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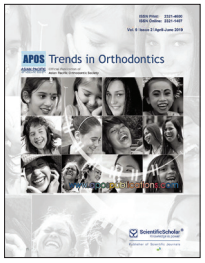

Original Article

Can social media tools be used as a reliable source of information about surgery-first approach?

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ABSTRACT

Objectives: The aim of this study was to evaluate the content and quality of videos and photos related to the surgery-first approach (SFA) process on YouTube™ and Instagram, one of the social media tools.

Materials and Methods: The online video hosting resource YouTube™ and photo hosting resource Instagram were analyzed on March 12, 2020, for photos and videos containing information relevant to SFA. The following three search terms were used in YouTube™: (1) Surgery first; (2) surgery-first approach; and (3) surgery first in orthognathic. The following two hashtags were analyzed in Instagram: #surgeryfirst and #surgeryfirstapproach. Twenty-four videos identified on YouTube™ on the subject of SFA and these videos analyzed with some measurements. A total of 884 videos identified on Instagram on the subject of SFA and these videos and photos analyzed with some measurements.

Results: #surgeryfirst and #surgeryfirstapproach hashtags posted by orthodontists or surgeons were had significantly more mean likes than shared by patients and clinics in Instagram. Interaction rate was 2.11 ± 1.01 and viewing rate was 431 ± 1021 in YouTube. YouTube video quality by type of video was comparatively assessed in terms of video and audio quality, and accuracy score. Videos analyzed by an oral and maxillofacial surgeon and an orthodontist and no differences were found.

Conclusion: The results of the study show that there is more sharing and data about SFA in Instagram; nevertheless, both YouTube™ and Instagram have now shown to be an insufficient source of information about the surgery-first approach for patients.

Keywords: Surgery first, YouTube, Instagram, Social media, Patient information

INTRODUCTION

Various dentofacial deformities can be treated with orthognathic surgery. Patients with dentofacial problems have many psychological problems such as lack of confidence. On the other hand, such deformities affect the patients quality of life. Orthognathic surgery is recognized as the mainstay of treatment for dentofacial deformities.[1] However, conventional orthognathic surgery needs presurgical orthodontics for a long time such as repairing the dental crowding, curve of Spee, and other orthodontic problems. In addition to prolonged pre-operative orthodontic treatment duration, other disadvantages of presurgical orthodontics include caries, serious root resorption, gingival recession, speech discomfort, and psychological problems.[2] Moreover, deterioration in the patients' facial profile during the presurgical orthodontic treatment has a negative impact on the quality of life.

Recently, the surgery-first approach (SFA) has been presented to solve the disadvantages of presurgical orthodontic treatment procedures.[2] SFA has some advantages, such as short total treatment time, early improvement of the facial profile, and establishment of a proper maxillomandibular relationship before orthodontic treatment. In the literature, researches have shown that patients enjoy great benefits of the surgery-first approach, such as improvement of the psychological rate, improved facial esthetics. Due to these advantages, popularity of the SFA is increased between the patients, surgeons, and orthodontists.[2]

Internet is widely used for getting information about health and its problems. Many websites provide excessive information, treatment plans, and experiences related to the health problems. Recent years, social media platforms are extensively used for advertising, providing personal experiences, new approaches, and health problems.[3]

YouTube™ is an online social media service founded in 2005. YouTube™ is accessible through a variety of media platforms and it is the third most frequently visited website on the Internet, after Google and Facebook. The presence of easily accessible websites that can provide online information to patients should theoretically allow them to make better-informed choices in relation to their health care.

One of the most popular social media networks, Instagram, has a valuable source of health information but misinformation or misdirection for patients becomes a serious problems for these social networks.[4] A variety of hashtags has started to appear in the Instagram for patients, specialists and they can discuss or provide their experiences, symptoms, or treatments. In the literature, few studies were performed on the relationship between the social media platforms and orthognathic surgeries.[5-7] However, SFA and its relations with social media are not evaluated.

The aim of this study was to evaluate the content and quality of videos and photos related to the surgery-first approach (SFA) process on YouTube™ and Instagram, one of the social media tools.

