 The checklist for the evaluation of ThuLEP surgical videos' educational value

Items of the checklist	n	(%)
Authors' Information and Video Introduction		
1) Authors' information	33	(47.1)
2) The title of the video including the procedure	60	(85.7)
3) Conflict of interest disclosure	0	0
Case presentation		
4) Patient anonymity and privacy protection	69	(98.6)
5) Baseline patient characteristics	10	(14.3)
6) Preoperative work-up and treatments	3	(4.3)
7) The volume of prostate before surgery	23	(32.9)
Demonstration of the surgical procedure		
8) The introduction of the laser equipment	13	(18.6)
9) The setting of laser power	11	(15.7)
10) Anatomic demonstration	51	(72.9)
11) In a standardized step by step fashion	47	(67.1)
12) Detailed explanation of critical steps	15	(21.4)
Outcome of procedure		
13) The operating time	4	(5.7)
14) The weight of the prostatic specimen	6	(8.6)
15) The length of hospitalization	3	(4.3)
16) The morbidity of intraoperative and postoperative complications	3	(4.3)
17) Functional outcomes	6	(8.6)
Associated educational content		
18) Diagrams, photos, snapshots or tables	9	(12.9)
Audio/written commentary in English language		
19) Only A	1	(1.4)
20) Only W	9	(12.9)
A and W	6	(8.6)

A, audio commentary; W, written commentary.

Results

A total of 70 videos of ThuLEP that met the inclusion criteria were identified. The characteristics of the videos are shown in *Table 2*. The median time available online was 1,120.5 days (range, 18–3,427 days). The oldest videos were

uploaded in 2011, and the newest videos were uploaded in 2020. The average number of views was 1,366 (range, 11–30,884, SD 3,848). *Figure 1* shows the distribution of the authors' countries. The image quality was rated as high for 34 (48.6%) videos, moderate for 19 (27.1%) and low for 17 (24.3%). The mean video length was 16.59 mins (range, 1.20–70.35 mins, SD 14.29). The mean number of likes and dislikes per video was 4.9 (range, 0–55) and 0.4 (range, 0–9), respectively. All channels except one allowed the viewers to post comments. Thirty-six videos (51.4%) were uploaded to individual channels. Twenty-three videos (32.9%) were uploaded by academic institutions of hospitals, and 11 videos (15.7%) were uploaded by commercial companies. Several surgeons uploaded a series of videos about ThuLEP.

The evaluation of the videos' educational value was completed by two surgeons simultaneously. No disagreement occurred. Only 22.9% (16/70) of videos had audio or/and written commentary in English language. Audio commentary alone was present in 1.4% (1/70) of the videos. Written commentary alone was present in 12.9% (9/70) of the videos. Six videos (8.6%) contained audio and written educational content. The patient privacy was protected in 98.6% (69/70) of the videos. However, the patients' characteristics were introduced in 14.3% of videos, and the preoperative volume of the prostate was reported in 32.9% (23/70). Anatomic landmarks were shown in 72.9% (51/70) videos. Although surgery information was presented in a step-by-step fashion in 67.4% (47/70) of videos, only 21.4% (15/70) of videos provided a detailed explanation of critical steps. Three-lobe, 2-lobe, and en bloc enucleation were present in 44.3% (31/70), 24.3% (17/70) and 31.4% (22/70) of the videos, respectively. Most of the videos reported no procedure outcomes.

The mean score of the videos was 5.5 points (range, 1–15, SD 3.1). No video received all the points from the checklist. Three videos uploaded by UROLOGIE SAINT AUGUSTIN had the highest scores of 15 points. One of these three videos was shown at the European Association of Urology Annual Congress of 2019. This channel also uploaded a series of videos about urological surgeries. The mean percentage conformity of the videos was 28% (range, 5–75%).

