

# Comparative analysis of laparoscopic inguinal hernia surgical training videos on WebSurg vs YouTube platforms: a quality evaluation

 Süleyman Çağlar Ertekin

Department of General Surgery, Faculty of Medicine, Altınbaş University, İstanbul, Turkey

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## ABSTRACT

**Aims:** Minimally invasive surgical techniques, particularly laparoscopic methods for inguinal hernia repair, have gained popularity due to their benefits such as reduced postoperative pain and faster recovery. This study aimed to compare the educational quality of laparoscopic inguinal hernia surgical training videos between YouTube and WebSurg platforms.

**Methods:** Using the keyword “laparoscopic inguinal hernia” we selected and analyzed top 20 videos based on popularity on both platforms. The study examined video sources, duration, likes, views, upload year, coverage of the entire surgical procedure, and evaluation scores (Global Quality Scale-GQS, American Medical Association-JAMA scores, modified DISCERN score, LAP-VEGaS criteria).

**Results:** YouTube predominantly featured private hospitals/organizations (30%) and physicians (45%), while WebSurg showcased academic institutions (75%). Notably, YouTube hosted mostly edited/abbreviated videos (95%), whereas WebSurg presented a balanced distribution of full-length (50%) and edited/abbreviated (50%) videos. While engagement metrics were comparable, WebSurg consistently achieved higher evaluation scores across various criteria, including modified DISCERN, GQS, JAMA, and LAP-VEGaS ( $p < 0.001$ ,  $p < 0.001$ ,  $p = 0.002$  and  $p < 0.001$  respectively).

**Conclusion:** This study is the first to compare WebSurg and YouTube videos in laparoscopic hernia surgery education, revealing that WebSurg provides higher-quality content, highlighting the importance of platform choice for advancing surgical training.

**Keywords:** Laparoscopy, inguinal hernia, YouTube, WebSurg

## INTRODUCTION

Minimally invasive surgical techniques are gaining popularity, because of their benefits like reduced postoperative pain and quicker recovery. Laparoscopic procedures for inguinal hernia repair have become safe options. These laparoscopic methods were initially introduced in 1992 for treating inguinal hernias. The transabdominal preperitoneal and total extraperitoneal approaches are now widely accepted as the standard laparoscopic techniques for hernia repair.<sup>1</sup>

YouTube, a widely popular platform, has emerged as a primary source for accessing surgical educational videos due to its vast collection of freely available content. However, it's worth noting that the quality and accuracy of these videos lack expert review before being shared online.<sup>2-5</sup> In contrast, WebSurg stands as a dedicated platform for delivering educational resources, with a specific focus on minimally invasive surgical techniques

within ongoing medical education. Esteemed for its comprehensive array of high-quality surgical educational videos contributed from diverse regions, WebSurg is acknowledged as a pioneering force in the realm of continuous surgical education and online training. Examining the website's statistics reveals a remarkable growth in its user engagement. The number of members has increased by an astonishing 1980%, visitors have surged by 740%, and video views have experienced a remarkable surge of 3300% between 2004 and 2010. These statistics clearly underscore the significant appeal of this virtual university within the surgical community.<sup>6</sup>

This study aimed to compare the quality and educational aspects of laparoscopic inguinal hernia surgical training videos on YouTube and WebSurg platforms. This examination seeks to assist surgical experts in making more informed choices regarding a more effective educational resource.

**Corresponding Author:** Süleyman Çağlar Ertekin, caglarertekin@gmail.com



## METHODS

This study analyzed readily accessible online videos intended for a general audience. Notably, there were no human or animal participants involved in the research. All videos were publicly available on widely accessible platforms such as YouTube and WebSurg. Given that no patient data was utilized and the analyzed videos were already accessible to the public, the requirement for ethical approval was waived. Thus, since no data pertaining to humans or animals was employed, and the videos under scrutiny were already accessible to the public on open platforms, obtaining ethical approval was deemed unnecessary.

In our research on YouTube, conducted on May 1, 2023, using the keyword 'laparoscopic inguinal hernia' we sorted the videos based on their popularity. We analyzed videos that encompassed various surgical techniques and educational content related to the topic of laparoscopic inguinal hernia."

Concurrently, we conducted additional research on WebSurg® using the same keyword. The videos were sorted by popularity, and the top twenty videos were selected for inclusion in the study.

Repetitive, commercially-driven, or unrelated videos, as well as those lacking surgical educational intent, were excluded from the study. Videos were evaluated by a surgeon who has performed over 100 laparoscopic inguinal hernia surgeries.