MATERIALS AND METHODS

The online video hosting resource YouTube™ (http:// www.youtube.com) was analyzed on March 12, 2020, for videos containing information relevant to SFA. The following three search terms were used: (1) Surgery first; (2) surgery-first approach; and (3) surgery first in orthognathic. Inclusion criteria for videos were as follows: (1) English language; (2) primary content related to SFA; and (3) acceptable audiovisual quality. Exclusion criteria were (1) non-English language.

The duration of the video, the number of views, and the likes and dislikes of these videos were recorded. Using this information, likes/dislikes ratio, number of comments, interaction index viewing rate, video quality, audio quality, and accuracy scores were calculated. Varity of the video contents and viewers of the videos listed in [Figure 1].

Each video was scored by an oral and maxillofacial surgeon and an orthodontist. Both scorers participated in the development of the customized scoring scheme and were familiar with the criteria for each score category. Numerical scores from the two scorers were averaged and final categories were chosen based on simple majority.

Posts on Instagram (www.instagram.com) with the hashtags "#surgeryfirst" and "#surgeryfirstapproach" were evaluated on March 12, 2020 [Figure 2]. Total number of "likes" and comments for the posts was categorized, as well as the type of posts (video and photograph), the date it was posted, its purpose. Furthermore, each post was recorded together with the information whether they were an orthodontist, surgeon, clinic, or patient. Comparison of Instagram characteristics of posts tagged with #surgeryfirst and #surgeryfirstapproach and comparison of hashtag number of likes and comments according to source of posts were analyzed.

Data were passed on by a researcher of this study in a Microsoft Excel (Microsoft, Inc., Redmond, WA) spreadsheet.

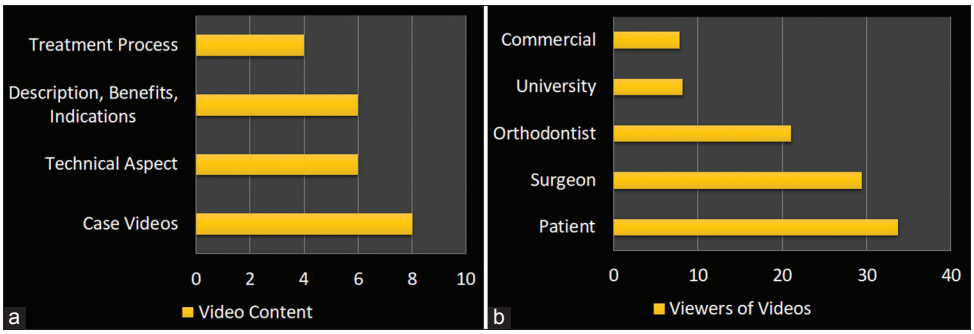

Figure 1: Histograms for each video, showing a list of video contents related to the surgery-first approach. (a) The number of views according to video source: 33.66% from patients (9123 views), 7.77% commercial (2106 views), 8.11% academic (2198 views), 29.43% surgeons (7977 views), and 21.03% orthodontist (5701 views) (b).

