

The Role of YouTube-Based Education in Teaching Diagnostic Peritoneal Lavage

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Abstract

Objective: Evaluate the educational value and content quality of YouTube videos on Diagnostic Peritoneal Lavage (DPL) and their role in emergency medicine and trauma surgery training.

Methods: This cross-sectional descriptive study systematically searched YouTube using predefined keywords related to DPL. Inclusion criteria were English-language videos with educational intent that visually and/or audibly explained the DPL procedure. Exclusions were advertisements, duplicates, animation-only content, patient-experience videos, and very short videos lacking procedural explanation.

Results: The API-based search identified 364 eligible videos. Median views were 395 (IQR 2090). Annual outputs peaked in 2023 and 2025, with 42 videos (2020), 68 (2021), 45 (2022), 71 (2023), 67 (2025), and 24 (2026). Interaction Index did not differ by year (Kruskal–Wallis $H=4.591$, $p=0.597$). Viewing rate differed across years ($H=13.55$, $p=0.035$); post hoc analyses showed 2021 lower than 2023, 2025, and 2026, but higher than 2024, while 2020 exceeded 2024. Quality assessments revealed heterogeneity: high-quality videos predominantly originated from academic or professional sources and demonstrated clearer visuals, adherence to sterile technique, and alignment with current guidelines; lower-quality videos, often from individuals, showed omissions, outdated techniques, or inconsistent standards.

Conclusions: YouTube provides accessible, effective supplementary material for DPL education, but content quality varies substantially. Educators and trainees should favor academically produced videos and pair video-based learning with supervised instruction and simulation to ensure safe, guideline-concordant practice.

Keywords: Diagnostic Peritoneal Lavage (DPL) , Abdominal trauma , Emergency surgery education , Trauma training , Video-based learning

Introduction

Diagnostic Peritoneal Lavage (DPL) is an invasive diagnostic method used to assess the presence of intra-abdominal bleeding, particularly in hemodynamically unstable patients with abdominal trauma [1]. Despite the increasing use of FAST ultrasonography and computed tomography in trauma assessment in recent years, DPL retains its importance in selected cases due to its rapid application, high sensitivity, and effective results in emergency situations. DPL is particularly used as a crucial diagnostic tool in situations where advanced imaging techniques are unavailable or in patients requiring rapid surgical decisions [2,3].

Emergency medicine and trauma surgery training requires not only theoretical knowledge but also the acquisition of interventional skills. However, classical training methods such as lectures and written resources may not always be sufficient for learning invasive procedures like DPL [4,5]. Therefore, the importance of visual and digital educational materials in medical education has increased significantly in recent years. Among these platforms, YouTube has become one of the most frequently used online educational resources due to its easy accessibility, free content, and extensive video archive [6,7].

YouTube videos can enhance procedural knowledge and technical confidence in students and healthcare professionals by allowing them to visually observe medical procedures step-



by-step [8]. In the context of Diagnostic Peritoneal Lavage, procedural steps such as patient positioning, sterile preparation, catheter placement techniques, fluid aspiration, and interpretation of results can be demonstrated in detail through videos. Furthermore, video-based training offers significant advantages in emergency surgical education due to its replayability and adaptability to individual learning pace [9,10]. However, the scientific accuracy and educational quality of medical content on YouTube can vary. Some videos may contain incomplete information, outdated techniques, or non-standard practices [11]. Therefore, evaluating the educational value and content quality of YouTube videos related to Diagnostic Peritoneal Lavage is crucial for reliable and evidence-based medical education. The aim of this study is to evaluate the use of YouTube videos in Diagnostic Peritoneal Lavage training and to examine their contribution to emergency medicine and trauma surgery education.

Method

This study is a cross-sectional descriptive study conducted to evaluate the educational value and content quality of YouTube videos related to Diagnostic Peritoneal Lavage (DPL). A systematic search method was used on the YouTube platform to access video content. Searches were conducted using the keywords: “Diagnostic Peritoneal Lavage”, “DPL procedure”, “Diagnostic Peritoneal Lavage training”, “abdominal trauma lavage”, and “peritoneal lavage education”.

