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Assessment of the Educational Value and Technical Competence of Surgical Incision Repair Videos Shared on YouTube

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Abstract

Aim: This study aimed to evaluate the educational quality, reliability, and technical accuracy of surgical incision repair videos on YouTube and to investigate the influence of video source, country of origin, and content characteristics on overall quality scores.

Materials and Methods: All videos were independently assessed by two researchers using four validated scoring systems: the Journal of the American Medical Association (JAMA) criteria, modified DISCERN, Global Quality score (GQS), and objective structured assessment of technical skills (OSATS). Video popularity was calculated using the video power index. Statistical analyses were conducted using the Mann-Whitney U test, Spearman's correlation analysis, and ROC curve evaluation, with statistical significance set at $p<0.05$.

Results: According to the DISCERN classification, 48.5% of videos were of very poor quality, while 12.1% were categorized as good quality. Institutional videos achieved significantly higher scores across all evaluation systems compared with individual uploads ($p<0.05$). Videos with spoken narration received higher scores for educational and technical quality than silent videos. Content originating from the United States had significantly higher JAMA, GQS, and DISCERN scores than content from other countries ($p<0.05$). Positive correlations were identified between OSATS scores and JAMA ($r=0.315$), GQS ($r=0.782$), and DISCERN ($r=0.702$) scores.

Conclusion: The overall educational quality of YouTube videos on surgical incision repair was moderate. Institutional and narrated videos yielded significantly higher quality scores, underscoring the importance of academic oversight and structured content development. Although YouTube represents a valuable supplementary tool for surgical education, standardization and scientific regulation are essential to ensure educational reliability.

Keywords: Surgical incision repair, educational quality, JAMA, modified DISCERN, Global Quality score, OSATS, video power index

Introduction

Surgical incision repair is a fundamental skill that directly influences wound healing, infection risk, and aesthetic outcomes. Optimal repair requires adherence to basic surgical principles, including appropriate suture selection, balanced tissue tension, elimination of dead space, and minimization of tissue trauma (1,2). Consequently, acquiring proper incision repair technique constitutes an essential component of surgical education for medical students and residents.

The rapid digital transformation in medical education has increased the use of online video platforms as supplementary learning tools. YouTube, being freely accessible and visually rich, has become one of the most frequently used platforms for observing surgical techniques. However, the uncontrolled nature of user-generated content raises concerns regarding the accuracy, reliability, and educational adequacy of such videos (3-5).

To objectively evaluate online surgical content, several validated scoring systems have been introduced. The Journal of the American Medical Association (JAMA) criteria, the Global Quality score (GQS), and the modified DISCERN instrument assess the reliability and completeness of medical information (6,7). Furthermore, the objective structured assessment of technical skills (OSATS) has been utilized to evaluate the technical quality of surgical performance in video format (8). Prior studies have consistently demonstrated that videos produced by academic or institutional sources receive higher quality scores, whereas individually uploaded content

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often lacks accuracy and completeness (9-11). These findings emphasize the need for standardized and structured evaluation of surgical educational videos.

The urgency of wound care underscores the critical role of both emergency departments and general surgery services in the timely management of acute injuries. Emergency physicians are often the first clinicians to assess traumatic or surgical wounds, and their initial decisions regarding incision, exploration, and early repair have direct consequences for infection control, functional recovery, and cosmetic outcomes. General surgeons subsequently provide definitive management and ensure that repair techniques adhere to established surgical principles.

The present study aims to assess the educational quality, reliability, and technical accuracy of videos of surgical incision repair available on YouTube. Additionally, the effects of video source (institutional vs. individual), country of origin, and presentation style on video quality scores were examined. The findings are intended to contribute to the growing body of literature on digital surgical education and highlight the need for scientifically supervised, high-quality online instructional content.

Materials and Methods

Video Selection

A comprehensive video search was conducted on the YouTube platform on September 10, 2025. To ensure methodological reproducibility, each keyword was searched separately, and the first 50 results for each keyword were recorded. In total, 250 videos (5 keywords × 50 results each) were initially screened. The keyword set-"surgical incision," "scalpel handling," "tissue dissection," "surgical cutting techniques," and "safe cutting in surgery"-was deliberately selected to encompass the entire spectrum of surgical steps that directly precede or accompany incision repair. Although the study primarily focused on incision repair, videos demonstrating incision techniques were generally uploaded under broader surgical skill categories such as instrument use, tissue dissection, or general surgical cutting.