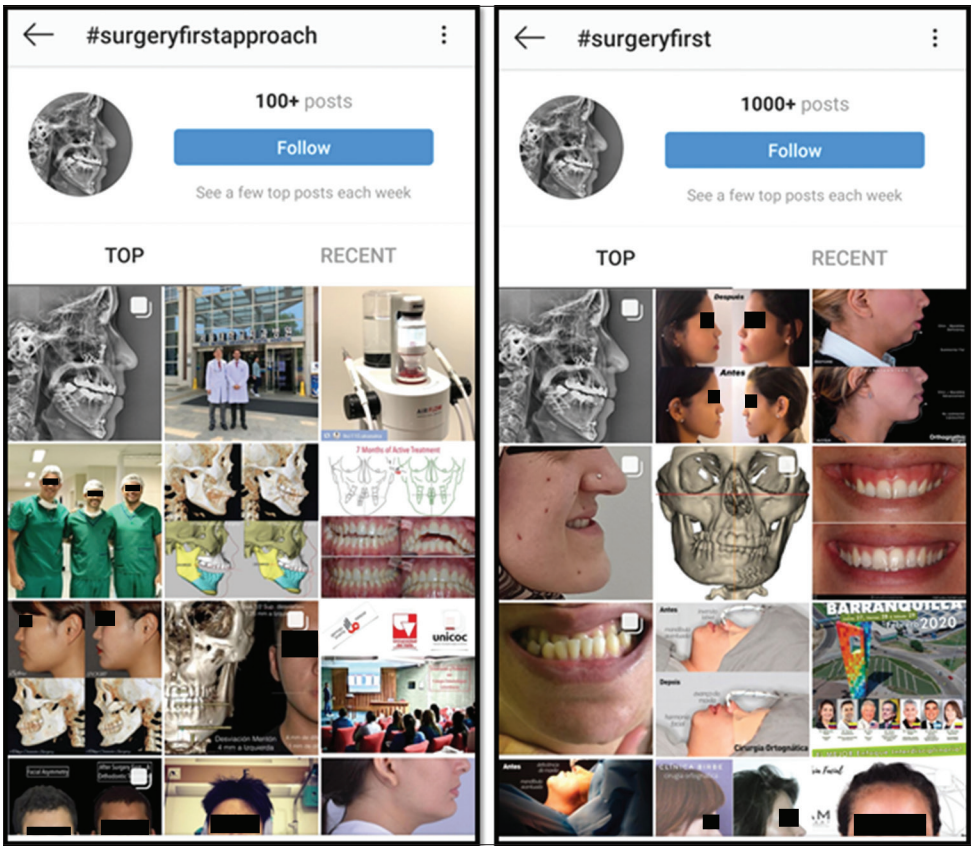

Figure 2: Results of the search terms #surgeryfirst and #surgeryfirstapproach on Instagram.

Descriptive statistics were performed for posts containing type of post, number of likes, number of comments, source of post, and purpose of posts.

Statistical analysis was done with IBM SPSS Statistics statistical software (version 21, IBM SPSS Statistics, Armonk, USA). Kruskal–Wallis test was performed to determine the differences between sources of posts. The significance level was set at 5%.

RESULTS

Twenty-four videos identified on YouTube™ on the subject of SFA [Figure 3]. The mean number of the views was calculated as 2129 ± 7631 with the minimum view as 39 and maximum as 11062 [Table 1]. The videos had a mean duration 2:59 ± 1:12 with a range of 0:31–13:07. Mean number of "likes" for each video was 182 ± 331 and mean number of "dislikes" was 2 ± 6. The most-liked video received 463 "likes." The most-disliked video received 9 "dislikes." Mean number of comments was 4 ± 3. Interaction rate was 2.11 ± 1.01 and viewing rate was 431 ± 1021 [Figure 4].

YouTube video quality by type of video was comparatively assessed in terms of video and audio quality, and accuracy score. Videos analyzed by an oral and maxillofacial surgeon and an orthodontist and no differences were found [Table 2].

A total of 738 posts were analyzed with the #surgeryfirst and 146 posts were listed as 3#surgeryfirstapproach. [Table 3] shows the number of likes, number of comments, and other descriptive characteristics of the posts. The posts with the #surgeryfirst included 590 photographs and 148 videos. As for their sources, 24 of them for commercial sharing, 91 of them were posted by patients, 101 by clinics, 208 by orthodontists, and 314 by surgeons. The posts about the #surgeryfirstapproach included 120 photographs and 26 videos. Our research showed that 93 of them were uploaded by surgeons, 2 by patients, 3 by clinics, 19 commercial sharing, and 29 by orthodontists.

#surgeryfirst and #surgeryfirstapproach hashtags posted by orthodontists or surgeons were had significantly more mean likes than shared by patients and clinics [Table 4]. Between the dislike, like, and comments among the groups, there are no statistically significant differences ($P > 0.05$).

