

# Social Media and Rotator Cuff Surgery : An Instagram Based Patient Analysis

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## ABSTRACT

**Purpose:** The purpose of this observational study is to investigate the content of social media posts shared with the hashtags [#rotatorcuffsurgery], [#rotatorcuff repair] and [#rotatorcuff]. In particular, we analyzed the contents of posts for timing and perspective, tone, patient's satisfaction and content.

**Methods:** Posts shared in the Instagram database with the [#rotatorcuffsurgery], [#rotatorcuff repair], and [#rotatorcuff] hashtags from September 1, 2019, to September 1, 2020, were analyzed and categorized by three separate reviewers. Of all 1785 posts, 142 were excluded since they were not related to orthopedic surgery and 12 were excluded due to inter-reviewer disagreements. Finally, 1631 posts shared by patients and surgeons were identified for final analysis in terms of perspective, timing, tone and the content of the posts.

**Results:** Of the 1631 posts included in the study, 1140 were shared by patients and their acquaintances, whereas 491 posts were shared by orthopedic surgeons. Posts shared by patients and their acquaintances mainly focused on rehabilitation (66%), daily activities (12%) and surgical site (10%), whereas, posts shared by surgeons mainly focused on intraoperative images (52%) and postoperative patient images (29%).

**Conclusions:** Patients were found to share their surgical experiences in a positive tone and they particularly focused on the rehabilitation process. Whereas orthopedic surgeons commonly shared intraoperative images, probably to better market themselves. Our findings show that the social media posts of patients who undergo rotator cuff surgery may provide important data in the understanding of patients' expectations from rotator cuff surgery.

**Keywords:** Social media, Instagram, Rotator Cuff Surgery, Shoulder, Rehabilitation

## Sosyal Medya ve Rotator Manşet Cerrahisi : Instagram Tabanlı Bir Hasta Analizi

### ÖZET

**Amaç:** Bu gözlemsel çalışmanın amacı, [#rotatorcuffsurgery], [#rotatorcuff onarım] ve [#rotatorcuff] hashtag'leriyle paylaşılan sosyal medya paylaşımlarının içeriğini araştırmaktır. Özellikle gönderilerin içeriklerini zamanlama ve bakış açısı, ton, hasta memnuniyeti ve içerik açısından analiz ettik.

**Gereç ve Yöntem:** 1 Eylül 2019'den 1 Eylül 2020'e kadar Instagram veri tabanında [#rotatorcuffsurgery], [#rotatorcuff Repair] ve [#rotatorcuff] hashtag'leriyle paylaşılan gönderiler, üç ayrı yorumcu tarafından analiz edildi ve kategorilere ayrıldı. 1785 gönderiden 142'si ortopedik cerrahi ile ilgili olmadığı için ve 12'si hakemler arası anlaşmazlıklar nedeniyle hariç tutulmuştur. Son olarak, hastalar ve cerrahlar tarafından paylaşılan 1631 gönderi, perspektif, zamanlama, ton ve gönderilerin içeriği açısından nihai analiz için belirlendi.

**Bulgular:** Çalışmaya dahil edilen 1631 gönderiden 1140'ı hastalar ve tanıdıkları tarafından, 491'i ise ortopedi cerrahları tarafından paylaşılmıştı. Hastalar ve tanıdıkları tarafından paylaşılan gönderiler ağırlıklı olarak rehabilitasyon (%66), günlük aktiviteler (%12) ve cerrahi bölgeye (%10) odaklanırken, cerrahlar tarafından paylaşılan gönderiler ağırlıklı olarak intraoperatif görüntüleme (%52) ve postoperatif hasta görüntülerine odaklanmıştı (%29).

**Sonuç:** Hastaların cerrahi deneyimlerini olumlu bir dille paylaştığı ve özellikle rehabilitasyon sürecine odaklandıkları görüldü. Ortopedik cerrahların ise muhtemelen kendi reklamları için genellikle ameliyat sırasındaki görüntüleri paylaştıkları görüldü. Bulgularımız rotator manşet ameliyatı geçiren hastaların sosyal medya paylaşımlarının hastaların rotator manşet ameliyatından beklentilerinin anlaşılmasında önemli veriler sağlayabileceğini göstermektedir.