In the study, video sources used in both groups were identified. These sources included academic institutions, private hospital clinics, expert doctors, and health information channels. The collected data were evaluated based on the duration of videos, number of likes, number of views, upload year, whether the video covered the entire surgical procedure, Global Quality Scale (GQS), American Medical Association (JAMA) scores, modified DISCERN score, and LAParoscopic surgery Video Educational GuidelineS (LAP-VEGaS) video assessment tool.<sup>7</sup>

The educational content quality of the videos was assessed using the GQS. The GQS ranges from 1 (indicating poor quality) to 5 (reflecting excellent coherence and quality). Assessments of video credibility were conducted using criteria from the JAMA scores. The JAMA score assigns 1 point for each of the specified elements: authorship, attribution, disclosures, and currency. The modified DISCERN score was used to evaluate both the reliability and quality aspects of the videos score comprised of five questions, with responses marked as either yes (1 point) or no (0 points). Higher scores indicate increased reliability, in line with previous research findings.<sup>8-11</sup>

Within the scope of the study, the content of the videos was thoroughly evaluated based on the LAP-VEGaS criteria. Initially, the presentation of the video by the author and the introduction of the content were examined. Subsequently, the case presentation where the surgical procedure was performed was analyzed in detail. The video provided a step-by-step demonstration of the surgical procedure, clearly presenting procedural details. The outcomes and success of the surgical intervention were meticulously assessed. Additionally, attention was given to whether the video conveyed educational content. This content evaluation was supported by a peer review of the video by experts in the field. Finally, the potential utilization of the videos in surgical education programs was considered. Employing these criteria, the videos were categorized using the LAP-VEGaS score ranging from 1 to 18. All these criteria collectively allowed for a comprehensive analysis of the content quality.<sup>7</sup>

Baseline clinical data underwent statistical analysis: continuous data via t-tests/Mann-Whitney U and categorical data through Fisher's exact test/chi-square test. SPSS v22.0 was employed. Descriptive statistics summarized data (mean, standard deviation, median, frequency, percentage, minimum, maximum). One-way ANOVA compared normally distributed quantitative variables across groups. Tests were two-tailed;  $P < 0.05$  indicated significance.

## RESULTS

A total of 20 videos from each platform were subjected to evaluation across various parameters. Regarding video sources, distinctive patterns emerged. On YouTube, video sources included academic institutions (5%), private hospitals/organizations (30%), physicians (45%), and health information websites (20%). Conversely, WebSurg predominantly featured videos from academic institutions (75%), with a smaller representation from private hospitals/organizations (25%). This difference was found to be statistically significant ( $p < 0.001$ ).

The differentiation extended to the types of surgical videos as well. YouTube predominantly hosted edited and abbreviated versions (95%), whereas full-length surgical videos constituted only 5% of the content. In contrast, WebSurg demonstrated a more balanced distribution with 50% full-length surgical videos and 50% edited/abbreviated videos. This divergence was statistically significant ( $p = 0.001$ ).

Despite these variations, there was no statistically significant difference in video duration between the platforms. The median duration of videos on YouTube was 14.68 minutes, and on WebSurg, it was 14.39 minutes ( $p = 0.299$ ).

**Table 1.** Comparative analysis of laparoscopic inguinal hernia surgery videos on YouTube and WebSurg

Parameters	YouTube (n=20) (%)	WebSurg (n=20) (%)	P value
Video source			
Academic institutions	1 (5)	15 (75)	<0.001
Private hospitals, organizations	6 (30)	5 (25)	
Physicians	9 (45)	0 (0)	
Health information website	4 (20)	0 (0)	
Full-length surgical videos	1 (5)	10 (50)	0.001
Edited and abbreviated surgical videos	19 (95)	10 (50)	
Duration (median, min.) (min-max)	14.68 (4.02-35.26)	14.39 (6.16-51.16)	0.299
Likes (median) (min-max)	114 (0-2950)	107.50 (44-1167)	0.162
Views (median) (min-max)	16576 (1600-371365)	9715 (5023-47539)	0.018
Duration since video upload date, days (median) (min-max)	1185.50 (220-43988)	1832 (9-4603)	0.215
GQS score (mean±SD)	2.55±1.09	3.60±0.99	0.003
JAMA score (mean±SD)	2±0.64	2.90±0.85	0.001
DISCERN score (mean±SD)	2.90±0.78	3.75±0.78	0.002
LAP-VEGaS (mean±SD)	8.20±3.13	12.65±2.23	<0.001