The correlation test showed that the number of views was significantly positively correlated with number of days posted online and the number of likes ($r=0.718$, $P<0.01$) and dislikes ($r=0.935$, $P<0.01$). Although the number of views had a negative relationship with video length, the

Table 2 Characteristic of the 70 reviewed surgical videos on ThuLEP on YouTube (The data were collected on October 31, 2020)

No. Title	Date of upload	Days online	Region	IQ (L/M/H)	Views	Length (min)	No. of likes	No. of dislikes	Scores, n (%)
1 thulep EAU 2019 1080p	2019/6/28	491	France	H	983	8.02	3	0	15 (75%)
2 THULEP Barcelona	2018/4/20	925	France	H	678	8.00	3	0	15 (75%)
3 Thulium enucleation en bloc 100 g	2018/4/26	919	France	H	97	10.70	1	0	15 (75%)
4 BPH - Pulsed Thulep	2013/11/22	2535	Italy	M	791	9.55	1	0	13 (65%)
5 Thulium Laser Enucleation - San Donato (MI) - (Cyber TM - Quanta System)	2012/9/7	2976	Italy	L	6,350	6.50	9	2	11 (55%)
6 Thulium Enucleation of the Prostate for 130g adenoma	2017/4/13	1297	France	H	1,316	10.00	7	1	10 (50%)
7 Thulium Laser Enucleation of the Prostate (ThuLEP)	2015/4/24	2017	USA	L	3,261	7.37	6	1	10 (50%)
8 Thulium laser enucleation of huge prostate 150 gm, step by step	2019/10/10	387	Taiwan (CHN)	H	441	9.15	4	0	10 (50%)
9 Thulium laser enucleation of the prostate (ThuLEP) "en bloc" technique by Dr. Rijo	2018/3/24	952	Spain	H	2,154	22.95	11	2	8 (40%)
10 THULEP (Thulium Laser Enucleation of Prostate) after only partial transurethral resection	2017/5/7	1273	UAE	M	617	3.53	13	0	8 (40%)
11 Enbloc Thulium Laser Enucleation of Prostate (ThuLEP) (Edited)	2020/10/13	18	Egypt	L	557	6.53	40	0	8 (40%)
12 ThuLEP with Cyber TM - two piece technique (Dr. Jung-Yao Huang)	2017/7/4	1215	Taiwan (CHN)	M	463	4.05	6	0	8 (40%)
13 ThuLEP with Cyber TM - One Piece Technique (Dr. Jung-Yao Huang)	2017/7/4	1215	Taiwan (CHN)	M	407	6.67	4	0	8 (40%)
14 A novel one lobe technique of ThuLEP: 'All-in-One' technique	2015/10/19	1839	South Korea	M	1,073	9.40	1	0	8 (40%)
15 Thulium Laser Enucleation of Prostate (THULEP)	2017/11/12	1084	UAE	M	1,903	3.90	16	0	7 (35%)
16 Cyber TM ThuLEP Procedure	2018/10/12	750	Unknown	L	437	3.97	1	0	7 (35%)
17 BPH ThuLEP ShuTien Jung Yao Huang - Thulium Laser - Cyber TM	2014/11/28	2164	Taiwan (CHN)	L	4,514	36.87	7	1	7 (35%)
18 BPH - Thulium Enucleation of Prostate	2011/6/14	3427	Unknown	L	3,355	3.97	1	1	7 (35%)
19 ThuFLEP: Thulium-fiber laser enucleation of a small adenoma.	2020/4/16	198	Russia	M	93	7.18	1	0	7 (35%)
20 Thulium laser enucleation of prostate (ThuLEP en bloc) - full length, PV: 95 ml	2018/3/9	967	Taiwan (CHN)	L	1,124	35.12	5	0	6 (30%)
21 Enucleation of prostate adenoma with cyber TM thulium 150 (Path 1) Dr. Farid Gadimaliyev	2014/11/23	2169	Azerbaijan	H	376	12.50	2	0	6 (30%)
22 ThuLEP 200 cc prostate and holmium laser cystolithotripsy, Dr. Farid Gadimaliyev, Baku, Azerbaijan	2015/3/6	2066	Azerbaijan	H	338	21.70	0	0	6 (30%)
23 Thulium Laser Enucleation (90cc) - Varese Hospital	2012/12/1	2891	Italy	L	3,901	5.87	5	1	6 (30%)
24 ThuFLEP: Thulium-fiber laser enucleation of the prostate: 90 cc in 25 minutes! No editing	2020/4/25	189	Russia	L	698	28.95	25	1	6 (30%)

Table 2 (continued)

Table 2 (continued)

