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Instagram and Achilles tendon surgery: Evaluation of patients' perceptions of surgery

Yigit Kultur [1], Emre Bal [2], Mehmed Nuri Tutuncu [3], Elviz Gasimov [4], Mirza Biscevic [5], Mehmet Tezer [6]

[1] Yeni Yuzyil University Gaziosmanpasa Hospital, Department of Orthopedics and Traumatology, Istanbul, Turkey
[2] Fatih Sultan Mehmet Training and Research Hospital, Orthopedics and Traumatology, Istanbul, Turkey
[3] Istanbul Medeniyet University, Goztepe Training and Research Hospital, Department of Orthopedics and Traumatology, Istanbul, Turkey
[4] Azerbaijan Scientific-research Institute of Traumatology and Orthopedics, Department of Orthopedics and Traumatology Baku, Azerbaijan
[5] General hospital Sarajevo, Department of Orthopedics and Traumatology, Bosnia and Herzegovina
[6] Nisantasi Orthopedic Center, Istanbul, Turkey

ORCID of the author(s)

YK: https://orcid.org/0000-0001-8201-6994
EB: https://orcid.org/0000-0003-3403-8069
MNT: https://orcid.org/0000-0002-0861-1477
EG: https://orcid.org/0000-0002-6495-8897
MB: https://orcid.org/0000-0002-8866-5749
MT: https://orcid.org/0000-0001-6137-7432

Corresponding Author
Yigit Kultur
Yeni Yuzyil University Gaziosmanpasa Hospital, Department of Orthopedics and Traumatology, Istanbul, Turkey
E-mail: yigitkulturr@hotmail.com

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This article is not a study with human participants. There are no experiments on animals. This article does not contain any studies on human participants or animals performed by the author. There is no identifying information of participants.

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Abstract

Background/Aim: The primary objective of this study was to conduct comprehensive research and analysis of patient-generated content related to Achilles tendon surgery on the social media platform Instagram. The aim was to gain deeper insights into patients' experiences during the perioperative period, which may contain valuable information pertinent to their condition, information of which the physicians may be unaware.

Methods: A search was conducted on the Instagram database, covering a period of 78 months from February 2015 to August 2021. Posts utilizing the hashtags "#achillessurgery" and "#achillesrepair" were included in the analysis. Posts were assessed using a binary scoring system, considering variables such as tone, media format, return to work, rehabilitation or physical therapy, return to sports, images related to the ankle (e.g., scars, stitches, casts, dressings, walking boots), activities of daily living, and pain.

Results: A total of 500 posts were reviewed, and a positive tone was observed in 77.8% of these. The average Instagram like ratio for these posts was computed as 9%. Statistical analysis revealed a significant relationship between post content and tone status (P=0.001). Specifically, within the positive tone group, informative content about the disease was comparatively lower and statistically significant when compared to exercise training and patient experience (P=0.001). Additionally, exercise training posts were found to be significantly lower than patient experience posts (P=0.001) within the positive tone group. In contrast, within the negative tone group, patient experience posts were significantly higher compared to informative content and exercise training posts (P=0.001). Moreover, the quantity of informative posts markedly surpassed the number of posts related to exercise training (P=0.001).

Conclusion: In the positive tone category, people tended to emphasize personal experiences and participate in posts related to exercise training rather than actively seeking or exchanging information about the disorder. On the other hand, within the negative tone group, individuals were more likely to share adverse experiences, pursue support, and seek a deeper understanding from others. Their priority may also lie in sharing and gaining information specifically about the disorder. Our exploration of the use of social media platforms to delve into patient perspectives on Achilles tendon surgery provides an alternative insight into patients' experiences with the surgical process. By comprehending the content shared by patients on social media, surgeons may gain an improved opportunity to assess and address the surgical experience of their patients more effectively, ultimately contributing to enhanced patient care.