Duplicate and Irrelevant Video Elimination

All 250 initial videos were exported into a screening spreadsheet. Duplicates were identified by matching identical uniform resource locators, identical uploader names with repeated titles, and algorithmically overlapping videos across different keyword searches.

Irrelevant videos were excluded based on their title, description, and the first 60 seconds of content. Videos were removed if they did not include any live, cadaveric, or simulated incision or dissection step; consisted solely of animations without procedural depiction; focused exclusively on postoperative wound care or complications; or included advertisements, promotional content, or non-instructional material. After this multistep elimination, 66 videos met the predefined criteria and were included in the final analysis.

Inclusion and Exclusion Criteria

Inclusion Criteria Were:

1. Videos demonstrating step-by-step surgical incision or related dissection techniques, (justification added: Incision repair cannot be evaluated independently of the preceding incision technique; poor incision may influence subsequent repair quality).

2. Visual resolution ≥480p to ensure evaluable technical detail,

3. Real surgery, cadaveric, animal model, or validated simulation footage,

4. Availability of English narration or subtitles for accurate interpretation of procedural intent and terminology.

Exclusion Criteria Were:

1. Promotional, humorous, or entertainment-oriented content,

2. Videos dedicated solely to postoperative care or complication management,

3. Videos with insufficient audio/visual quality preventing technical assessment,

4. Repetitive uploads from the same uploader to prevent content duplication bias.

Data Collection

For each video, the following parameters were recorded:

- Title, duration, upload date, number of views and likes,
- Video source: institutional (university, hospital, surgical society) or individual (surgeon, student, general user),
- Country of origin (United States, Türkiye, others),
- Type of presentation (spoken narration, silent, or subtitled).

The country of origin for each video was determined using a multi-step verification protocol. First, the uploader's profile information was examined, including self-declared institutional affiliation, professional designation, and geographic details. Channel metadata, such as language, institutional logos, and linked websites, was also reviewed. When this information was unclear, cross-verification was performed using publicly available data regarding the affiliated institution or surgeon featured in the video, official web pages linked to the YouTube channel, and

professional registry records, when applicable. If none of these sources provided reliable information, the video was classified as "others/not identifiable" to avoid misclassification bias.

All videos were independently assessed by two reviewers. In cases of scoring discrepancies, reviewers discussed the differences and reached agreement; because consensus-based final scores were used for statistical analyses, formal inter-rater reliability metrics could not be calculated. Each video was examined for the appropriateness of the surgical incision technique, including incision line planning, scalpel handling, tissue tension management, hemostasis, and tissue preservation.

Video Quality Assessment Systems

Each video was evaluated using four validated scoring systems:

1. JAMA criteria:

Comprising four parameters-authorship, attribution, disclosure, and currency-each assigned one point, with a maximum possible score of 4.

2. Modified DISCERN:

A five-question instrument assessing information reliability and content integrity. Each "yes" response was assigned 1 point, and each "no" response was assigned 0 points, yielding a maximum score of 5.

3. GQS:

A five-point scale evaluating overall flow, informativeness, and educational value, where 1 indicates poor and 5 indicates excellent quality.

4. OSATS:

Used to evaluate technical performance across five criteria:

- Scalpel handling,
- Tissue manipulation,
- Field of vision control,
- Hemostasis management,
- Safety and surgical planning.

Each item was rated from 1 to 5, with a maximum possible score of 25.

For technical evaluation, we used a video-adapted version of the OSATS. The selected OSATS domains—scalpel handling, tissue manipulation, field-of-vision control, hemostasis, and safety/surgical planning—represent components that can be objectively assessed from recorded videos rather than by real-time observation. Both reviewers were trained general surgeons with experience in surgical skills education. These surgeons independently assigned OSATS scores before reaching a consensus.

The mean total score obtained from these four systems was recorded as the overall video quality indicator.