**Table 2.** Comparative analysis of full-length vs. edited/abbreviated surgical videos on YouTube and WebSurg

	Full-length surgical videos	Edited and abbreviated surgical videos	P value
Website (n, %)			
YouTube	1 (5)	19 (95)	0.001
WebSurg	10 (50)	10 (50)	
Duration (median, min.) (min-max)	35.26 (13.17-51.16)	12.08 (4.02-34.56)	<0.001
Likes (median) (min-max)	150 (0-1167)	108 (13-2950)	0.515
Views (median) (min-max)	14747 (6574-279237)	13488 (1600-371365)	0.747
Duration since video upload date, days (median) (min-max)	1678 (802-4231)	1102 (9-4603)	0.537
GQS score (mean±SD)	4.09±0.53	2.68±1.10	<0.001
JAMA score (mean±SD)	3.27±0.78	2.13±0.78	<0.001
DISCERN score (mean±SD)	4±0.63	3.06±0.84	0.002
LAP-VEGaS (mean±SD)	13.90±1.30	9.10±3.15	<0.001

Engagement metrics, encompassing likes and views, did not exhibit noteworthy differences. Median likes were 114 on YouTube and 107.50 on WebSurg (p=0.162). However, median views demonstrated a statistically significant difference, with 16576 on YouTube and 9715 on WebSurg (p=0.018).

Furthermore, the duration since the video upload date did not present a significant variance between platforms. The median duration since the video upload date on YouTube was 1185.50 days, while on WebSurg, it was 1832 days (p=0.215).

Evaluation scores, including the modified DISCERN score, in addition to the GQS, JAMA score, and LAP-VEGaS score, unveiled noteworthy distinctions. WebSurg videos consistently garnered higher scores across these metrics with statistically significant differences (Modified DISCERN: p<0.001, GQS: p=0.003, JAMA: p=0.001, LAP-VEGaS: p<0.001). The comparative analysis of full-length vs. edited/abbreviated surgical videos on YouTube and WebSurg platforms reveals distinct differences between these video categories.

Regarding the distribution across websites, 5% of full-length surgical videos were found on YouTube, while 50% of edited/abbreviated videos were hosted on the same

platform. Conversely, 95% of full-length videos and 50% of edited/abbreviated videos were present on WebSurg. This distribution discrepancy is highly significant (p=0.001), illustrating the differing content strategies of the platforms.

Examining video duration, full-length surgical videos had a median duration of 35.26 minutes (ranging from 13.17 to 51.16 minutes), whereas edited/abbreviated videos had a median duration of 12.08 minutes (ranging from 4.02 to 34.56 minutes). This contrast is statistically significant (p<0.001), underscoring the substantial variance in video length.

Engagement metrics like likes displayed a median value of 150 for full-length videos and 108 for edited/abbreviated videos, without significant distinction (p=0.515). Similarly, median views for full-length and edited/abbreviated videos were 14,747 and 13,488, respectively, without a statistically significant difference (p=0.747).

The median duration since the video upload date was 1678 days for full-length videos and 1102 days for edited/abbreviated videos, without a significant difference (p=0.537). Evaluation scores—GQS, JAMA, modified DISCERN, and LAP-VEGaS—exhibited noteworthy variations. Full-length videos obtained a mean GQS

score of  $4.09 \pm 0.53$ , while edited/abbreviated videos scored  $2.68 \pm 1.10$  ( $p < 0.001$ ). Mean JAMA scores for full-length and edited/abbreviated videos were  $3.27 \pm 0.78$  and  $2.13 \pm 0.78$ , respectively ( $p < 0.001$ ). Full-length videos achieved a mean modified DISCERN score of  $4.00 \pm 0.63$ , while edited/abbreviated videos scored  $3.06 \pm 0.84$  ( $p = 0.002$ ). In addition, LAP-VEGaS scores demonstrated a significant difference, with full-length videos scoring  $13.90 \pm 1.30$  and edited/abbreviated videos scoring  $9.10 \pm 3.15$  ( $p < 0.001$ ).

