Original Article

# Educational value assessment of YouTube surgical videos of green light laser vaporization of the prostate

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**Background:** YouTube is commonly used by doctors to learn surgery. To date, no studies have evaluated the quality of videos on photoselective vaporization of the prostate (PVP) for benign prostatic hyperplasia (BPH) on YouTube. Our aim was to assess the educational value of YouTube videos regarding PVP.

**Methods:** "Green light laser vaporization of the prostate" and "photoselective vaporization of the prostate (PVP)" were searched by 2 authors on YouTube on February 14, 2022. Based on the Laparoscopic Surgery Video Educational Guidelines and previous studies, a checklist that included 4 major and 16 minor items was developed. SPSS version 26 (IBM Corp., Armonk, NY, USA) was used to analyze the data using correlation analysis.

**Results:** A total of 74 surgical videos were assessed. The mean number of days available for educational videos was 2,607 days (range, 156–5,854 days), with the earliest videos dating back to 2006 and the latest to 2021. The average length was 12.69 minutes (range, 0.73–123.7, SD 21.25). The majority of videos originated in the United States, and the video definition was divided into high, moderate, and low, accounting for 21.6%, 66.2%, and 12.2% of the videos, respectively. The average numbers of likes and dislikes for videos were 34.26 (SD 87.96) and 0, respectively. The average score of the videos was 6.65 (range, 2–12, SD 2.79). The correlation analysis indicated that the number of views of these videos was related to the number of online days and likes. The scores of videos were related to the number of likes, and the annual average number of views was related to both the number of views and the number of surgeon likes.

**Conclusions:** There is a lack of high-quality surgical videos of green laser vaporization of the prostate on YouTube. More detailed explanations of the key steps of the operation are needed. We hope that more videos with higher educational value will be published in the future to help surgeons master this technology.

**Keywords:** Greenlight laser vaporization of the prostate; photoselective vaporization of the prostate (PVP); quality assessment; surgical education

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## Introduction

Benign prostatic hyperplasia (BPH) is diagnosed histologically. In clinical practice, it is characterized by lower urinary tract symptoms (LUTS), and it can lead to complications, including acute urinary retention (1). A third of men over the age of 50 years will develop LUTS, and a quarter of LUTS in male patients over the age of 50 years will require surgical intervention. Investigators

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for the Olmsted County study showed that the chances for requiring surgery is highest in men over 65 years old who have severe symptoms and large prostates (2).

At present, the commonly used treatment methods for BPH include drug prescription, transurethral resection of the prostate (TURP), and thulium laser. However, compliance with medical treatment is poor, and there are many side effects, such as hypotension and lethargy. Patients with TURP often experience relapse, and the costs of operation are high. Thulium laser completely removes the transition zone (3), whereas green light laser selectively targets prostatic tissue to vaporize the hyperplastic prostate, which results in less intraoperative bleeding and shorter hospital stays. However, this new technology is not widely popular and only used by a few doctors (4). Barriers to teaching greenlight laser photoselective vaporization of the prostate (PVP) include lack of access to teaching hospitals for community surgeons and the poor reputation of video viewing (5). Fortunately, with the continuous progress of new media, video websites have become a more viable training tool. Therefore, learning this surgical technology online has become a potential learning method for surgeons. YouTube, a social media platform focusing on online videos, contains more than 7 billion videos that are readily available to the general public and free to watch. Creators from all over the world can upload videos to YouTube with no prerequisites or specific qualifications required (6).

To our knowledge, there is no professional supervision of the publication of videos, some videos do not have enough educational value, and the video quality is mixed, which makes it difficult for trainees to select appropriate videos to study. Considering this situation, we aimed to select high-quality surgical videos and provide references for follow-up surgical videos.