Popularity Analysis

The duration, title, number of views, time elapsed since upload, viewing rate (views/day), number of comments, number of likes and number of dislikes, and like ratio [likes × 100 / (likes + dislikes)] were recorded for each video. Video popularity was assessed using the video power index (VPI), a standardized indicator of user engagement and visibility on the platform. The VPI was calculated using the formula: (like ratio × viewing rate) / 100, which incorporates the number of views, likes, and comments.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics version 27.0 (IBM Corp., Armonk, NY, USA). Continuous variables were expressed as median and interquartile range (IQR), while categorical variables were presented as percentages (%). Comparisons between two groups (e.g., institutional vs. individual videos) were performed using the Mann-Whitney U test. Correlations between video quality metrics were analyzed using the Spearman's correlation test. A p-value <0.05 was considered statistically significant.

Results

Quantitative data for YouTube videos are presented in Table 1 as median and IQR. YouTube Global score (2069.5 (1509.2-2069.5), subscribers (5670 (196.7-70575), likes [(222.5 (23.2-2500)], views [33001.1 (1618.7-239.682)], video duration [5.1 (2-8.7)], JAMA [1 (1-2)], GQS [3 (2.7-4)], DISCERN [2 (1-3)], OSAST [3 (2.7-3)], viewing rate [6.9 (1.2-48.2)], like ratio [0.07 (0.01-0.4)].

According to the DISCERN classification, 48.5% (32) of the videos were of very poor quality, 21.2% (14) were of poor quality, 18.2% (12) were of medium quality, and 12.1% (8) were of good quality. No videos of excellent quality met the validation criteria for this classification. According to the OSATS classification, 10.6% (7) of the videos were rated as low technical quality, 13.6% (9) as medium quality, 53% (35) as good quality, and 22.7% (15) as excellent quality.

When videos were categorised as corporate or individual, the numbers of subscribers and likes, and the JAMA, GQS, DISCERN, and Osast scores were statistically significantly higher for corporate videos. ($p=0.006$, $p=0.007$, $p=0.016$, $p=0.002$, $p=0.004$, $p=0.001$)

The videos were divided into two groups based on whether they contained spoken narration. The group containing spoken narration had statistically significantly higher values for subscriber count, like count, view count, video duration, and JAMA, GQS, DISCERN, and OSATS scores compared to the other group. (p=0.012, p=0.005, p=0.019, p=0.004, p=0.014, p=0.001, p=0.001, p=0.001)

The JAMA, GQS, and DISCERN scores for trending videos in the USA were significantly higher (p=0.032, p=0.001, and p=0.02).

When correlation analysis was performed using the OSATS Monitoring index and the JAMA, GQS, and DISCERN classifications, all indices showed a positive correlation with OSATS. The correlation analyses are presented in Table 2. When ROC analysis was performed with corporate and individual loaders using the JAMA, GQS, DISCERN, and OSATS scoring indices, the highest sensitivity (84.1%) was observed in corporate loaders with OSATS, followed by DISCERN (72.7%), GQS (61.4%), and JAMA (47.7). (Table 3, Figure 1)

Table 1. Quantitative data for YouTube videos: median and interquartile range

	MEDIAN	IQR	
		25%	75%
NDRA	2069.5	1509.2	2069.5
Subscriber	5670	196.7	70575
Likes	222.5	23.2	2500
View	33001.1	1618.7	239.682
Video duration	5.1	2	8.7
JAMA	1	1	2
GQS	3	2.7	4
DISCERN	2	1	3
OSAST	3	2.7	3
Viewing rate	6.9	1.2	48.2
Like ratio	0.07	0.01	0.4

NDRA: Number of days it remained on air, JAMA: Journal of American Medical Association, GQS: Global Quality score, OSAST: Objective structured assessment of technical skills

Table 2. Correlation analysis between the OSATS Monitoring index and the JAMA, GQS, DISCERN classifications

		r	p
JAMA	OSATS	0.315*	0.01
GQS		0.782**	0.001
DISCERN		0.702**	0.001

*: Low, **: High, JAMA: Journal of American Medical Association, GQS: Global Quality score, OSAST: Objective structured assessment of technical skills

Discussion

In this study, we evaluated the educational quality, reliability, and technical accuracy of surgical incision repair videos on the YouTube platform. Overall, the moderate JAMA, modified DISCERN, GQS, and OSATS scores indicate that, although many videos provide basic instructional content, they often lack the depth, structure, and standardization expected in formal surgical education.

Consistent with prior research, institutional videos demonstrated significantly higher quality scores than individual uploads. Similar findings have been reported in studies assessing sleeve gastrectomy, laparoscopic prostatectomy, and resuscitation-related videos, where academic or professionally produced content consistently received higher scores on established quality indicators (7,9,12). These results underscore the continued influence of content source reliability on educational accuracy and completeness.

