Hip Arthroscopy

A Social Media Analysis of Patient Perception

Heather S. Haeberle,* BS, Nicholas I. Bartschat,† BS, Sergio M. Navarro,‡ BS, Patrick W. Rooney,† BA, James Rosneck,§ MD, Robert W. Westermann,† MD, and Prem N. Ramkumar,§|| MD, MBA

Investigation performed at the Cleveland Clinic, Cleveland, Ohio, USA

Background: The rate of hip arthroscopy has increased significantly in recent years, although understanding of patient perception remains limited.

Purpose: To analyze posts shared on Instagram and Twitter referencing hip arthroscopy to evaluate perspective, tone, timing, content, visibility, and location.

Study Design: Cross-sectional study; Level of evidence, 3.

Methods: A search of public posts on Instagram and Twitter was performed over a 1-year period, selected through use of the following hashtags: #hiparthroscopy, #hipscope, and #labralrepair. A total of 1850 Instagram posts and 163 Twitter posts were included in the analysis. A categorical classification system was used for media format (picture or video), perspective (patient, family or friend, physician, hospital or physical therapy group, professional organization, news media, or industry), timing (preoperative, postoperative, nonoperative), perioperative period (within 1 week before or after surgery), tone (positive, negative, or neutral), and content (surgical site, hospital or surgeon, imaging, rehabilitation, activities of daily living (ADLs), return to work, surgical instruments, or education). Post popularity (number of likes) and geographic location were also recorded.

Results: Of the 1850 Instagram posts analyzed, 91.2% were made by patients, and 52.9% were positive. The most common content included in Instagram posts was rehabilitation, ADLs, and hospital or surgeon. A total of 163 Twitter posts were analyzed, with 59.0% of posts made by physicians. A majority of posts had a positive tone, and the most frequently referenced themes included education, hospital or surgeon, and rehabilitation. Overall, posts originated from 24 different countries.

Conclusion: The majority of patients who undergo hip arthroscopy have a positive tone when discussing their procedure. Posts commonly focused on rehabilitation, ADLs, hospital or surgeon, and education. This analysis provides insight into patient perspectives toward hip arthroscopy.

Keywords: hip arthroscopy; social media; Instagram; Twitter

In recent years, the incidence of hip arthroscopy has increased significantly as indications have expanded, technology has improved, and exposure during residency has increased.[3-5,29] In a study of 595 patients undergoing primary hip arthroscopy, Gupta et al[10] reported statistically significant improvements in patient-reported outcome measures (PROMs) at 2-year follow-up. A study of 719 patients demonstrated significant clinical benefit in 57.1%, 68.0%, and 71.7% of patients at 6 months, 1 year, and 2 years, respectively.[16] In elite athletes, arthroscopy has been used for several indications, with improvement in PROMs and a return to play (RTP) rate exceeding 80%.[13,18,27] Despite these promising results, some reports using "big data" are less enthusiastic and point out that 11% of patients undergo revision arthroscopy, with 8% converting to arthroplasty.[26] Currently, evidence for the procedure has been limited by retrospective data, small study cohorts, inconsistency in indications and technique, and a lack of long-term follow-up, leading to an underestimation of the complication rate.[25,28]

Several published studies have reported on the use of social media, including Instagram and Twitter, by orthopaedic patients, physicians, and hospitals.[6,7,11,15,19-22] In a study of more than 3145 public Instagram posts related to anterior cruciate ligament (ACL) reconstruction, Ramkumar et al[19] reported a positive tone in 88% of posts and a focus by patients on rehabilitation and RTP. Similarly, analysis of 1177 patient posts related to shoulder and elbow surgery demonstrated an 87% rate of positive posts, with focus on RTP, surgical site, and activities of daily living (ADLs).[20] A study of 1287 posts from patients who underwent joint arthroplasty revealed that 93% of posts were

The Orthopaedic Journal of Sports Medicine, 7(6), 2325967119854188
DOI: 10.1177/2325967119854188

positive, with emphasis on rehabilitation and ADLs.[22] To date, no such study exists for hip arthroscopy that characterizes how patients perceive and share their perioperative experience. As the outcomes of hip arthroscopy rely heavily on subjective pain relief of the patient, social media provides a different lens to examine the patient experience.[1]