**Anahtar Kelimeler :** Sosyal medya, Instagram, Rotator Manşet Cerrahisi, Omuz, Rehabilitasyon

The widespread use and easy access to mobile devices globally led to the introduction of many social media platforms such as Facebook, Twitter, and Instagram in recent years. These platforms hold a large reach at relatively low cost, representing a distinct advantage over face-to-face approaches. From this point of view, Instagram (San Francisco, CA), one of the largest social media networks with the highest number of active users, is unique in providing a platform for users to share a variety of photo and/or video media content which are called 'posts'. Moreover, in Instagram, as in many of the social media platforms, individuals might also operate hashtags (#) to search and discover similar media produced by other users (1). According to 2020 data, more than 4.6 billion people worldwide use the internet and 4.1 billion people use social media daily (2). Due to its widespread use, social media platforms have an important place in patient education today (3). It has been shown that almost half of the people who use social media when making decisions about their health, do research on social media to choose a hospital and specialist, and those who already go to the specialist to get another opinion (4). It has been shown that the use of social media in health institutions and various specialties is an important factor in increasing the popularity and reputation of the health institution (5). Unavoidably, patients and healthcare professionals are also involved in social media interactions, of which Instagram plays an important part. Patients and healthcare professionals share their expectations and satisfaction regarding the care they have received and most importantly, procedures that they have undergone. However, current data regarding the integration of social media in scientific research in the area of orthopedic surgery is limited. As such, there are only a few studies investigating the social media posts of patients who have undergone shoulder and elbow surgeries and total joint arthroplasty (6,7).

Parallel to the increasing age of the population, the number of patients being subject to rotator cuff tears is also growing. Surgical repair is the definite treatment strategy in rotator cuff tears particularly when conservative strategies fail (8). Thus, obtaining information from patients in regard to their understanding of the operation, postoperative rehabilitation and expectations from the surgical procedure is of great importance to improve the quality of the medical care provided (9).

The purpose of this observational study was to obtain information reflecting patients' and surgeons' experiences regarding rotator cuff surgery from Instagram posts which were shared with the following

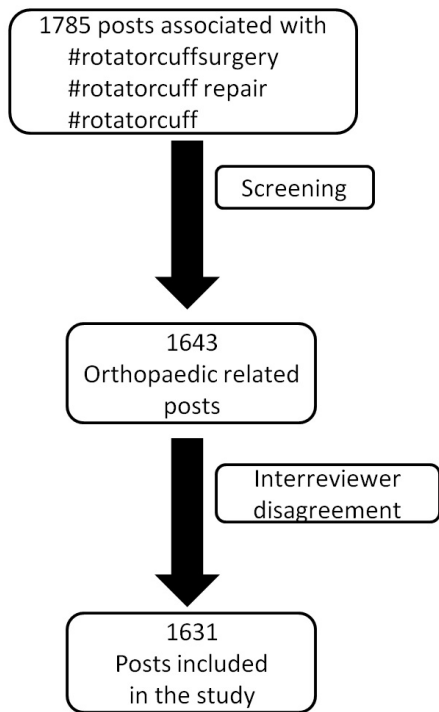
hashtags: [#rotatorcuffsurgery], [#rotatorcuff repair], and [#rotatorcuff].

We hypothesized that most patients would post photographs and comments comprised of their experience with surgery and their healing process. In regard to the surgeons' posts, we expected to see posts aimed at conveying their clinical success which would arguably be the best form of advertisement.