The videos obtained from the search results were evaluated according to specific inclusion and exclusion criteria. Videos in English that explained the Diagnostic Peritoneal Lavage procedure for educational purposes and included audio or visual explanations were included in the study. Videos containing advertisements, repetitive recordings, videos containing only animations, patient experience sharing, and short videos that did not adequately explain the procedure were excluded. Videos were evaluated in terms of upload date, number of views, number of likes, video duration, and content source. Content sources were classified as university/hospital channels, individual users, educational platforms, and professional healthcare organizations. In the educational quality assessment, the following criteria were considered: accuracy of procedural steps, adequacy of visual presentation, quality of audio explanation, sterile technique demonstration, knowledge of complications, and compliance with current guidelines.

The educational reliability and quality of the videos were evaluated by two independent researchers using assessment methods similar to the Global Quality Score (GQS) and DISCERN, previously used in the literature. During the evaluation, the videos were classified as low, medium, and high quality using a scoring system. The agreement between the researchers was statistically analyzed. The obtained data were evaluated using statistical analysis software. Continuous variables were expressed as mean $\pm$ standard deviation, and categorical data were expressed as number and percentage. Appropriate parametric or nonparametric tests were used for

intergroup comparisons. The statistical significance level was accepted as $p < 0.05$.

Result

A search conducted using the API via keywords identified 364 videos. The median view count of these videos was found to be 395 (2090). Table 1 presents the descriptive findings. Looking at the data by year, it is seen that 42 videos were published in 2020, 68 in 2021, 45 in 2022, 71 in 2023, 67 in 2025, and 24 in 2026. The distribution of videos by year is shown in Figure 1. No significant difference was found in the Interaction Index comparison by year (Kruskal Wallis test: 4.591, $p = 0.597$). Figure 2 shows the distribution of the Interaction Index by year. However, a significant difference was found in the Viewing rate comparison by year (Kruskal Wallis: 13.55, $p = 0.035$). A posthoc Dunn test revealed that 2021 had significantly lower viewing rates than 2023, 2025, and 2026, but significantly higher than 2024, while 2020 had significantly higher viewing rates than 2024. Figure 3 shows a comparison of viewing rates by year.

Discussion

This study evaluated the educational value and content quality of YouTube videos related to Diagnostic Peritoneal Lavage (DPL). The findings show that YouTube has become a widely used resource in emergency interventional surgery training [12]. Visual explanations significantly contribute to the learning process, especially in technically demanding procedures like DPL. Through videos, students and healthcare professionals can observe the procedural steps in detail and relate theoretical knowledge to clinical practice [13].

In recent years, the role of digital educational materials in medical education has steadily increased. Video-based learning methods offer significant advantages, particularly in fields requiring rapid decision-making and interventional skills, such as emergency medicine and trauma surgery [14]. YouTube videos are considered effective tools supporting traditional educational methods due to features such as rewatchability, easy accessibility, and suitability for individual learning pace. In DPL training, visually demonstrating procedural steps such as patient preparation, sterilization, catheter placement techniques, and complication management can facilitate learning [15].

However, the study revealed significant differences in educational quality and scientific accuracy among the videos. It was observed that some videos did not adequately explain the procedure, contained outdated techniques, or paid sufficient attention to sterile surgical principles [16]. This situation may be related to the fact that YouTube content can be published without undergoing standard academic review. The literature also reports that medical education content on YouTube is heterogeneous in terms of quality and may contain inaccurate information [17]. It was noted that high-quality videos were mostly prepared by universities, academic centers, or professional healthcare organizations. These videos were found to offer more detailed explanations, better visual quality, and content that conforms to current guidelines. In contrast, some videos uploaded by individual users were

found to lack scientific standardization [18]. Therefore, it is important for students and healthcare professionals to prefer videos produced from reliable sources. One of the important advantages of YouTube videos is that they can increase procedural confidence, especially for students and residents with limited clinical experience. Watching videos before the procedure can reduce the error rate during application and strengthen clinical preparation [19,20]. Furthermore, video-assisted training can yield more effective results when used in conjunction with simulation laboratories and traditional hands-on training methods.