Keywords: Achilles, hashtag, post, return to sports, Instagram like ratio

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Introduction

Social media platforms, including Facebook, Twitter, and Instagram have emerged as pervasive channels for social interaction, attracting a considerable number of users on a daily basis. Within this communication network, individuals suffering from health issues avail themselves of the opportunity to engage in discussions regarding their medical conditions [1,2]. The emergence of social media has played a crucial role in facilitating improved communication between patients and healthcare professionals [3,4].

Instagram, a social networking application with a user base exceeding 250 million active daily users, functions as a platform for the distribution of varied visual content in the form of photographs and videos [5]. Since 2011, Instagram has empowered its users to conduct searches using hashtags (#), thereby simplifying the exploration of users and posts that align with similar interests or themes [5,6]. In the context of orthopedic surgeries, Instagram serves as a communication tool that facilitates interaction among patients, hospitals, and physicians, thereby promoting mutual benefits for all stakeholders involved [7].

The aim of this study was to explore and analyze content related to Achilles tendon surgery posted by patients on Instagram. Our goal was to acquire insight into patients' experiences during the perioperative period, which might hold significance for them but remain undisclosed to physicians. We anticipate that the results of this study, along with future research efforts, will contribute to improving healthcare quality by enhancing the surgeon-patient relationship.

Materials and methods

This research covered a duration of 78 months, commencing on February 15, 2015, and concluding on August 17, 2021. Throughout this period, posts labeled with the hashtags “#achillessurgery” and “#achillesrepair” were queried within Instagram's database. The search terms were documented, along with the corresponding number of posts associated with the aforementioned hashtags. Subsequently, two independent researchers cataloged and analyzed the search results. In instances where discrepancies arose between the reviewers, a consensus was reached through joint examination of the media. Posts that continued to elicit disagreement were excluded from the study. As the submissions were already publicly accessible, no personally identifiable information was redacted, and thus, no approval from an ethics committee was sought.

The study included all posts written in English, containing the hashtags “#achillessurgery” and “#achillesrepair”, featuring human subjects. The majority of posts primarily focused on Achilles tendinopathy and, consequently, were excluded from the analysis. Additionally, patients who did not undergo Achilles surgery, accounts featuring rehabilitation or physical therapy advertisements, accounts belonging to physicians, and accounts related to health and veterinary topics, were also excluded.

The primary outcome variables derived from the analysis of the posts, were assessed using a binary scoring system. These variables included the media format (video or photo), the tone (positive or negative), the timing of post sharing relative to the surgery (before or after), references to return to work (RTW) and return to sports (RTS), mentions of rehabilitation or physical therapy, references to ankle-related images (such as scars, dressings, stitches, casts, or walking boots), pain, magnetic resonance images (MRI), and references to activities of daily living (ADL). Additionally, the timing of post sharing during the perioperative period was categorized into groups based on whether the posts were shared within one week before or after surgery or on the first anniversary of surgery.

The shared content was additionally categorized into groups, including exercise training, informative content about the condition, patients' experiences, and surgical techniques.

For each post that included the hashtags “#achillessurgery” and “#achillesrepair,” the "Instagram like ratio" was computed by dividing the number of likes by the total number of followers (likes * 100 / [likes + dislikes]). The average Instagram like ratio was then determined based on these calculations. [8].

Statistical analysis

The Number Cruncher Statistical System (NCSS) 2007 program for statistical analysis (Kaysville, Utah, USA) was used in the investigation

Data distribution and the application of data restriction methods, such as standard deviation, mean, median, frequency, minimum, ratio, and maximum were assessed, ensuring the integrity of the study data. The Shapiro-Wilk test was used to evaluate the data distribution. In cases involving the comparison of three or more groups of quantitative variables, the Kruskal-Wallis test was employed, while the Mann-Whitney U-test was used for pairwise comparisons between two groups. To determine the relationship between qualitative variables, chi-square analysis criteria were applied. The significance level was set at $P<0.01$ and $P<0.05$.