Our findings also showed that videos originating in the United States had higher overall quality and viewership metrics than those from other countries, which aligns with previous literature suggesting that North American and European institutions tend to produce more structured, professionally edited surgical videos (13). Nevertheless, the influence of geographic origin should be interpreted cautiously, as cross-country comparisons remain relatively limited in the current literature.

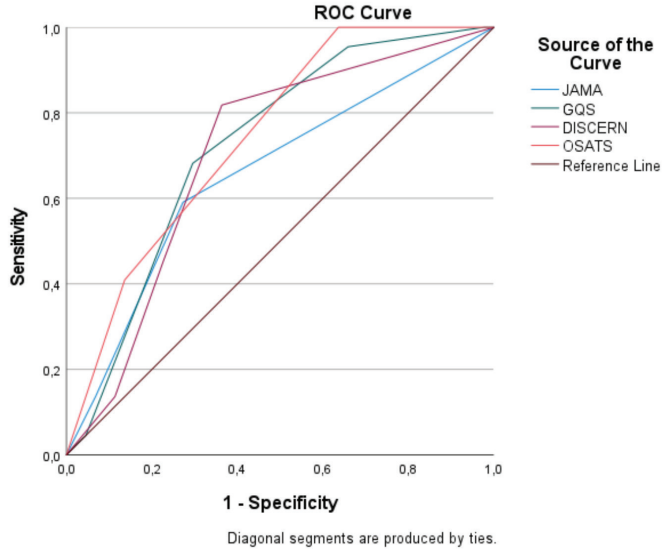

Figure 1. ROC graph according to JAMA, GQS, DISCERN, and OSATS scoring indices with corporate and individual loaders

JAMA: Journal of American Medical Association, GQS: Global Quality score, OSAST: Objective structured assessment of technical skills

Table 3. ROC analysis according to JAMA, GQS, DISCERN, and OSATS scoring indices for institutional and individual uploaders						
	AUC	**p value**	**Cutoff**	**Sensitivite**	**Spesifite**	**Youden index**
JAMA	0.66	0.035	1.5	47.7	81.8	0.295
GQS	0.803	0.001	3.5	61.4	95.5	0.568
DISCERN	0.839	0.001	1.5	72.7	90.9	0.636
OSATS	0.735	0.002	2.5	84.1	40.9	0.25
JAMA: Journal of American Medical Association, GQS: Global Quality score, OSAST: Objective structured assessment of technical skills, AUC: Area under the curve						

The moderate OSATS scores further highlight gaps in the technical accuracy of many videos. Suboptimal demonstrations of incision execution, scalpel handling, tissue manipulation, and hemostasis management may mislead inexperienced trainees and reinforce improper techniques. Although the LAP-VEGaS guidelines provide a structured framework for high-quality surgical video reporting (8), adherence appears limited among publicly available videos. Similar observations have been made in studies examining suturing, knot-tying, and instrument-handling videos, in which a substantial proportion of the content was found to be technically inadequate (12,14).

Another noteworthy finding was the lack of a strong correlation between popularity metrics, such as the VPI, and educational or technical quality. Videos with lower quality scores often received high view counts, reflecting a discrepancy between viewer engagement and scientific accuracy. Previous studies have similarly reported that popularity on YouTube does not necessarily reflect educational value (4,15).

Overall, the results of this study support the growing consensus that YouTube can serve as a complementary tool for surgical training; however, its lack of peer review, standardization, and quality control continues to limit its reliability as a stand-alone educational resource. Further efforts by academic institutions to develop and disseminate high-quality, peer-reviewed educational videos are essential for improving the pedagogical value of online surgical content (16,17).

Study Limitations

This study has several limitations. First, although searches were performed in incognito mode to minimize bias, YouTube's search algorithm is dynamic and personalized, and variations in displayed content cannot be fully eliminated. Second, restricting the analysis to English-language videos may have excluded potentially valuable content in other languages and may have limited the generalizability of the findings. Third, although a video-adapted OSATS approach was used, OSATS was originally developed for real-time observation, and certain nuances of technical performance may not be fully captured in recorded footage. Fourth, despite independent evaluations by two reviewers, subjective bias cannot be entirely excluded; because consensus scoring was applied, formal inter-rater reliability calculations could not be performed. Fifth, YouTube metadata such as likes, views, and comments are user-generated, non-standardized, and susceptible to external influences, which may limit the interpretability of these popularity metrics.

