Quality and Bias Assessment of Robotic General Surgery YouTube Videos

Sean J. Halloran BS[1], Jacob Chinthagada[1], Aaron Grau[1], Christopher W. Towe[2], Joseph J. Sferra[1,3]

[1]The University of Toledo College of Medicine and Life Sciences, [2]University Hospitals Cleveland Medical Center and Case Western Reserve School of Medicine, Department of Surgery, Division of Thoracic and Esophageal Surgery, [3]Department of Surgery, ProMedica Health System, Toledo, Ohio

COLLEGE OF MEDICINE AND LIFE SCIENCES
THE UNIVERSITY OF TOLEDO

Background

Although YouTube is used by patients and providers for self-education, the quality of content is variable. We hypothesized that robotic general surgery videos on YouTube would be poor quality and vary by procedure type.

Methods

Three robotic general surgery procedures were assessed for educational quality on YouTube: "Robotic Inguinal Hernia Repair", "Robotic Ventral Hernia Repair", and "Robotic Cholecystectomy". The top 20 videos for each procedure were scored using the DISCERN criteria for education content.

15 criteria were scored to generate a total DISCERN score (DS), which was further categorized as:

- very poor(15-26)
- poor(27-38)
- fair(39-50)
- very good(51-62)
- excellent(63-75)

Multivariable analysis of DS was performed, which adjusted for video length, number of views, and procedure type.

Results

Among the videos reviewed, robotic cholecystectomy had the most views (13,913,717) and robotic ventral hernia repair had the fewest views (1,502,569). All procedure types were associated with "poor" DS scores: robotic inguinal hernia repair 33.4, robotic ventral hernia repair 29.3, and robotic cholecystectomy 27.5. The DS did not vary between the groups (p=0.054). Bias score was consistently low between groups (p=0.348). In a multivariate model of DS, there was no association between video length and DISCERN score, but robotic inguinal hernia repair procedure type was associated with higher DS.

Figure 1

Relationship of total DISCERN score to number of video views

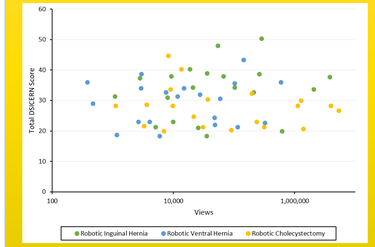


Figure 2

Relationship of total DISCERN score to video length (in minutes)

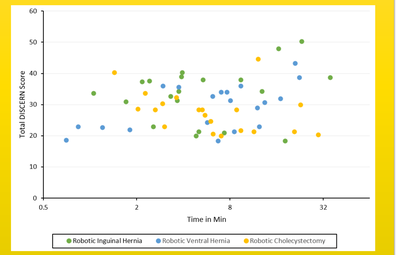


Table 1

Summary of Results by Procedure Type

Procedure type	Avg duration	Avg views	Discern score (median + IQR)	Discern score (mean)	Bias score (Median + IQR)	Bias score (Mean)
Robotic Inguinal Hernia	08:19	378,799	34.333 (27 – 38.333)	33.417	1.333 (1-1.333)	1.417
Robotic Ventral Hernia	08:25	75,128	31 (22.833 – 34.833	29.333	1.667 (1.333 – 2)	1.783
Robotic Cholecystectomy	08:24	695,686	28.333 (21.5 – 30.167)	27.65	1.5 (1-2)	1.683

Table 2

Multivariable Analysis of DISCERN Score with Procedure Type and Video Characteristics

	Coefficient	P>|t|	95% Conf. Interval
Time (minutes)	.293516	0.143	(-.0674841 - .4545162)
Views	2994.453	0.905	(-47104.16 - 53093.06)
Procedure type			
Robotic Inguinal Hernia Repair	-326337.8	0.388	(-1077529 - 424853.9)
Robotic Cholecystectomy	ref	ref	
Robotic Ventral Hernia Repair	-628564.8	0.053	(-1266177 - 9047.829)

Conclusions

Although widely available, YouTube content pertaining to robotic general surgery deliver poor educational information to patients and are frequently biased. Despite these findings, the top videos for common robotic general surgery procedures have been streamed over 22,000,000 views. There is an opportunity to improve educational value of YouTube content, which could enhance robotic general surgery education for patients prior to undergoing these common procedures.

References

1. *YouTube Statistics*. https://www.youtube.com/yt/press/statistics.html website.
2. Charnock D, Shepperd S, Needham G, Gann R. DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. J Epidemiol Commun Health 1999;53(2):105–11. https://doi.org/10.1136/jech.53.2.105. PMID: 10396471; PMCID: PMC1756830.
3. Zhang Y, Sun Y, Xie B. Quality of Health Information for Consumers on the Web. J Assoc Inf Sci Technol 2015;66:2071–84. https://doi.org/10.1002/asi.23311.
4. Balta C, Kazucuoglu M, Can Karacaoglu I. Evaluation of YouTube videos in video-assisted thoracoscopic pulmonary lobectomy education. J Laparoendosc Adv Surg Tech A 2020;30(11):1223–30. https://doi.org/10.1089/lap.2020.0140. Epub 2020 May 13. PMID: 32401615.