Results

This study aimed to assess and analyze 500 public posts on Instagram using the hashtags #achillessurgery and #achillesrepair over a 78-month period, specifically from February 15, 2015, to August 17, 2021. The average monthly post count for Achilles surgery was 6.4. All posts were included in the analysis, as there were no discrepancies among the reviewers. Of the 500 posts reviewed, 67% consisted of photographs, while 33% were videos. Notably, 79.2% of the posts were shared by female patients. Posts with a positive tone constituted 77.8% of the total.

Regarding the timing of the posts, 78.6% were found to be shared after the surgery, while 21.4% were posted before the surgery. Concerning the perioperative period, 84.2% of the posts were shared within one week before or after the surgery. Among these, 21.4% were shared less than one week before the surgery, and 62.8% were shared within one week after the surgery. Additionally, 15.8% of the posts were shared on the first anniversary of the surgery.

Approximately half of the patients discussed ADL in their social media posts (25.6%), and 20.4% of the posts included images of the ankle. RTS was also frequently mentioned (20.2%). Other relevant comments in the posts

referred to pain (15.8%), MRI (9.6%), RTW (4.4%), and PT (4%).

Regarding the categorization of the post contents, 79.2% of the posts were related to patients' experiences, while 10.6% contained informative content about the condition, and 10.2% focused on exercise education (Table 1).

The average Instagram like ratio for posts featuring the hashtags #achillessurgery and #achillesrepair was calculated at 9%. However, upon considering the content of the posts, the Instagram like ratio did not exhibit a statistically significant difference (*P*=0.116) (Table 2).

Table 1: Patient analysis of 500 posts from #achillessurgery and #achillesrepair search on Instagram

		n	%
Gender	Female	396	79.2
	Male	104	20.8
Timing of Post	<1 wk before surgery	107	21.4
	<1 wk after surgery	314	62.8
	1st year anniversary of surgery	79	15.8
Type of media	Photographic media	336	67
	Video media	164	33
Post Content	Education of exercise	51	10.2
	Informative content of disease	53	10.6
	Patient experience	396	79.2
Tone	Positive	389	77.8
	Negative	111	22.2
Media reference	RTS	101	20.2
	RTW	22	4.4
	ADL	128	25.6
	PT	20	4
	Images of ankle	102	20.4
	Pain	79	15.8
	MRI	48	9.6

n: Number, RTS: Return to sports, RTW: Return to work, ADL: Activities of daily living, PT: Physical Therapy, MRI: Magnetic Resonance Imaging

Table 2: Comparing Instagram like ratio by post content

		n	Mean (SD)	Min-Max (Median)	*P*-value
Instagram Like Ratio	Education of exercise	51	0.09 (0.1)	0.01-0.6 (0.05)	0.116
	Informative content of disease	53	0.08 (0.15)	0.01-0.6 (0.03)	
	Patient experience	396	0.1 (0.13)	0-0.6 (0.04)	

Kruskall Wallis Testi **P*<0.05 ***P*<0.01, n: Number, SD: Standard deviation, Min: Minimum, Max: Maximum

A statistically significant relationship was found between the post content and gender (*P*=0.042). Specifically, in the female group, the number of posts containing informative content was significantly higher than those related to exercise training (*P*=0.001).

The study findings revealed several statistically significant relationships between the content of the posts and other variables. Firstly, there was a significant relationship between the content of the post and the timing of the post (*P*=0.001). In the group of posts shared one week before the surgery, the number of posts related to exercise education was lower compared to posts about patient experience and informative content (*P*=0.001). On the other hand, for posts shared on the first year anniversary of the surgery, the number of exercise education posts was higher compared to informative content about the condition and lower than patient experience posts (*P*=0.001).