## Method

The public domains of Instagram were searched for posts shared with the following hashtags [#rotatorcuffsurgery], [#rotatorcuff repair] and [#rotatorcuff] on September 2, 2020 to include posts shared during the past 1 year, from September 1, 2019 to September 1, 2020. A total of 1785 posts shared with the aforementioned hashtags were assessed by three separate reviewers that who were orthopaedic surgeons, independently. The reviewers consisted of orthopedic surgeons experienced in rotator cuff surgery. All posts relevant to the above hashtags which featured human subjects were included in this observational study. Inter-reviewer consensus was required to consider a post to be related with these hashtags. In the case of any disagreements, for example, if another reviewer gives a different opinion on a post that one reviewer says has a good opinion the post in question was excluded. Of all 1785 posts, 142 were excluded since they were not related to orthopedic surgery and 12 were excluded due to inter-reviewer disagreement (Figure 1). A final total of 1631 posts shared by patients and surgeons were identified for analysis. The following characteristics of posts were evaluated: the user's perspective, timing, tone and the content of the posts (Table 1).

| Media format              | Photo or video                             |
|---------------------------|--|
| Perspective of the user's | Patient, friend , family, surgeon          |
| Timing                    | Preoperative , Postoperative, Peroperative |
| Tone                      | Positive or negative                       |
| Outcome                   | Satisfied or dissatisfied                  |
| Content                   |  |
| Return to Work            | Presence or Absence                        |
| Daily Activities          | Presence or Absence                        |
| Rehabilitation            | Presence or Absence                        |
| Surgical Site             | Presence or Absence                        |
| X-rays                    | Presence or Absence                        |



**Figure 1.** Flow diagram depicting the selection of patient posts

One of the evaluation criteria, tone was a criterion that varies according to the person. We have identified positive tone as a smiling expression, thanking the surgeon, telling you that surgery is better than before, recommending it to others, stating that you are satisfied. We defined negative tone as having a bad and anxious facial expression, words stating regret, reporting that it was worse than before, reporting that you did not recommend it to anyone. If all three reviewers made the same comment, positive or negative for a post, we accepted it as is. However, when even one of the reviewers expressed a different opinion, three reviewers evaluated the post together and when a consensus was reached, the post was included. When there was no consensus, it was excluded from the study. The same method was used to evaluate patient satisfaction. Reasons for satisfaction or dissatisfaction, each entry was analyzed and interpreted for example, if a patient said, "I cannot move my arm or my pain continues," this was considered as dissatisfaction. When evaluating whether the patient was satisfied with the process, it was included in case of consensus among the reviewers. Post was excluded in the absence of consensus among reviewers.

### Statistical Analysis

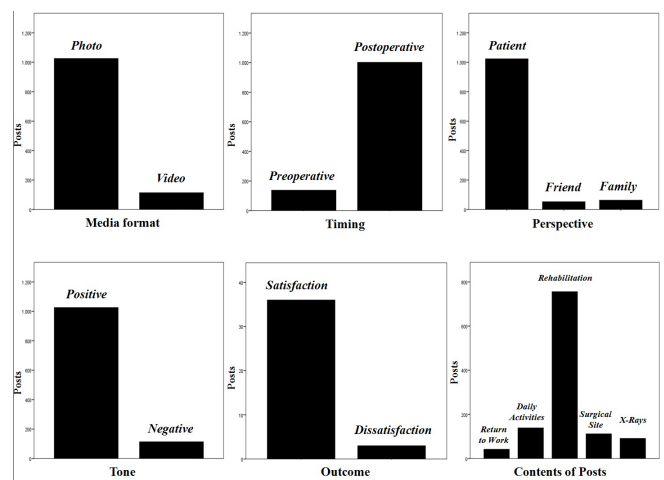
All data analysis was performed using Microsoft Excel 2010 (Microsoft Corporation, Redmond, Washington). The

study protocol was approved by the Institutional Ethical Committee. The primary outcome for the posts shared by patients was the content of the posts which were categorized as follows: return to work, daily activities, rehabilitation, surgical site, and X-ray images. The surgical site was defined as the incision site in the respective surgery. The content of posts was also the primary outcome for posts shared by the surgeons. The content of the posts shared by surgeons were categorized as follows: postoperative image of the patients, intraoperative images, X-ray images, patient education posts and advertisements.

### Results

Of the 1631 posts included in the study, 1140 were shared by patients and their acquaintances, whereas 491 posts were shared by orthopedic surgeons. 1516 posts included photographic media (93%) while the remaining 115 were in the form of videos (7%).