## Methods

"Green light laser vaporization of the prostate" and "photoselective vaporization of the prostate (PVP)" were searched by two authors (SQ Yang and YZ Chen) on YouTube on February 14, 2022. The following inclusion criteria were applied to the identified videos: (I) the title or video should describe or include the main procedure and (II) the main procedure should be recorded completely. The exclusion criteria were as follows: (I) commercial advertisements; (II) promotional videos; and (III) cartoons. If the two authors could not agree on a video, a joint decision was made with the help of a third author (L Peng). Because a standard and authoritative urological surgery video quality evaluation checklist does not exist, the Laparoscopic Surgery Video Educational Guidelines was used as a reference (7) in addition to a similar research scale of thulium laser enucleation of the prostate (8) to develop the final checklist, which is shown in *Table 1*. In addition to the researchers, 2 experienced urogynecologists, who had performed more than 200 prostate green laser vaporizations, assisted with the development of the checklist. The overall content of the list was consistent with previously published scales, while adjustments were made to the wording regarding surgical procedures and outcome measures. The standard procedure for PVP using the potassium-titanyl-phosphate (KTP) laser was taken from descriptions in the literature (9). Each subitem counted for 1 point out of a total of 16, with a higher score indicating a higher quality of video.

Data on the videos were collected, including the publication date, days online, region of origin, video definition (we regarded 1,080 P as high-, 720–480 P as moderate-, and 360–240 P as low-definition videos), length in minutes, number of views, and number of likes and dislikes. Data are shown in *Table 2*. Data were collected by the two authors (SQ Yang and YZ Chen) independently, and if there were any differences, the video was rescored by the same authors.

### *Statistical analysis*

Data analysis was performed with SPSS v. 26 for Windows (IBM Corp., Armonk, NY, USA), and results are displayed in *Table 3*. The mean, range, and SD were recorded as the primary outcome measures, and Pearson correlation coefficient was calculated to evaluate the correlations among variables. Correlations were considered significant at $P<0.05$ level (2 tailed).

## Results

A total of 172 videos were screened. After viewing of the videos, 74 videos were selected for the final list based on the inclusion and exclusion criteria. The data on these videos are shown in *Table 2*. Regarding the primary outcome measure, the mean number of days available for educational videos was 2,607 days (range, 156–5,854 days), with the earliest videos dating back to 2006 and the latest to 2021. The average length was 12.69 minutes (range, 0.73–123.7, SD 21.25). The longest video received a score of 10, and

 

**Table 1** Data on the checklist for evaluating the educational value of green light laser for prostate surgery videos

| Items of checklist | N | % |
|---|---|---|
| Authors' details and video introduction | | |
| 1) Authors' details | 36 | 48.7 |
| 2) Title of video includes name of the procedure | 65 | 88.8 |
| 3) Conflict of interest disclosure | 0 | 0 |
| Case presentation | | |
| 4) Patient anonymity and privacy protection | 74 | 100.0 |
| 5) Patient details | 10 | 13.5 |
| 6) Preoperative workup and treatments | 9 | 9.5 |
| Demonstration of the surgical procedure | | |
| 7) Preoperative prostate volume | 14 | 18.9 |
| 8) Introduction of equipment | 9 | 9.5 |
| 9) Power of the green light laser | 30 | 40.5 |
| 10) Anatomic demonstration | 71 | 95.9 |
| 11) Video shows standardized step-by-step procedure | 38 | 51.4 |
| 12) Emphasis of critical steps | 18 | 24.3 |
| 13) Operating time | 10 | 13.5 |
| Other information about the videos | | |
| 14) Associated educational contents | 22 | 29.7 |
| 15) Includes audio explanation | 49 | 66.2 |
| 16) Includes subtitles | 42 | 56.8 |

the shortest video obtained a score of 2. The majority of videos originated in the United States, followed by Spain. The video definition was divided into high, moderate, and low, accounting for 21.6%, 66.2%, and 12.2% of the videos respectively. The average numbers of likes and dislikes for videos were 34.26 (SD 87.96) and 0, respectively. We found that the largest number of videos were published in 2013, and the trends in the numbers of surgical videos published in consecutive years are shown in *Figure 1*.

The average score of the included videos was 6.65 (range, 2–12, SD 2.79). Five videos obtained a score of 12. A total of 51.3% of videos showed the standard surgical procedure. In addition, 24.3% of videos emphasized the critical steps of the surgery. As for the equipment, 12.1% of videos had a short introduction or picture of the green laser equipment, and 40.5% of videos demonstrated how to set the power parameters for the equipment. Only 9.0% of videos involved preoperative workup and treatments. In all, 29.7% of the videos covered associated educational content that was unrelated to the learning needs of individuals watching the videos. In addition, 66.2% of videos included audio commentary.