DISCUSSION

To improve skeletal inconsistencies, malocclusion, function, facial, and smile esthetics, orthognathic surgery is required,

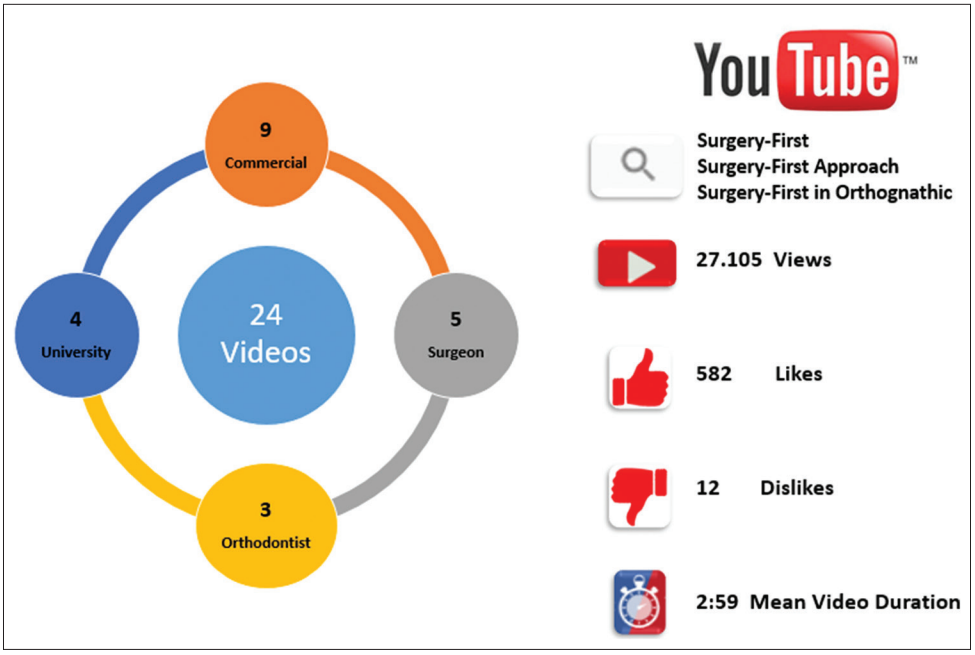

Figure 3: Video data.

$$\text{Interaction Index (\%)} = \frac{\text{Number of likes - Number of dislikes}}{\text{Number of views}} \times 100$$

$$\text{Viewing Rate (\%)} = \frac{\text{Number of views}}{\text{Number of days since upload}} \times 100$$

Figure 4: Calculation of the interaction index and viewing rate.

along with orthodontic treatment. In the traditional orthognathic surgical approach, surgery follows orthodontic treatment. The presurgical orthodontic treatment period, which includes alignment of tooth occlusion, reversal of the incisors, correction of dental rotation, and arc coordination, lasts 12–36 months depending on the complexity of the case and also continues for a period after surgery.[8]

In the past 10 years, surgery-first approach has started to be applied in some centers and has created wide interest. Surgery first is orthognathic surgery approach, surgery comes before orthodontic treatment. At the beginning of treatment, surgery is performed without orthodontic preparation, and orthodontic treatment is done after surgery.[8]

Surgery-first approach has many advantages. There are many benefits such as short treatment time (usually 6–12 months), patients starting treatment with an esthetically very advanced face at the beginning of treatment, and achieving and improving the patient's main complaint, dental function and facial esthetics at the beginning of treatment, and the patient feeling better psychosocially.[8,9]

As the interest in social media increases day by day, millions of people turn to social media account to find answers to medical or dental problems instead of consulting doctors. Instagram application is one of the social media platforms that adult patients with skeletal (esthetic) problems frequently

Table 1: Video data.

	Mean±SD	Min.	Max.
Number of views	2129±7631	39	11062
Duration	2:59±1:12	0:31	13:07
Number of likes	182±331	2	463
Number of dislikes	2±6	0	9
Number of comments	4±3	0	8
Interaction index	2.11±1.01	0.02	8.61
Viewing rate	431±1021	5.34	1630

Table 2: Scoring of videos by oral-maxillofacial surgeon and orthodontist.

	Oral-maxillofacial surgeon	Orthodontist
Video quality	2.25	2.19
Audio quality	2.61	2.57
Accuracy score	2.13	2.23
P	NS	NS

P: Results of Mann–Whitney U-test

Table 3: Comparison of Instagram characteristics of posts tagged with #surgeryfirst and #surgeryfirstapproach.