Furthermore, there was a statistically significant relationship between the content of the post and the tone status (*P*=0.001). In the positive tone group, informative content about the disorder was significantly lower compared to exercise training and patient experience posts (*P*=0.001). Exercise training posts were also significantly lower compared to patient experience posts (*P*=0.001). In the negative tone group, patient experience posts were significantly higher compared to informative content about the Achilles surgery and exercise training posts (*P*=0.001). Additionally, the number of informative content posts about the condition was significantly higher compared to the number of exercise training posts (*P*=0.001).

Lastly, a statistically significant relationship was found between the post content category and media reference (*P*=0.001). In the group of posts related to a return to sports (RTS), the number of exercise education videos was significantly higher compared to patient experience and informative content videos (*P*=0.001). In the activities of daily living (ADL) group, the number of exercise education videos was significantly lower compared to patient experience videos (*P*=0.001). Similarly, in the images of ankle group, the number of exercise education videos was significantly lower compared to informative content videos and patient experience (*P*=0.001). In the pain group, the number of exercise education videos was significantly lower compared to informative content videos and patient experience (*P*=0.001). Lastly, in the MRI group, the number of exercise education videos was significantly lower compared to informative content videos about the condition (*P*=0.001) (Table 3).

Discussion

This observational study conducted on social media revealed that patients undergoing Achilles tendon surgery extensively discussed topics such as scar appearance, ankle images, return to sports (RTS), activities of daily living (ADL), and pain in their posts. Given that 25.6% of the posts were related to ADL, it can be argued that patients perceive this as a primary criterion for assessing the success of Achilles tendon surgery. Furthermore, with 20.2% of the posts regarding Achilles tendon surgery mentioning ADL, it can be inferred that this criterion holds significant importance for patients when evaluating the outcome of their surgical procedure.

Activities of daily living encompass the routine tasks individuals perform in their daily lives, such as walking, climbing stairs, dressing, and personal hygiene. The restoration of functionality and independence in performing these activities is often a paramount goal for patients in their recovery from Achilles tendon surgery. Therefore, a substantial focus on ADL within posts or discussions related to Achilles tendon surgery suggests that patients attach significance to their ability to resume and execute these daily activities without limitations or difficulties. Hence, the successful restoration of functional abilities is likely considered a primary criterion when evaluating the overall success of Achilles tendon surgery.

In the context of Achilles tendon surgery, a statistically significant relationship exists between the content of posts and gender. Specifically, females exhibited a higher number of informative posts about the condition compared to exercise training posts.

These findings indicate disparities in the types of posts shared by males and females concerning Achilles tendon surgery. The greater number of informative posts about the disorder observed within the female group suggests an increased focus on comprehending and disseminating information related to the condition itself, encompassing its etiology, symptoms,

Table 3: Relationship between post content and the other variables

		Type of post content			*P*-value
		Education of exercise	Informative content about the disease	Patient experience	
Gender	Female	35a (8.8%)	47b (11.9%)	314a, b (79.3%)	0.042*
	Male	16a (15.4%)	6b (5.8%)	82a, b (78.8%)	
Timing of Post	<1 week before surgery	1a (0.9%)	17b (15.9%)	89b (83.2%)	0.001**
	>1 week after surgery	30a (9.6%)	30a (9.6%)	254a (80.9%)	
	1st year anniversary of surgery	20a (25.3%)	6b (7.6%)	53b (67.1%)	
Tone	Positive	50a (12.9%)	32b (8.2%)	307c (78.9%)	0.001**
	Negative	1a (0.9%)	21b (18.9%)	89c (80.2%)	
Media reference	RTS	39a (38.6%)	7b (6.9%)	55b (54.5%)	
	RTW	5a (22.7%)	0a (0%)	17a (77.3%)	
	ADL	5a (3.9%)	9a, b (7%)	114b (89.1%)	
	PT	0a (0%)	3a (15%)	17a (85%)	
	Images of ankle	2a	14b (13.7%)	86b (84.3%)	
	Pain	0a (0%)	11b (13.9%)	68b (86.1%)	
	MRI	0a (0%)	9b (18.8%)	39a, b (81.3%)	

Chi-Square Testi **P<0.01, RTS: Return to sports, RTW: Return to work, ADL: Activities of daily living, PT: Physical Therapy, MRI: Magnetic Resonance Imaging

treatment options, and potential outcomes. Conversely, the lower number of exercise training posts in the female group implies that females may exhibit less inclination to share or seek advice specifically concerning exercise training during the recovery process.