The correlation analysis indicated that the number of views of these videos was related to the number of days online and the number of likes. The scores of videos were correlated with the number of likes, and the annual average number of views was associated with both the number of views and the number of likes. Moreover, average annual views were more strongly related to the number of likes than to the number of views. The correlation was significant at the 0.05 level (2-tailed). The results of the correlation analysis are shown in *Table 3*.

## Discussion

This study evaluated the quality of videos by searching

 

**Table 2** Characteristics of reviewed surgical videos on green light laser vaporization of the prostate on YouTube

| Title | Date of upload (year/month/day) | Region | Days online | Definition | Views | No. of likes | No. of dislikes | Score | Length (min) | Mean annual views |
|---|---|---|---|---|---|---|---|---|---|---|
| Greenlight Laser for Enlarged Prostate | 2021/5/30 | Australia | 262 | 1,080 | 8665 | 198 | 0 | 12 | 5.52 | 8,665 |
| Laser Vaporization of the Prostate | 2016/9/2 | Unknown | 1,993 | 720 | 62,599 | 163 | 0 | 12 | 2.23 | 12,519.8 |
| Greenlight Photoselective Vaporization of the Prostate | 2013/6/6 | Spain | 3,177 | 480 | 1305 | 1 | 0 | 12 | 3.92 | 145 |
| Photoselective Vaporization of the Prostate (PVP) Laser Therapy for BPH | 2013/1/19 | Unknown | 3,315 | 480 | 36076 | 329 | 0 | 12 | 11.9 | 4,008.44 |
| Green Light Laser Vaporization of the Prostate | 2021/6/22 | UK | 239 | 720 | 175 | 4 | 0 | 12 | 23.65 | 175 |
| GreenLight XPS 180W Prostate Laser Treatment of Male BPH (Benign Prostatic Hyperplasia) | 2011/4/12 | Canada | 3,963 | 480 | 58,328 | 152 | 0 | 11 | 8.9 | 5,302.55 |
| Enlarged Prostate Surgery for BPH Treatment With GreenLight Laser PVP from www.williamsurology.com | 2011/5/23 | Unknown | 3,922 | 480 | 155,594 | 234 | 0 | 11 | 8.12 | 14,144.91 |
| Greenlight Laser Vaporization | 2018/1/11 | Unknown | 1,497 | 480 | 76 | 2 | 0 | 11 | 10.03 | 19 |
| Greenlight Laser Treatment for Benign Prostatic Hyperplasia (BPH) | 2021/2/8 | Unknown | 373 | 1,080 | 1459 | 23 | 0 | 10 | 6 | 1,459 |
| Greenlight Laser Intervention for Benign Prostate Hyperplasia (BPH) | 2016/7/5 | Unknown | 2,052 | 480 | 3672 | 9 | 0 | 10 | 14.33 | 612 |
| GreenLight XPS™ Laser Therapy System: Bladder Neck Vaporization Surgical Video Clip | 2018/10/31 | Unknown | 1,204 | 720 | 4677 | 0 | 0 | 10 | 6.23 | 1,169.25 |
| Basics of GreenLight Laser Prostatectomy | 2021/9/13 | Australia | 156 | 1,080 | 669 | 39 | 0 | 10 | 2.85 | 669 |
| Anatomic Photoselective Vaporization of the Prostate (PVP) with GreenLight XPS 180W by Dr Rijo | 2017/7/4 | Unknown | 1,688 | 720 | 4817 | 28 | 0 | 9 | 9.35 | 963.4 |
| Technique and Short Time Outcome of GreenLight Laser (KTP, 80 W) Vaporisation of the Prostate | 2011/1/27 | Unknown | 4,038 | 360 | 9292 | 30 | 0 | 9 | 13.15 | 844.73 |
| GreenLight Laser Vaporization of the Prostate for Urolift Failure | 2021/9/1 | Unknown | 168 | 480 | 315 | 2 | 0 | 9 | 2.47 | 315 |