		#surgeryfirst (738)	#surgeryfirstapproach (146)	Total (884)
Post type	Photograph	590	120	710
	Video	148	26	174
Number of likes	0–50	156	120	276
	50–100	504	20	524
	100^{+}	78	6	84
Number of comments	0–5	634	139	773
	6–10	78	5	83
	10^{+}	26	2	28
Source	Surgeon	314	93	407
	Orthodontist	208	29	237
	Clinic	101	3	104
	Patient	91	2	93
	Commercial sharing	24	19	43
Purpose	Surgical information	363	91	454
	Patient experience	208	21	229
	Advertisement	167	34	201

Table 4: Comparison of hashtag number of likes and comments according to source of posts.

	#surgeryfirst		#surgeryfirstapproach	
	Like	Comments	Like	Comments
	Median (Min.-Max.)	Median (Min.-Max.)	Median (Min.-Max.)	Median (Min.-Max.)
Surgeon	63 (0–357)	14 (0–63)	49 (0–266)	11 (0–34)
Orthodontist	45 (0–376)	18 (0–57)	33 (0–176)	8 (0–13)
Clinic	56 (0–549)	2,5 (0–8)	38 (0–241)	3 (0–11)
Patient	38 (0–266)	3 (0–17)	23 (0–63)	2,5 (0–7)
Commercial sharing	9 (0–25)	1 (0–3)	11 (0–17)	2 (0–6)
P	0.008	0.015	0.046	0.024

Min.: Minimum, Max.: Maximum; *P*: Results of Kruskal–Wallis test.

prefer, as it provides easy access to information, videos and photographs on orthodontics, orthognathic surgery, surgery first, and other health-related issues.

The number of photos or videos uploaded to Instagram daily is over 100 million. This enables patients to quickly access photos, comments, or videos regarding both traditional orthognathic surgery and the surgery-first approach.[4,5] In this study, it was aimed to investigate the content of the publications shared on Instagram about the surgery-first approach, which has increased its popularity in recent years.

This article examines Instagram posts about surgery-first approach. The videos and photos evaluated in the study are the most frequently accessed videos by both doctors and patients. It was seen that most of the shares come from clinics and doctors and the share of patients is in the minority. Patients may be afraid to ask as many questions as they want to see their doctor because of timidity. Internet sites and social media are among the factors that enable them to obtain information easily.[10] However, since it is a social platform, the reliability and accuracy of the photos and videos shared on Instagram are controversial.

Most of the Instagram posts related to orthognathic surgery are shared by patients or clinical advertising agencies, and few come from field specialists such as maxillofacial surgeons or orthodontists. It has also been revealed by studies that most of the Instagram posts related to orthognathic surgery are shared by lay people or patients.[5] Unlike conventional orthognathic surgery, it has been observed that surgery-first posts were shared by field experts such as maxillofacial surgeons or orthodontists. In our study, it was seen that most of the posts about surgery first on Instagram were shared by physicians and their numbers were small, although informative.

While it has been observed that most of the videos related to orthognathic surgery involve patients defining personal treatment journeys and are primarily designed as a patient information source, it has been observed that videos related to surgery first are shared from more professional information sources and contain more technical information, benefits, and case presentations.[5,6]

It was also demonstrated that clinicians should warn their patients in need of orthognathic surgery on social media to guide them correctly and provide comprehensive information about the treatment procedure.[5] In our study, we first obtained a similar result with the literature regarding paying attention to the origin and purpose of the Instagram posts related to surgery to patients of clinicians. Since the current study is the first in the literature in the field of surgery first, we were able to compare with the social media studies on conventional orthognathic surgery since there was no study to compare the data we obtained.

Coleman *et al*. examined how patients use social media in relation to orthognathic surgery with a different method.[7] A questionnaire consisting of 15 questions was applied to the patients. After examining the orthognathic surgery sharing on social media, 87% of the participants showed that their anxiety about surgery decreased. Most of the patients surveyed most frequently searched the terms "jaw surgery" and "orthognathic".[7] In our study, we also researched #surgeryfirst and #surgeryfirstapproach because these were the most common search terms used by experts on Instagram.