Detailed descriptions of the posts shared by patients and their acquaintances are presented in Table 2. These posts were mostly photos (95%) and were frequently shared by the patients themselves (90%). A large majority of posts were shared postoperatively (91%) and the tone of the posts shared by patients was positive in 90% of all posts. Satisfaction related to the surgery was expressed in only 36 of the posts; however, only 2 posts expressed dissatisfaction. The content of the posts shared by patients and their acquaintances were focused on rehabilitation in 66%, on postoperative daily activities in 12%, on surgical site in 10%, and on X-rays and return to work in 8% and 4%, respectively (Figure 2).



**Figure 2.** Analyses of posts shared by patients and their acquaintances

| Table 2. Summary of the posts shared by patients and their acquaintances |            |
|--|------------|
| Total posts (1140)   |            |
| <b>Media format</b>  |            |
| Photo  | 1083 (95%) |
| Video  | 57 (5%)    |
| <b>Perspective</b>   |            |
| Patient  | 1024 (90%) |
| Friend   | 51 (4%)    |
| Family   | 65 (6%)    |
| <b>Timing</b>  |            |
| Preoperative   | 102 (9%)   |
| Postoperative  | 1038 (91%) |
| <b>Tone</b>  |            |
| Positive   | 1026 (90%) |
| Negative   | 114 (10%)  |
| <b>Outcome</b>   |            |
| Satisfied  | 36         |
| Dissatisfied   | 2          |
| <b>Content</b>   |            |
| Rerturn to Work  | 42 (4%)    |
| Daily Activities   | 139 (12%)  |
| Rehabilitation   | 756 (66%)  |
| Surgical Site  | 112 (10%)  |
| X-rays   | 91 (8%)    |

Detailed descriptions of the posts shared by orthopedic surgeons are given in Table 3. These were mainly focused on intraoperative images of the surgical site (52%) and postoperative images of patients (29%). However, posts associated with patient education were quite low (Figure 3).

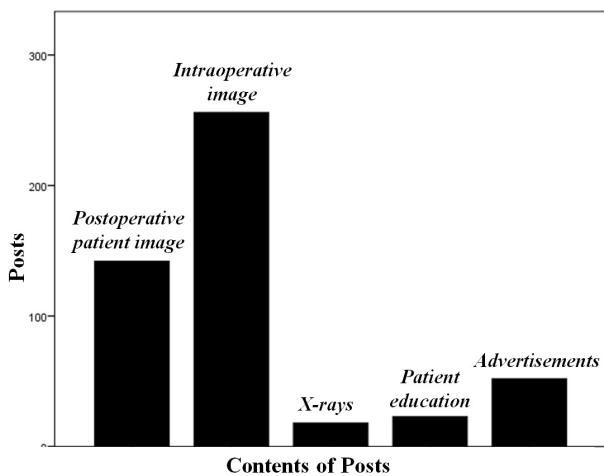


Figure 3. The content of posts shared by orthopedic surgeons

| Table 3. Summary of the posts shared by orthopedic surgeons |           |
|---|-----------|
| Total posts (491)   |           |
| <b>Media format</b>   |           |
| Photo   | 433 (88%) |
| Video   | 58 (12%)  |
| <b>Content</b>  |           |
| Postoperative patient image                                 | 142 (29%) |
| Intraoperative image  | 256 (52%) |
| X-rays  | 18 (4%)   |
| Patient education   | 23 (5%)   |
| Advertisements  | 52 (10%)  |

### Discussion

As healthcare approach has shifted towards patient-centric care models in recent years, understanding how patients perceive their health and medical procedures has received increased attention since this can provide valuable insight and first-hand feedback to healthcare providers. Several patient-reported outcomes and patient satisfaction surveys are currently in use for this purpose (10,11). However, these surveys and questionnaires are usually categorical and mostly concentrate on the subject determined by the professionals which have prepared the surveys and therefore do not always reflect patients' own perceptions and evaluations (12).

Conversely, social media platforms, for instance, Instagram, provide a wide area for their users to express their perspective without any limitation, allowing medical service providers to gain insight concerning the care they offer (13,14).