No.	Title	Date of upload	Days online	Region	IQ (L/M/H)	Views	Length (min)	No. of likes	No. of dislikes	Scores, n (%)
25	Thulium fiber laser enucleation of the prostate: 165 cc in 45 min	2020/10/8	23	Russia	L	108	47.48	5	0	6 (30%)
26	Laserowa Enukleacja Prostaty ThuLEP	2015/2/27	2073	Unknown	M	464	22.12	3	0	6 (30%)
27	Thulium laser enucleation of the prostate with en bloc technique (ThuLEP en bloc) - full length	2017/5/16	1264	Taiwan (CHN)	M	4,732	37.72	25	0	5 (25%)
28	Case history: Benign Prostate Enlargement or Hypertrophy (BPH)	2017/5/2	1278	UAE	M	470	3.45	9	0	5 (25%)
29	ThuLEP (Thulium Laser Enucleation of Prostate) - Prof. C. Imbimbo (Naples - Italy)	2014/7/15	2300	Italy	L	6,614	7.92	8	1	5 (25%)
30	Thulium laser enucleation of the prostate, Dr. Farid Gadimaliyev	2014/11/24	2168	Azerbaijan	M	125	6.85	0	0	5 (25%)
31	Simultaneous ThuLEP and hernioplasty. Dr. Farid Gadimaliyev, Customs Hospital, Baku, Azerbaijan	2015/1/9	2122	Azerbaijan	H	55	33.22	2	0	5 (25%)
32	ThuLEP under TRUS guidance, Dr. Farid Gadimaliyev, Customs Hospital, Baku, Azerbaijan	2015/3/12	2060	Azerbaijan	H	99	13.33	1	0	5 (25%)
33	ThuLEP after TURP failure, Dr. Farid Gadimaliyev, Customs Hospital, Baku, Azerbaijan	2015/3/9	2063	Azerbaijan	H	319	20.63	1	0	5 (25%)
34	ThuLEP simultaneous with thulium laser ureterotomy and holmium laser lithotripsy. Dr. Farid G.	2015/3/6	2066	Azerbaijan	H	234	14.58	2	0	5 (25%)
35	ThuLEP (thulium laser prostate enucleation) after failed TURP,with ultrasound guidance, Dr. Farid G.	2015/4/29	2012	Azerbaijan	H	708	20.28	1	0	5 (25%)
36	ThuLEP performed simultaneously with open nephrectomy and bladder stones, Dr.Farid Gadimaliyev	2015/4/21	2020	Azerbaijan	H	265	14.18	1	0	5 (25%)
37	ThuLEP with Ultrasound Guidance, Dr. Farid Gadimaliyev, Customs Hospital, Baku, Azerbaijan	2015/4/3	2038	Azerbaijan	H	103	22.18	1	0	5 (25%)
38	ThuLEP with dynamic ultrasound evaluation, Dr. Farid Gadimaliyev, Customs Hospital, Baku, Azerbaijan	2015/4/11	2030	Azerbaijan	H	168	23.98	1	0	5 (25%)
39	Enucleation of prostate adenoma with cyber TM thulium 150 (Path 2) Dr. Farid Gadimaliyev	2014/11/23	2169	Azerbaijan	H	117	15.27	2	0	5 (25%)
40	ThuLEP Thulium-YA.G. Enucleation of Prostate	2014/4/20	2386	Taiwan (CHN)	L	1,431	28.15	0	0	5 (25%)
41	7U ThuLEP - prezentarea tehnicii de enucleere prostatice cu laser Thulium	2020/7/21	102	Unknown	M	55	3.00	0	0	5 (25%)
42	Prostata con laser ThuLEP	2017/11/11	1085	Unknown	M	397	6.92	1	0	5 (25%)
43	Thulium Laser Prostatectomy to 142 cc prostate Full Length Video	2019/6/27	492	Turkish	M	1,223	70.35	11	1	4 (20%)
44	Laser prostate surgery - Complete thulium laser enucleation, Dr. Farid Gadimaliyev	2015/7/2	1948	Azerbaijan	H	30,884	16.90	55	9	4 (20%)

Table 2 (continued)

Table 2 (continued)