| GreenLight Laser Surgery for Prostate | 2009/8/23 | Unknown | 4,560 | 240 | 126,282 | 57 | 0 | 9 | 1.98 | 9,714 |
| Ejaculation-Preserving Photoselective Vaporization of the Prostate (EP-PVP) by Dr Rijo | 2017/11/18 | Unknown | 1,551 | 720 | 73800 | 85 | 0 | 9 | 7.37 | 14,760 |
| Photo-vaporisation prostatique au laser Greenlight | 2014/2/9 | Unknown | 2,929 | 720 | 68,870 | 47 | 0 | 9 | 5.18 | 8,608.75 |
| Greenlight PVP - Photoselective Vaporization of the Prostate | 2006/2/6 | Spain | 5,854 | 240 | 49,611 | 31 | 0 | 9 | 6.65 | 3,100.69 |
| GreenLight HPS Laser Prostatectomy 130 grams | 2006/12/11 | Spain | 5,546 | 360 | 46,562 | 19 | 0 | 9 | 3.23 | 2,910.13 |
| New GreenLight Laser PVP Treatment for BPH | 2008/8/14 | USA | 4,934 | 480 | 30,311 | 23 | 0 | 9 | 6.7 | 2,165.07 |
| Green Light Laser Vaporization of the Enlarged Prostate | 2008/9/5 | USA | 4,912 | 480 | 25,540 | 20 | 0 | 8 | 9.42 | 1,824.29 |
| Anatomic PVP with the GreenLight XPS 180 Watt Laser | 2012/6/12 | Spain | 3,536 | 480 | 20,252 | 64 | 0 | 8 | 35.63 | 2,025.2 |
| Vaparorização da próstata com GreenLight LASER 180W | 2017/9/27 | Portugal | 1,603 | 720 | 16,779 | 455 | 0 | 8 | 13.9 | 3,355.8 |
| GreenLight Laser Surgery for BPH | 2009/4/20 | Unknown | 4,685 | 480 | 12,796 | 11 | 0 | 8 | 7.25 | 984.31 |
| GreenLight PVP Laser | 2007/11/26 | Unknown | 5,196 | 240 | 10,163 | 0 | 0 | 8 | 3.92 | 677.53 |
| Greenlight HPS Photoselective Vaporization of the Prostate | 2006/10/9 | Spain | 5,609 | 480 | 8,262 | 7 | 0 | 8 | 1.73 | 516.38 |
| Sentara Green Light Laser Therapy for Enlarged Prostate | 2010/11/4 | Unknown | 4,122 | 360 | 6,806 | 9 | 0 | 8 | 3.23 | 567.17 |
| GreenLight XPS™ Laser Therapy System: Vaporization to Capsule Video Clip | 2018/10/31 | USA | 1,204 | 720 | 5,913 | 0 | 0 | 8 | 5.15 | 1,478.25 |
| Greenlight Laser Surgery Miami Urology BPH Specialist David Robbins MD Urologist | 2011/7/11 | Unknown | 3,873 | 480 | 5,757 | 3 | 0 | 7 | 2.25 | 523.36 |
| Anatomic Photoselective Vaporization of the Prostate with GreenLight XPS 180W by Dr. Rijo (unedited) | 2015/11/9 | USA | 2,291 | 720 | 4,238 | 411 | 0 | 7 | 47.83 | 605.43 |
| Prostate KTP-Laser Vaporization | 2010/3/17 | Unknown | 4,354 | 480 | 3,895 | 3 | 0 | 7 | 9.48 | 324.58 |
| New GreenLight Laser PVP Treatment for BPH | 2008/8/20 | USA | 4,928 | 480 | 2,876 | 2 | 0 | 7 | 6.97 | 205.43 |
| Greenlight XPS 180W Unedited Case Video Presentation 65 g Prostate Size with Median Lobe- Trilobar | 2013/9/17 | Unknown | 3,074 | 480 | 2,449 | 3 | 0 | 7 | 58.08 | 272.11 |
| Comparing GreenLight and DIOLAS LFD 3000 (BPH - Benign Prostatic Hyperplasia) | 2009/10/7 | Germany | 4,515 | 480 | 2,243 | 1 | 0 | 7 | 2.67 | 172.54 |
| GreenLight HPS on a post-Brachytherapy Prostate | 2009/7/29 | Unknown | 4,585 | 480 | 1,988 | 2 | 0 | 6 | 4.7 | 152.92 |
| Greenlight HPS Laser Prostatectomy: Median Lobe Enucleation for a 100 cc Prostate & Bladder Stones | 2009/10/7 | Unknown | 4,515 | 240 | 1,856 | 3 | 0 | 6 | 5.48 | 142.77 |