While 77.8% of the Instagram posts included in this study displayed a positive tone, previous analyses of social media platforms have shown percentages ranging from 87% to 93% of patients expressing a positive tone following procedures such as arthroplasty, anterior cruciate ligament reconstruction, and shoulder-elbow surgeries. [9–11]. In their social media study, Haeberle et al. [12] reported a lower rate of positive tone (53%) in their investigation of patients undergoing hip arthroscopy, attributing it to the postoperative recovery protocol. In contrast, the patients in the present study generally displayed an optimistic attitude when discussing the rehabilitation process following Achilles tendon surgery. However, it was observed that ankle movements were seldom mentioned in the posts, suggesting a potential lack of emphasis on ankle joint range of motion by the post originators.

The findings of this study revealed that the majority of posts (62.8%) were shared within the first week after the surgery, while a smaller proportion (15.8%) were shared on the first year anniversary of the surgery. The decrease in the number of posts during the preoperative period, which is known to be traumatic and painful, suggests that individuals may be less active in posting content during this challenging phase. It is not uncommon for individuals to seek support and advice and share their experiences during the early stages of recovery, which are characterized by heightened pain, discomfort, and uncertainty. Therefore, the higher percentage of posts during the first postoperative week could be attributed to the need for support and information during this crucial and potentially traumatic period.

Conversely, the lower percentage of posts at the first year anniversary of surgery may indicate that patients have progressed further in their recovery and may feel more confident and self-reliant. As time passes and the healing process continues, individuals may require less frequent support or feel less inclined to share their experiences online.

The observation that individuals post less frequently during the preoperative period aligns with the understanding that this period can be emotionally and physically challenging, leading to reduced online activity. The anticipation of surgery, accompanied by pain, limitations, and concerns about the procedure and its outcomes, likely contribute to the decreased frequency of posts during this phase.

In the group "first year anniversary of surgery," it was found to be statistically significant that the number of "education of exercise" posts was higher compared to "informative content of disease" posts, but lower compared to "patient experience" posts. This suggests that during the first year after surgery, patients may be more inclined to share or seek information about exercise education as part of their ongoing recovery journey. However, their focus may still be primarily on sharing their personal experiences and insights gained throughout the process.

These findings highlight the temporal variations in post content related to Achilles tendon surgery. Patients' concerns, priorities, and information needs may evolve at different stages, from the preoperative period to the first year anniversary of the surgery. It is important to consider these temporal dynamics when analyzing online discussions and providing support to patients undergoing Achilles tendon surgery.

In the positive tone group, it was found to be statistically significant that the number of informative posts about the condition was lower compared to exercise training and patient experience posts. Additionally, it was found to be statistically significant that exercise training posts were lower compared to patient experience posts. This suggests that in the positive tone group, individuals may focus more on sharing their personal experiences and engaging in exercise training discussions rather than seeking or sharing information about the disorder itself.

In the negative tone group, it was found to be statistically significant that patient experience posts were higher compared to informative posts and exercise training posts. Furthermore, the number of informative posts about the condition was higher compared to exercise training posts. This indicates that in the negative tone group, individuals may be more inclined to share their negative experiences and seek support or understanding from others. They may also prioritize sharing and acquiring information about the surgery itself.

These findings highlight the differences in post content based on the tone status of the posts in relation to Achilles tendon surgery. Positive tone posts may be more focused on personal experiences and exercise training, while negative tone posts may center around sharing negative experiences and seeking support or information about the disorder.