No.	Title	Date of upload	Days online	Region	IQ (L/M/H)	Views	Length (min)	No. of likes	No. of dislikes	Scores, n (%)
45	201712 Vela Enucleation TRUS 63 cc ThuLEP	2018/1/23	1012	Taiwan (CHN)	H	215	45.17	2	0	4 (20%)
46	201711 ThuLEP TRUS 50 cc s/p Warfarin	2018/1/23	1012	Taiwan (CHN)	H	119	19.83	1	0	4 (20%)
47	201703 Vela Enucleation ThuLEP TRUS 86.9gms	2018/1/10	1025	Taiwan (CHN)	H	222	28.98	2	0	4 (20%)
48	201712 Vela 001 ThuLEP TRUS 40cc	2018/1/10	1025	Taiwan (CHN)	H	56	22.42	0	1	4 (20%)
49	THULEP	2011/11/24	3264	Unknown	L	1,859	2.58	2	0	4 (20%)
50	THULEP- THULIUM LASER PROSTATE SURGERY	2019/10/28	369	Unknown	H	152	4.97	2	0	4 (20%)
51	ThuLEP 25min	2020/7/23	100	Taiwan (CHN)	H	230	29.45	0	0	4 (20%)
52	ThuLEP: EndoUroCenter	2020/1/5	300	Unknown	H	26	66.00	0	0	4 (20%)
53	Cistolitotrixxia endoscopica ed enucleazione adenoma prostatico con Laser a Thulio (ThuLEP)	2017/10/7	1120	Unknown	M	272	10.38	1	0	4 (20%)
54	Laser enucleation of prostate	2017/10/20	1107	Taiwan (CHN)	H	542	10.47	3	0	4 (20%)
55	THULEP	2011/11/25	3263	Unknown	L	1,856	2.58	2	0	3 (15%)
56	201710 Cyber-TM Enucleation ThuLEP	2018/1/10	1025	Taiwan (CHN)	H	223	27.88	5	0	3 (15%)
57	201712 Vela 003 Enucleation	2018/1/10	1025	Taiwan (CHN)	H	75	30.97	1	0	3 (15%)
58	201611 Vela Prostatectomy Enucleation TRUS 82cc	2018/1/9	1026	Taiwan (CHN)	H	55	18.15	2	0	3 (15%)
59	Thulium Laser Enucleation of Prostate (revolix) Enucleoresezione Prostatica Laser Tullio ThuLEP	2013/11/5	2552	Italy	L	1,764	14.57	2	1	3 (15%)
60	Thulium Laser Enucleation (ThuLEP) of the Prostate	2020/6/24	129	Unknown	M	116	18.40	1	0	2 (10%)
61	201710 Vela	2018/1/10	1025	Taiwan (CHN)	H	58	13.80	3	1	2 (10%)
62	Enucleazione Laser Adenoma della prostata THULEP	2015/3/18	2054	Unknown	L	1,066	21.65	0	0	2 (10%)
63	ThuLEP	2018/8/28	795	Unknown	H	299	1.53	0	0	2 (10%)
64	(ThuLEP)	2018/1/22	1013	Unknown	H	732	1.20	4	0	2 (10%)
65	(ThuLEP)	2018/3/13	963	Unknown	M	450	2.90	3	1	2 (10%)
66	THULEP	2017/10/6	1121	Unknown	M	107	5.22	2	0	2 (10%)
67	Thulium laser enucleation of prostate	2017/6/10	1239	Taiwan (CHN)	H	511	29.57	1	1	2 (10%)
68	Thulium laser enucleation for prostate hyperplasia	2019/11/7	359	Taiwan (CHN)	L	41	5.13	0	0	2 (10%)
69	Thulium laser enucleation of the prostate.	2020/5/3	181	India	H	11	6.17	0	0	2 (10%)
70	THUFLEP Laser Enucleation of Prostate	2020/6/16	137	Unknown	M	80	10.40	3	0	1 (5%)

ThuLEP, thulium laser enucleation of the prostate; IQ (M/H), image quality (low/moderate/high).

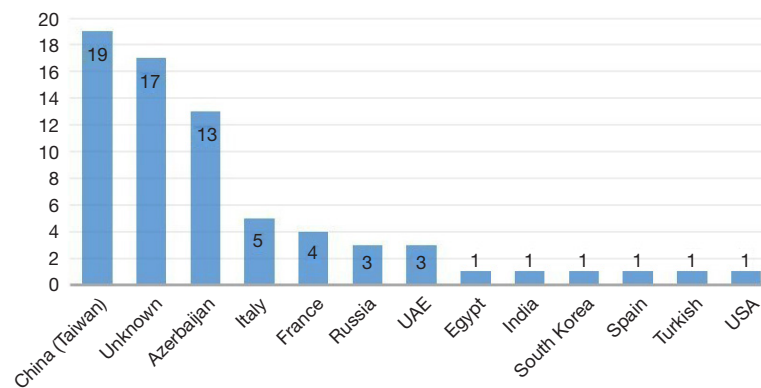


Figure 1 The distribution of the authors' countries.