Rotator cuff pathologies have been shown to cause a significant burden to healthcare resources globally as a result of the increase in the aging population (15). It is one of the most frequently encountered and surgically addressed diseases of the upper extremity. Among people older than 60 years, the prevalence of rotator cuff tears has been estimated to be at least 10% (16). In these patients, arthroscopic rotator cuff repair continues to provide a high success rate in terms of functional results when conservative management strategies fail (17). Based on this information, comprehension of patients' expectations, attitude and perspective regarding rotator cuff surgery is crucial to improve the quality of the healthcare provided. Therefore, in the present study, we used Instagram posts shared by patients, their acquaintances and orthopedic surgeons to analyze the perspectives of several specific populations

in terms of their perspectives on rotator cuff surgery. Our results indicate that Instagram, a popular social media platform is frequently used by the patients, their acquaintances and orthopedic surgeons. Patients usually share contents in a positive tone, giving rise to the thought that these patients are highly satisfied with the surgical procedure they have undergone, even though the number of patients reporting their surgical satisfaction was quite low. Previous studies conducted by Ramkumar and colleagues reported similar results regarding the tone of the posts shared by patients undergoing total joint arthroplasty (7). It could be difficult to conclude that patients are highly satisfied with surgery based on a positive tone in a post. Also, a positive tone a week after surgery is different than three months after surgery.

We also found that patients mainly shared posts concerning the rehabilitation process and daily activities, suggesting that these aspects of rotator cuff surgery are of higher importance to the patients and their acquaintances. Additionally, the long rehabilitation process after surgery may also be a contributor to the high number of posts shared in this context (18). This finding is also consistent with the results of Ramkumar et al. in which they enrolled patients undergoing total joint arthroplasty and found that 34% of the posts were associated with the rehabilitation process.

About 10% of the posts included videos or images of the surgical site. Patients may have shared media of the surgical site for the purpose of comparing their wound healing process with others who have undergone similar surgical procedures. The frequency of such posts in the current study was found to be similar to the findings of a similar study focused on total knee arthroplasty, whereas the frequency of similar images in total hip arthroplasty was lower. This result may be explained by the fact that patients do not prefer to share images of their hip which may be considered a more intimate part of the body compared to the knee and shoulder.

Only a minority of posts directly shared their satisfaction with the procedure. However, most of these posts were expressing satisfaction (94%) and only a minority of the posts reported dissatisfaction. The reason for this is unclear but it may have something to do with the fact that people tend to share positive aspects of their private life in social media (19,20).

In terms of surgeons, the large majority was found to share posts with intraoperative images and postoperative images of the patients. It is rather possible that these results are associated with surgeons' attempts at demonstrating their surgical practices and results for commercial purposes (21). It is interesting to note that, sharing intraoperative media might constitute an ethical issue if the images are shared without directly obtaining the patient's permission. The lack of patient privacy challenges patient safety and might deteriorate the patient-doctor relationship. Thus, it is important to remind physicians that sharing patient images in any form requires outright written permission from the patients (22).

The results of our study suggest that analyzing the content of social media posts might provide valuable data for further patient education, could increase the quality of tailored healthcare, and may empower the patient and also the physician in today's patient-centric health care model.

The present study has some limitations to be mentioned. We only included data from Instagram, as it is focused on images and is one of the most actively used social media platforms worldwide; however, this may have caused a bias towards patients who were willing to share images and thus chose to post on Instagram, which may have caused the omission of patients who did not wish to share images and thus primarily chose other social media to share their experiences. Instagram was chosen because it provides a more objective assessment due to the search parameters and media format (picture or video with text caption). However, additional search in Twitter and Facebook might have provided more comprehensive data as a result of the increased sample size. An additional concern from this analysis arises from the fact that individuals may tend only to share positive outcomes, which may positively distort our results. Conclusion

Patients who shared their surgical experiences in Instagram were found to employ a positive tone and they focused on the rehabilitation process in their posts. Orthopedic surgeons were found to primarily share intraoperative images, probably to better market themselves. We suggest that this study provides critical first-hand data in the understanding of patients' expectations after rotator cuff surgery, which can be used to improve the quality of health care.

## DECLARATIONS

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