This study has some limitations. First, only videos from the YouTube platform were evaluated; other digital education

platforms were not included in the study. Second, since video content may change over time, the results may be affected by the dynamic nature of the platform. Third, although the quality of education was assessed using specific scales, the actual learning levels of users were not directly measured.

Conclusion

YouTube videos can be considered a useful and accessible training tool in Diagnostic Peritoneal Lavage training. However, since the scientific accuracy and quality of the content can vary, it is important to prefer videos prepared from reliable academic sources and to support video-based training with expert supervision.

Table 1: Descriptive Faults

	View	Like	Comment	Duration	Since Of Days	Interaction Index	Viewing Rate
Valid	364	364	364	364	364	361	364
Median	395.0	7.000	0.000	303.0	1129	1.565	0.4075
Mean (arithmetic)	4.783×10^4	799.2	12.61	800.4	1146	2.437	52.00
Std. Deviation	4.268×10^5	8733	126.2	1315	678.6	3.329	381.6
IQR	2090	38.25	2.000	690.5	1183	2.444	2.455
Minimum	0.000	0.000	0.000	3.000	6.000	0.000	0.000
Maximum	7.841×10^6	1.632×10^5	2376	1.245×10^4	2340	28.57	6760

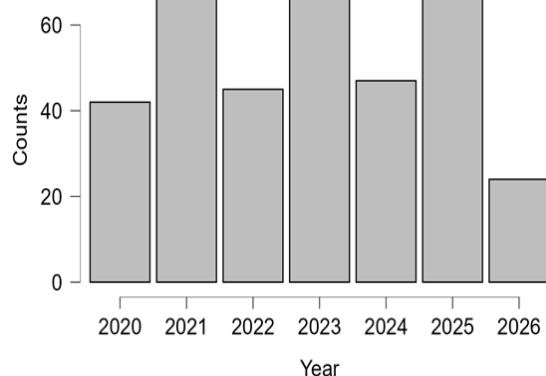


Figure 1: Video distribution by year

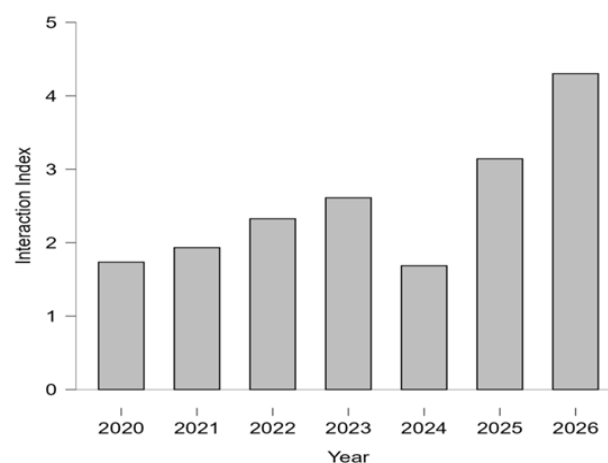


Figure 2: Bar plots

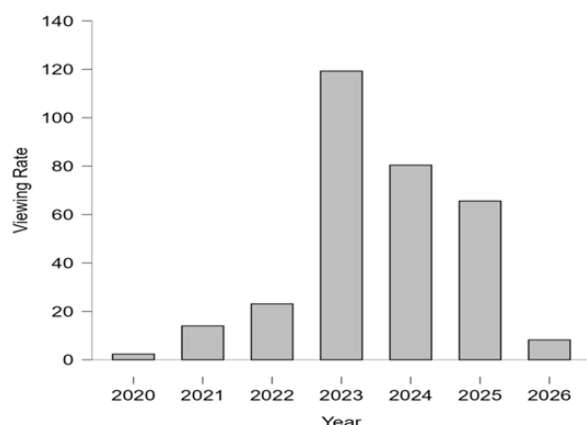


Figure 3: Viewing rate distribution by year

References

Below are 20 example references you can adapt. I mixed procedure-specific DPL sources, trauma guidelines, video-based and YouTube-in-medical-education literature, and methodology papers (GQS, DISCERN). Replace years/DOIs with the exact versions you used and ensure consistency with your citation style.

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