Conclusion

Finally, the rapidly evolving nature of YouTube content means that video availability and engagement statistics may change over time.

Ethics

Ethics Committee Approval: This study included only YouTube videos and did not involve any patient data or interventional procedures; therefore, ethical committee approval was not required.

Informed Consent: The study did not involve direct patient participation or the use of identifiable patient data; therefore, informed consent was not obtained.

Footnotes

Financial Disclosure: The author declared that this study received no financial support.

References

1. Baranoski, Sharon, and Elizabeth A. Ayello. Wound care essentials: practice principles. Lippincott Williams & Wilkins, 2008.
2. Singer AJ, Dagum AB. Current management of acute cutaneous wounds. N Engl J Med. 2008;359:1037-46.
3. Azer SA. Can "YouTube" help students in learning surface anatomy? Surg Radiol Anat. 2012;34:465-8.
4. Rapp AK, Healy MG, Charlton ME, Keith JN, Rosenbaum ME, Kapadia MR. YouTube is the most frequently used educational video source for surgical preparation. J Surg Educ. 2016;73:1072-6.
5. Maziriri ET, Gapa P, Chuchu T. Student perceptions towards the use of YouTube as an educational tool for learning and tutorials. 2020;13:119-38.
6. Rössler B, Lahner D, Schebesta K, Chiari A, Plöchl W. Medical information on the ınternet: quality assessment of lumbar puncture and neuroaxial block techniques on YouTube. Clinical Neurology and Neurosurgery. 2012; 114:655-8.

7. Arslan B, Gönültaş S, Gökmen E, Özman O, Onuk Ö, Yazıcı G, et al. Does YouTube include high-quality resources for training on laparoscopic and robotic radical prostatectomy? World J Urol. 2020;38:1195-9.
8. Celentano V, Smart N, McGrath J, Cahill RA, Spinelli A, Obermair A, 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.
9. Ferhatoğlu MF, Kartal A, Filiz Aİ, Kılıç A, Aydın MT. Evaluation of the reliability, utility, and quality of the information in sleeve gastrectomy videos shared on open access video sharing platform YouTube. Obes Surg. 2019;29:1477-84.
10. Erdem MN, Karaca S. Evaluating the accuracy and quality of the ınformation in kyphosis videos shared on YouTube. Spine (Phila Pa 1976). 2018;43:E1334-E1339.
11. Kerrey BT, Rinderknecht AS, Geis GL, Nigrovic LE, Mittiga MR, Fine AM, et al. Rapid sequence intubation for pediatric emergency patients: higher frequency of failed attempts and adverse effects found by video review. Ann Emerg Med. 2012;60:251-9.
12. Bochenska K, Milad MP, Santoro N, Twidale E, McGuire J, Ferris D. Instructional video and medical student surgical knot-tying proficiency: randomized controlled trial. JMIR Med Educ. 2018;4:e9.
13. Pratsinis M, Abt D, Müllhaupt G, Langenauer J, Knoll T, Schmid HP, et al. Systematic assessment of information about surgical urinary stone treatment on YouTube. World J Urol. 2021;39:935-42.
14. Kaya HD, Dinç H, Yıldız H, Kızılkaya Beji N. Content analysis and quality evaluation of YouTube videos on Leopold's Maneuvers: a mixed-method study. Education and Information Technologies. 2025:1-20.
15. Pavuloori M, Lin A, Mi M. Tools/instruments for assessing YouTube videos on surgical procedures for patient/consumer health education: a systematic review. Front Public Health. 2025;13:1575801.
16. Manchikanti L, Benyamin RM, Falco FJE, Hirsch JA. Evidence-based medicine, systematic reviews, and guidelines in interventional pain management: part 6. Systematic reviews and meta-analyses of observational studies. Pain Physician. 2009:819.
17. Akdemir E, Ateş M, Özcan C, Koç G, Gökçe Mİ, Hamidi N. Educational quality of YouTubeTM videos on laparoscopic radical prostatectomy. J Laparoendosc Adv Surg Tech A. 2025;35:373-8. Epub 2025 Mar 21.