## DISCUSSION

This study holds the distinction of being the first to compare surgical education aspects of WebSurg and YouTube videos in laparoscopic hernia surgery. The comparative analysis clearly highlights variations in video sources, types, engagement metrics, and evaluation scores between YouTube and WebSurg platforms. These findings underscore the potential impact of platform choice on the accessibility and educational quality of laparoscopic inguinal hernia surgery videos. The obtained results emphasize the significance of selecting the appropriate platform for the advancement of medical education and surgical practice. In parallel with our study, numerous researchers have examined medical videos uploaded on YouTube for quality and accuracy. Moreover, most of these studies have revealed that many videos exhibit lower quality and accuracy than anticipated. The absence of references and data sources in YouTube videos, coupled with the lack of a review process to assess information reliability, has prompted researchers to question the academic competency of YouTube videos.<sup>3,12-16</sup>

Furthermore, the fact that videos uploaded by academic professionals and published after academic review on WebSurg could indicate potentially higher quality and reliability of education. Moreover, published studies have emphasized that videos uploaded by healthcare professionals are of elevated quality and are considered reliable.<sup>17,18</sup>

In our study, evaluations conducted regarding content quality and educational value revealed higher scores for videos on the WebSurg platform. This disparity can be attributed to WebSurg's provision of unique and comprehensive content, including videos and educational materials produced by experts. In light of these findings, a study conducted in 2020 examined 50 inguinal hernia surgery videos on the YouTube platform. The results elucidated that online surgical videos on YouTube are not reliable sources for demonstrating best practices in minimally invasive inguinal hernia repairs.<sup>19</sup> Furthermore, in another study that assessed videos on the WebSurg platform concerning parathyroid surgery,

it was determined that while these videos do assist surgeons in incrementally learning the procedure prior to performing the surgery, they nonetheless fall short of meeting expected quality standards.<sup>20</sup> A similar trend was observed in a study focused on sleeve gastrectomy operations. In that study as well, the challenges of meeting stringent academic publishing criteria on YouTube, given its open-access nature, were emphasized. Furthermore, it was noted that WebSurg videos attained higher DISCERN, JAMA, and GQS scores compared to YouTube videos. This difference might stem from WebSurg's emphasis on delivering more academic content.<sup>21</sup>

When comparing full-length and edited/abbreviated surgical videos that encompass the entirety of the surgical procedure, significant differences emerge between the YouTube and WebSurg platforms. The comparative analysis of these two categories reveals pronounced distinctions in GQS, JAMA, modified DISCERN, and LAP-VEGaS evaluation scores. Full-length videos tend to receive higher scores based on these evaluation criteria.

In a study examining videos of the Total Extraperitoneal Hernia (TEP) technique on the WebSurg platform, a positive correlation was observed between video publication duration, video duration, and video popularity. However, no significant correlation was found between educational and surgical technical quality scores. These findings underscore the intricate interplay between video duration, popularity, and educational quality.<sup>22</sup>

In response to this, the findings from our study demonstrate that full-length videos, due to their comprehensive coverage of the entire surgical procedure, have the potential to better showcase various challenges encountered during the operation and better prepare the viewer. Significantly, the comprehensive portrayal of each procedural phase in full-length videos offers viewers an authentic understanding of the surgical process, catering to those striving to grasp and evaluate diverse operation facets. Conversely, edited or abridged videos may efficiently deliver concise information, yet at the expense of limiting opportunities for thorough learning.

This study bears limitations; our evaluations might be deemed surface-level due to the lack of a dedicated tool for topic-specific video analysis. Furthermore, being conducted by a single surgeon, divergent assessments by varied healthcare experts could yield disparate outcomes. In conclusion, this pioneering study juxtaposes WebSurg and YouTube videos in laparoscopic hernia surgery education, with WebSurg showcasing superior content quality. These findings underscore the pivotal role of platform selection in medical education, with potential implications for enhanced surgical training.

## CONCLUSION

This study presents the first comparison of WebSurg and YouTube videos within the realm of laparoscopic hernia surgery education. The outcomes indicate that WebSurg delivers superior content quality. These findings emphasize the critical role of platform selection in medical education, potentially augmenting the refinement of surgical training.

## ETHICAL DECLARATIONS

**Ethics Committee Approval:** Because no patient data was used and all videos are publicly accessible on YouTube and WebSurg, ethical approval wasn't required.

**Informed consent:** As this study solely utilized publicly accessible online videos and did not involve any direct interaction or data collection from human or animal subjects, the concept of informed consent was not applicable. The videos under examination were already shared on openly accessible platforms and did not involve the use of personal or sensitive information. Consequently, the study did not encompass the conventional process of obtaining informed consent from participants.

**Referee Evaluation Process:** Externally peer reviewed.

**Conflict of Interest Statement:** The authors have no conflicts of interest to declare.

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