Table 3 Correlation test for the factors influencing the views

Factors	1	2	3	4	5	6
1 Views	1					
2 Days online	0.250*	1				
3 Video length	-0.016	-0.179	1			
4 No. of likes	0.718**	-0.09	0.045	1		
5 No. of dislikes	0.935**	0.163	0.03	0.681**	1	
6 Educational score	0.029	0.082	-0.177	0.101	-0.008	1

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).

correlation was not significant. The educational score of the videos had no significant positive correlation with the number of views (Table 3).

Discussion

This study reports the educational evaluation of ThuLEP surgical videos on YouTube on October 31, 2020. These videos were available on YouTube for a mean of 3.1 years and were watched by trainees, residents and beginners worldwide. Considering that these videos have potential educational value and enormous influence, a quality assessment of these videos may be essential and reasonable for trainees. To our knowledge, this is the first quality assessment of ThuLEP surgical videos posted on YouTube. We are also the first to report an evaluation checklist for ThuLEP educational videos.

Watching videos is a good method to learn surgical methods, especially minimally invasive endoscopic surgeries. Some studies have revealed that YouTube is the most frequently used video source for surgical learning

and preparation (3,4,12). However, without peer review and quality assessment, some studies have revealed that YouTube is not a reliable education or information resource (13-16). This finding reminds us that the quality assessment of surgical videos is necessary when we use them as the educational tool.

In laparoscopic surgical education, LAP-VEGaS is a good example for producing an educational video with a logical structure (10,15). These guidelines can improve the educational value of surgical videos. Therefore, we assume that a similar requirement for reporting educational videos of urological endoscopic surgeries is also useful. Given the lack of a published evaluation checklist for ThuLEP videos, two experienced ThuLEP surgeons created an initial vision of this checklist (Table 1). The content of this checklist was finally established based on the LAP-VEGaS checklist and ThuLEP surgery characteristics.

In our study, we found that the most popular videos did not have the highest educational value. In contrast, the highest valued videos were not the most popular videos. The correlative analysis demonstrated that the educational

score of the videos is not correlated with the number of views. This is an interesting phenomenon, which is consistent with findings from other studies (3,13,17-19).

We noted that many urological journals have video sections that encourage authors to submit videos. Very few journals are open access and most journals are not free. Two ThuLEP surgery videos created by experts in this field were published in *Videourology* (20,21). These videos can only be viewed after purchase. We also found that one of the reviewed videos had been published in the *Urology Video Journal*, which is an open access journal (22). The European Association of Urology and the American Urological Association both have video libraries. However, these libraries are only open to registered members or eligible learners.

There are some inevitable limitations in this study. We only evaluated ThuLEP videos posted on the YouTube platform given that this platform is the most frequently used educational video source for residents and trainees. We only search for videos using English language. Thus, selective bias exists. Given that authors may upload their videos with non-English language, and the fact that YouTube is an open platform, new videos will be uploaded, and old videos may be removed. In addition, there is still no generally accepted consensus for reporting an educational video about ThuLEP. The checklist that we created must be approved by more experts. Although YouTube is a public and nonacademic video platform, more requirements for uploading surgical videos may improve its educational value.

Conclusions

Although YouTube is the most frequently used educational video source for surgical learning, the majority of ThuLEP videos have low educational value. Videos often lack important and detailed explanations about surgical procedures. These findings remind us that a global effort should be made to improve the educational value of YouTube surgical videos, and more reporting guidelines are needed.

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Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. No ethical approval is required.