**Table 2** (*continued*)

 

**Table 2** (*continued*)

| Title | Date of upload (year/month/day) | Region | Days online | Definition | Views | No. of likes | No. of dislikes | Score | Length (min) | Mean annual views |
|---|---|---|---|---|---|---|---|---|---|---|
| Greenlight Pvp Laser I Laser Surgery for Prostate Enlargement in India | 2020/3/1 | India | 717 | 240 | 1,636 | 21 | 0 | 6 | 1.05 | 818 |
| Laser et Urologie - Vaporisation Greenlight - Prostate - Saint Jean de Dieu - Clinique Oudinot | 2014/1/31 | France | 2,938 | 1,080 | 1,444 | 0 | 0 | 6 | 4.68 | 180.5 |
| Greenlight XPS 180W Unedited Case Video Presentation 150 g Prostate SIZE | 2013/9/16 | Unknown | 3,075 | 480 | 1,240 | 6 | 0 | 6 | 123.72 | 137.78 |
| Vaporization with GreenLight Laser XPS 180 W | 2013/7/24 | Unknown | 3,129 | 480 | 1,022 | 1 | 0 | 6 | 5.35 | 113.56 |
| Dr Himesh Gandhi Introduces Green Light Laser Surgery for Prostate | 2017/12/6 | Unknown | 1,533 | 240 | 948 | 2 | 0 | 6 | 4.85 | 189.6 |
| Prostate Enucleo Vaporization, Physician doct. Dadone Claudio | 2013/10/18 | Unknown | 3,043 | 1,080 | 693 | 1 | 0 | 6 | 7.33 | 77 |
| Greenlight XPS Laser TUVP | 2014/1/24 | Unknown | 2,945 | 240 | 665 | 1 | 0 | 6 | 3.7 | 83.13 |
| Greenlight XPS Prostate Vaporization 75cc | 2013/2/1 | Unknown | 3,302 | 240 | 637 | 1 | 0 | 5 | 4.93 | 70.78 |
| Photoselective Vaporisation of the Prostate (PVP) with GreenLight Laser (GLL) | 2012/3/3 | Unknown | 3,637 | 240 | 603 | 0 | 0 | 5 | 1.55 | 60.3 |
| GreenLight™ Laser PVP | 2016/5/5 | Unknown | 2,113 | 1,080 | 560 | 1 | 0 | 5 | 48.67 | 93.33 |
| Vaporisation de Prostate par Laser GreenLight | 2013/10/19 | Unknown | 3,042 | 480 | 549 | 1 | 0 | 5 | 29.35 | 61 |
| Laser Vaporization of the Prostate KTP GreenLight HPS5 | 2016/5/10 | Unknown | 2,108 | 480 | 434 | 0 | 0 | 5 | 11.95 | 72.33 |
| Adenome Prostate Vaporization Laser GreenLight Hupertan Bichat | 2014/10/21 | Unknown | 2,675 | 480 | 434 | 0 | 0 | 5 | 3.43 | 54.25 |
| GreenLight Laser Vaporization of the Enlarged Prostate | 2015/5/11 | Germany | 2,473 | 480 | 350 | 5 | 0 | 5 | 9.42 | 50 |
| Laser Vaporization of the Prostate KTP GreenLight HPS1 | 2016/5/10 | Unknown | 2,108 | 480 | 314 | 0 | 0 | 5 | 12 | 52.33 |
| Anatomical Vaporization, Physician doct. Crivellaro Simone. | 2013/10/17 | Italy | 3,044 | 144 | 303 | 0 | 0 | 5 | 5.28 | 33.67 |
| Highly Powered GreenLight Laser Vaporisation of the Prostate | 2020/1/27 | Unknown | 751 | 480 | 297 | 12 | 0 | 5 | 1.1 | 148.5 |