This paper shows a wide variety of video communications available on surgery-first related YouTube™. The videos evaluated in the study are the most frequently accessed videos by both physicians and patients. Most of the videos were seen to originate from clinics and physicians, and no videos shared by patients were encountered.

In their study of conventional orthognathic surgeries through YouTube videos in 2017, Hegarty *et al*. reported that most of the shares were patient related and patient experiences were intense.[6] On the other hand, contrary to this situation, it was seen that physicians were more known by physicians, and accordingly, it was determined that surgeons and orthodontists shared their own accounts and accounts of clinics. The sources of information from patients' accounts were underrepresented among the videos we examined.[6]

Most of the videos uploaded on orthognathic surgery issues have been reported in patient studies, but since surgery first is a new topic and is now widely used in Far East and Asian countries, no video from patients has been encountered in our study.[11] However, it shows that the vast majority of viewers consist of patients and that the screening represents videos routinely accessed by patients.

While there is not enough study in the field of jaw surgery related to YouTube™, the previous studies investigating videos on orthodontics have revealed that the majority are positively biased.[12] However, most of the videos evaluated in this research have little information content, but more than half are considered of medium quality. This supports insufficient information findings related to YouTube™ content as a source of information for health-care patients.[13-15]

However, in the current study, it was seen that the content of the videos is different from orthognathic surgery shares. While it has been observed that most of the videos related to orthognathic surgery involve patients defining personal treatment journeys and are primarily designed as a patient information source, it has been observed that videos related to surgery first are shared from more professional information sources and contain more technical information, benefits, and case presentations.

The previous studies are mostly cross-sectional and examined the most current or most popular videos. Because, according to published statistics, about 60 hours of video are uploaded to YouTube™ every minute.[16] This turns into a very dynamic video database, which can change quickly in a short time. However, previous evidence of search strategy shows that most viewers do not go beyond the first three pages of YouTube™ and the vast majority are in English.[17]

Video content has been evaluated using a subjective rating score instead of a valid scoring system not currently available for YouTube™. In addition, only the interactive index and the viewing rate were examined objectively. Approved evaluation tools such as the DISCERN questionnaire can be used to evaluate health information written on the web.[18] However, a similar tool is currently not available for the evaluation of video-based resources such as YouTube™ or social media content. However, the kappa coefficient showed a very high fit for the content rating used in this study and showed that the technique used was valid between the researchers in two different branches that had an important role in the surgery-first approach.[19]

This assessment was carried out jointly by the orthodontist and surgeon, and although this is useful for measuring content and quality according to specific criteria, the introduction of non-professionals can help in future studies.[12] As more information is obtained in video format, how it is evaluated and managed should be considered as part of the process of ensuring patients have access to high quality and accurate information.

An important question posed by this research is how we interact with the internet as professionals to ensure that patients have access to appropriate and accurate information and to make them make informed choices about health care.[6] This may include making and publishing high-quality videos that patients can be directed to. Many of these are found on professional community websites, which are often poorly accessed by patients. Instead, patients will tend to use search engines like Google, which creates a general website, image, and video list. If health-care professionals no longer interact with websites and platforms such as YouTube™, there is a danger that a balanced and accurate message will be lost under the weight of online information.

Limitations

The most important limitation of this study is that the most up-to-date posts in the Instagram and YouTube application are based on a certain time interval.[5] Another limitation is that the working data are constantly updated on Instagram and YouTube.

CONCLUSION

- Prospective and unmanned studies on surgery first should be done using different social media tools.
- The YouTube videos identified the surgery-first approach were inadequate and generally of moderate quality. YouTube and Instagram are not currently a suitable source of information for patients about the surgery-first approach.
- In the light of the results of our study, as a suggestion to experts such as orthodontists and maxillofacial surgeons, individuals can be informed correctly with quality content to better educate about the surgical procedures mentioned in social media.
- Maxillofacial surgeons and orthodontists need to make further efforts to create reliable and quality medical content on popular social media platforms such as YouTube and Instagram.

Ethical approval

Since the data used in the study are accessible to everyone, it is exempted with the approval of the ethics committee.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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