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References

1. Pugh CM, Watson A, Bell RJ, et al. Surgical education in the internet era. *J Surg Res* 2009;156:177-82.
2. Glass NE, Kulaylat AN, Zheng F, et al. A national survey of educational resources utilized by the Resident and Associate Society of the American College of Surgeons membership. *Am J Surg* 2015;209:59-64.
3. Rapp AK, Healy MG, Charlton ME, et al. YouTube is the Most Frequently Used Educational Video Source for Surgical Preparation. *J Surg Educ* 2016;73:1072-6.
4. Mota P, Carvalho N, Carvalho-Dias E, et al. Video-Based Surgical Learning: Improving Trainee Education and Preparation for Surgery. *J Surg Educ* 2018;75:828-35.
5. Herrmann TR, Bach T, Imkamp F, et al. Thulium laser enucleation of the prostate (ThuLEP): transurethral anatomical prostatectomy with laser support. Introduction of a novel technique for the treatment of benign prostatic obstruction. *World J Urol* 2010;28:45-51.
6. Kyriazis I, Swiniarski PP, Jutzi S, et al. Transurethral anatomical enucleation of the prostate with Tm:YAG support (ThuLEP): review of the literature on a novel surgical approach in the management of benign prostatic enlargement. *World J Urol* 2015;33:525-30.
7. Saredi G, Pirola GM, Pacchetti A, et al. Evaluation of

- the learning curve for thulium laser enucleation of the prostate with the aid of a simulator tool but without tutoring: comparison of two surgeons with different levels of endoscopic experience. *BMC Urol* 2015;15:49.
8. Herrmann TR, Gravas S, de la Rosette JJ, et al. Lasers in Transurethral Enucleation of the Prostate-Do We Really Need Them. *J Clin Med* 2020;9:1412.
 9. Netsch C, Bach T, Herrmann TR, et al. Evaluation of the learning curve for Thulium VapoEnucleation of the prostate (ThuVEP) using a mentor-based approach. *World J Urol* 2013;31:1231-8.
 10. Celentano V, Smart N, McGrath J, et al. LAP-VEGaS Practice Guidelines for Reporting of Educational Videos in Laparoscopic Surgery: A Joint Trainers and Trainees Consensus Statement. *Ann Surg* 2018;268:920-6.
 11. Herrmann TR, Wolters M. Transurethral anatomical enucleation of the prostate with Tm:YAG support (ThuLEP): Evolution and variations of the technique. The inventors' perspective. *Andrologia* 2020;52:e13587.
 12. Celentano V, Smart N, Cahill RA, et al. Use of laparoscopic videos amongst surgical trainees in the United Kingdom. *Surgeon* 2019;17:334-9.
 13. Betschart P, Pratsinis M, Mullhaupt G, et al. Information on surgical treatment of benign prostatic hyperplasia on YouTube is highly biased and misleading. *BJU Int* 2020;125:595-601.
 14. Tanwar R, Khattar N, Sood R, et al. Benign prostatic hyperplasia related content on YouTube: unregulated and concerning. *Recent Prog Med* 2015;106:337-41.
 15. Haslam RE, Seideman CA. Educational Value of YouTube Surgical Videos of Pediatric Robot-Assisted Laparoscopic Pyeloplasty: A Qualitative Assessment. *J Endourol* 2020;34:1129-33.
 16. de'Angelis N, Gavriilidis P, Martinez-Perez A, et al. Educational value of surgical videos on YouTube: quality assessment of laparoscopic appendectomy videos by senior surgeons vs. novice trainees. *World J Emerg Surg* 2019;14:22.
 17. Loeb S, Sengupta S, Butaney M, et al. Dissemination of Misinformative and Biased Information about Prostate Cancer on YouTube. *Eur Urol* 2019;75:564-7.
 18. Staunton PF, Baker JF, Green J, et al. Online Curves: A Quality Analysis of Scoliosis Videos on YouTube. *Spine (Phila Pa 1976)* 2015;40:1857-61.
 19. Jones M, Wiberg A. Evaluating Youtube as A Source of Patient Information on Dupuytren's Disease. *World J Plast Surg* 2017;6:396-8.
 20. Imkamp F, Hannover, Bach T, et al. Thulium Laser Enucleation of the Prostate: Five Steps to Surgical Success. *Videourology* 2011;25.
 21. Omar M. Thulium Laser Enucleation of the Prostate: Median Lobe Enucleation, Step by Step, for a Beginner Surgeon. *Videourology* 2019;33.
 22. Bozzini G, Besana U, Calori A, et al. 7U-Thulium Laser Enucleation of the Prostate (7U-ThuLEP): description of the technique. *Urology Video J* 2020;7:100036.

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