| GreenLight Photoselective Vaporisation of the Prostate | 2013/8/2 | Unknown | 3,120 | 240 | 286 | 1 | 0 | 5 | 5.33 | 31.78 |
| Core Videos (2017): Photoselective Vaporization of the Prostate (PVP) | 2021/3/5 | USA | 348 | 1,080 | 249 | 5 | 0 | 5 | 13.28 | 249 |
| GreenLight XPS – Step 7 - Dr. Zorn – How I do it 2014 | 2014/10/6 | Unknown | 2,690 | 480 | 214 | 0 | 0 | 4 | 3.55 | 26.75 |
| Photoselective Vaporization of the Prostate and Cystolitholapaxy | 2016/1/12 | Unknown | 2,227 | 480 | 204 | 0 | 0 | 4 | 112.23 | 34 |
| GreenLight Laser - Vaporisation de la Prostate | 2014/11/6 | Unknown | 2,659 | 720 | 191 | 1 | 0 | 4 | 1.33 | 23.88 |
| Vaporisation de Prostate au Laser GreenLight | 2019/12/3 | Unknown | 806 | 1,080 | 176 | 1 | 0 | 4 | 9 | 58.67 |
| GreenLight Laser Vaporization of the Enlarged Prostate | 2015/6/21 | Germany | 2,432 | 360 | 173 | 2 | 0 | 4 | 6.18 | 24.71 |
| Anatomical Vaporization, Physician doct. Gomez Sancha | 2013/10/25 | Unknown | 3,036 | 480 | 169 | 0 | 0 | 4 | 11.95 | 18.78 |
| Laser Vaporization of the Prostate KTP GreenLight HPS6 | 2016/5/10 | Unknown | 2,108 | 480 | 150 | 0 | 0 | 4 | 1.2 | 25 |
| Prostate Laser Vaporization | 2018/1/15 | Unknown | 1,493 | 480 | 104 | 1 | 0 | 3 | 0.73 | 26 |
| GreenLight (KTP,80W) Vaporization of a 80 gr Prostate by Omer OGE, MD, Izmir | 2017/5/25 | Unknown | 1,728 | 480 | 79 | 0 | 0 | 3 | 5.83 | 15.8 |
| Green Laser Vaporization of Enlarged Prostate | 2016/8/17 | Unknown | 2,009 | 480 | 72 | 0 | 0 | 3 | 50.62 | 12 |
| GreenLight XPS™ Laser Therapy System - Classic Vaporization 60g | 2018/12/13 | USA | 1,161 | 1,080 | 69 | 0 | 0 | 3 | 4.38 | 17.25 |
| GreenLight Laser PVP for Enlarge Prostate \|\| Urology \|\| Photoselective Vaporization of Prostate \|\| | 2020/5/8 | Unknown | 649 | 360 | 65 | 0 | 0 | 3 | 21.93 | 32.5 |
| Green Light Laser Vaporization | 2017/10/18 | Unknown | 1,582 | 720 | 65 | 0 | 0 | 3 | 1.05 | 13 |
| Vaporisation Adénome de Prostate Laser Greenlight/Clinique Saint Jean Montpellier | 2021/1/8 | Unknown | 404 | 720 | 59 | 1 | 0 | 3 | 0.82 | 59 |
| Laser Vaporization of the Prostate KTP GreenLight HPS2 | 2016/5/10 | Unknown | 2,108 | 480 | 56 | 0 | 0 | 3 | 11.97 | 9.33 |
| GreenLight XPS™ Laser Therapy System Bladder Neck Vaporization Surgical Video - Boston Scientific | 2020/9/25 | Unknown | 509 | 720 | 49 | 0 | 0 | 2 | 6.23 | 24.5 |
| Laser Vaporization of the Prostate KTP GreenLight HPS4 | 2016/5/10 | Unknown | 2,108 | 480 | 37 | 0 | 0 | 2 | 11.95 | 6.17 |
| Green Light Laser of Prostate | 2020/3/27 | Unknown | 691 | 720 | 23 | 1 | 0 | 2 | 3.95 | 11.5 |