In the RTS group, it was found to be statistically significant that the number of exercise education videos was significantly higher compared to informative content videos and

patient experience. This suggests that individuals in the RTS group may be more interested in sharing and accessing exercise education materials to support their journey of returning to sports activities.

In the ADL group, it was found to be statistically significant that the number of exercise education videos was significantly lower compared to patient experience videos. This indicates that individuals in the ADL group may prioritize sharing their personal experiences related to daily activities rather than focusing on exercise education.

In the incision site group, the number of exercise education videos was found to be significantly lower compared to informative content videos about the condition and patient experience. Similarly, in the pain group, the number of exercise education videos was significantly lower compared to informative content videos and patient experience. These findings suggest that individuals in these groups may be more inclined to discuss or seek information about the condition and their personal experiences rather than focusing on exercise education.

In the MRI group, the number of exercise education videos was found to be significantly lower compared to informative content videos about the disorder. This indicates that individuals in the MRI group may prioritize sharing or seeking information about the condition itself rather than focusing on exercise education.

These findings highlight the variations in post content category and media references across different groups within the context of Achilles tendon surgery. The preferences and priorities of individuals can differ depending on their specific circumstances, such as their goals (e.g., returning to sports, improving daily activities), concerns (e.g., incision site, pain), or the diagnostic procedures they have undergone (e.g., MRI). Further research and analysis would be needed to understand the underlying reasons for these differences and their implications.

The quantity of followers and likes is often considered a significant metric for assessing the perceived value of individuals or companies. Instagram users typically strive to augment their follower count and accumulate likes in order to create a favorable impression [13]. According to classical understanding, having a substantial number of followers and likes on social media enhances the effectiveness of a post and triggers the phenomenon known as "social proof." Social proof refers to the psychological tendency for individuals to assume that what is popular or endorsed by a majority of people is deemed valuable or credible. When a post has a high number of followers and likes, it creates the perception that the content is of high quality or worth following [14].

In contemporary times, there is an assumption that Instagram users gauge the credibility of a post based on its likes/follower ratio. It has been established that in credible accounts, one post for every 1,000 followers typically receives an average of 30 to 140 likes, representing a percentage range of 3% to 14% [13,15]. When the likes/follower ratio significantly exceeds or falls below these established rates, the content is generally perceived as generating distrust among users [13]. In our study, the mean Instagram like ratio was 9%, a value that falls within the safe limits as indicated by previous studies.

Limitations

Our study encountered certain limitations. The evaluation was restricted to publicly accessible posts, limiting the sample size to 500. Nevertheless, it is crucial to acknowledge that 500 posts from individuals who underwent Achilles surgery hold significance. Furthermore, social media users may have the tendency to present themselves in a more positive light than in reality, potentially leading to an overestimation of positive tones. The specific details regarding the surgical technique employed remain unknown. Additionally, the variability among surgeons, inherent in the study design, may influence the results.

Conclusion

In the positive tone category, people tended to emphasize personal experiences and participate in posts related to exercise training rather than actively seeking or exchanging information about the condition. On the other hand, within the negative tone group, individuals were more likely to share adverse experiences, seek support, and seek a deeper understanding from others. Their priority may also lie in sharing and gaining information specifically about the disorder.

Amid the ongoing transition towards patient-centered care models, there is an increasing acknowledgment of the importance of investigating and analyzing patients' perceptions of their health. These insights provide valuable feedback for healthcare practitioners within the healthcare system. Traditionally, evaluations have depended on standardized and stereotypical questions. However, our study on the utilization of social media regarding Achilles tendon surgery presents an alternative perspective on patients' sentiments and experiences throughout their surgical journey. By comprehending the content shared by patients on social media platforms, there is a potential opportunity to enhance the evaluation of patients' surgical experiences, thereby enabling surgeons to improve their management and care approaches. This approach acknowledges the importance of patient perspectives and seeks to leverage them for better patient outcomes.

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