 

**Table 3** Correlation analysis of factors associated with quality scores

| Factors | Days online | Views | Likes | Score | Length | Average annual views |
|---|---|---|---|---|---|---|
| Days online | 1 | | | | | |
| Views | 0.320** | 1 | | | | |
| Likes | −0.20 | 0.397** | 1 | | | |
| Score | 0.186 | 0.152 | 0.255* | 1 | | |
| Length | −0.025 | −0.109 | 0.065 | 0.137 | 1 | |
| Average annual views | 0.083 | 0. 874** | 0.483** | 0.154 | −0.116 | 1 |

*, correlation significant at the 0.05 level (2-tailed); **, correlation significant at the 0.01 level (2-tailed).

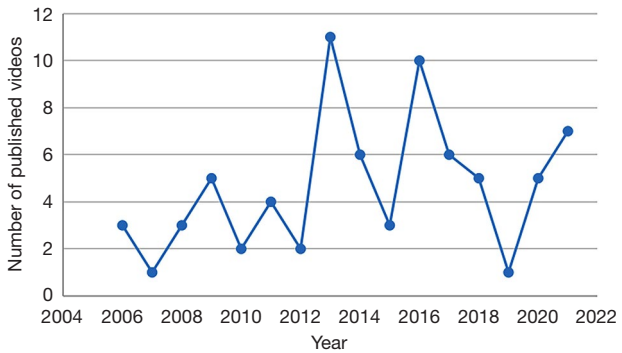


**Figure 1** Trends in surgical videos published in consecutive years.

YouTube for educational videos on green light lasers for prostate surgery to identify videos that have pedagogical value, to determine deficiencies of the videos, and to provide a reference for higher-quality videos. To the best of our knowledge, this is the first study to appraise the quality of existing green light laser videos on YouTube, and it is also the first to use our modified checklist to evaluate the quality of videos on these surgical procedures.

With the advent of the information era and the continuous development of multimedia, doctors have better access to the learning resources they need. Thanks to the release of the Laparoscopic Surgery Video Educational Guidelines, several studies have already been undertaken to evaluate the quality of videos of abdominal surgery, thus providing a template for the evaluation of such videos (10-12). Nevertheless, a small number of studies (10-13) have shown that such videos are generally not highly rated, the relevant educational components are incomplete, and the educational value is not sufficiently high to meet the standards for a surgical teaching video. YouTube, a video-sharing website, still lacks professional video reviews, resulting in the publication of many unprofessional videos, which may have counterproductive effects.

The checklist developed as part of this study was undoubtedly critical to effectively assessing the video quality. Previous articles associated with laparoscopic surgery were also based on checklists, and these previous checklists were adapted for the current study according to these authors' suggestions. There were several reasons why we chose to assess the quality of the green light laser videos rather than those relating to thulium laser enucleation of the prostate: (I) the wavelength of greenlight laser is 532 to 556 nm; (II) the absorption coefficient for hemoglobin is very high, thus minimizing bleeding during surgery; (III) the scope of thermal damage is relatively small; (IV) the risk of capsular perforation or peripheral organ damage is low, and as such, recovery is faster; (V) the surgery vaporizes the prostate, and, thus, there will be no prostate specimen; (VI) the patient usually does not need an indwelling catheter; and (VII) most patients can leave the hospital on the day of surgery.

However, the vast majority of videos still fall short of the requirements for a high-quality surgical teaching video, with only 24.3% explaining the critical steps in detail. Correlation analysis showed that many factors were not associated with video scores. Only the number of likes correlated with scores, which may be because the number of likes represents the quality of videos. Surprisingly, we found that average annual views were significantly correlated with likes and views.

This study has several limitations. The search scope of our videos was limited to YouTube, and the search strategy for green light laser of the prostate should be applied to other websites to capture relevant videos more comprehensively. YouTube is a well-known video-sharing platform, which has a low registration threshold and a large

 

global audience. Therefore, we hope that an increasing number of urologists will share their surgical procedures to help trainees. In addition, the sound quality of English audio commentary was inconsistent, thus making it difficult for viewers to learn the surgery, and 33.8% of videos did not have any audio commentary. Moreover, we found it difficult to assess whether the videos contained accurate descriptions of key surgical steps, as we could not identify any suitable video evaluation standards that could be followed. Although we produced a checklist based on previous articles and guidelines, more expert advice is needed to develop an authoritative checklist.

## Conclusions

YouTube lacks high-quality educational surgical videos of green laser vaporization of the prostate, and more detailed explanations of the key steps of the operation are needed. We hope that more videos with higher educational value can be published in the future to help beginners master this technology.

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## Footnote

*Peer Review File:* Available at https://tau.amegroups.com/article/view/10.21037/tau-22-318/prf

*Conflicts of Interest:* All authors have completed the ICMJE uniform disclosure form (available at https://tau.amegroups.com/article/view/10.21037/tau-22-318/coif). The authors have no conflicts of interest to declare.

*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.



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