Social media is a powerful tool for understanding the patient experience for hip arthroscopy, particularly because of the increasing use of these platforms by the relatively young patients undergoing arthroscopy. The purpose of this observational study was to analyze publicly shared content on the social media platforms Instagram and Twitter in order to gain an understanding of patient, physician, hospital, and payer perspectives regarding hip arthroscopy. Specifically, we evaluated posts for (1) media format (picture or video); (2) tone (positive, negative, or neutral); (3) perspective (patient, family or friend, physician, hospital or physical therapy [PT] group, professional organization, news media, or industry); (4) timing (preoperative, postoperative, or nonoperative); (5) content (surgical site, hospital or surgeon, imaging, rehabilitation, ADLs, return to work, surgical instruments, or education); (6) post popularity (number of likes); and (7) location. We hypothesized that patients would have a relatively positive tone, focusing on recovery and return to activities and athletics.

METHODS

Search

A search of public posts on Instagram and Twitter was performed on May 1, 2018, for posts from a 1-year period: May 1, 2017, to April 30, 2018. Posts were identified by use of 3 hashtags: #hiparthroscopy, #hipscope, and #labralrepair.

Inclusion Criteria

Only posts relating to human participants were included, while veterinary and other nonhuman content was excluded. All posts referencing hip arthroscopy were included, and those discussing other procedures were excluded. Only posts in English were included in order to avoid misinterpretation.

Analysis

Data were collected and analyzed by 2 independent reviewers (H.S.H., N.I.B.). Interrater variability was resolved by review of original media and discussion to achieve agreement. Data analysis was performed in Microsoft Excel. A binary categorical scoring system was used for media format, perspective, timing, perioperative period, tone, content, post popularity, and geographic location. Tone was determined by overall explicit positive, negative, or neutral expression in the text accompanying any media. No posts were excluded for interrater variability.

RESULTS

Instagram

Table 1 summarizes the results of the Instagram content. A total of 1850 posts were included in the analysis. Overall, 91.2% of posts were shared by patients, with physicians making 5.9% of the posts. A majority of posts had a positive tone (52.9%). In terms of timing, 89.4% of posts were postoperative, 6.2% preoperative, and 4.4% nonoperative. In total, 14.3% of posts were made in the perioperative period, within 1 week before or after surgery.

The most common content depicted on Instagram included rehabilitation (63.7%), ADLs (17.9%), and hospital or surgeon (11.0%). In terms of popularity, each post had an average of 95.8 likes. A total of 594 Instagram posts included a location tag, with 391 posts from the United States and 203 posts from another country. International posts were made from 22 different countries, with 86 posts from the United Kingdom, 36 from Australia, and 21 from Canada. Figure 1 demonstrates a representative post by two patients.

Twitter

A summary of the content analyzed from Twitter is available in Table 2. A total of 163 tweets were included in the study. A majority (50.9%) of these posts were generated by physicians, with patients sharing 22.7% of posts and professional organizations sharing 12.3% of posts. A majority of the posts had a positive tone (50.9%), with only 4.3% posts having a negative tone. Postoperative posts composed 62.6% of the cohort, while 19.6% of posts were preoperative and 17.8% were nonoperative. Perioperative posts made within 1 week before or after surgery represented 13.5% of all posts. In terms of content, 64.4% of posts were educational, 29.4% referenced a hospital or surgeon, and 23.9% discussed rehabilitation. Each post had an average of 4.9 likes. Location was available for 5 posts, with 1 from the

‖Address correspondence to Prem N. Ramkumar, MD, MBA, 2049 E 100th Street, Cleveland, OH 44195, USA (email: premramkumar@gmail.com).
*Department of Orthopedic Surgery, Baylor College of Medicine, Houston, Texas, USA.
†Department of Orthopedic Surgery, University of Iowa, Iowa City, Iowa, USA.
‡Said Business School, University of Oxford, Oxford, UK.
§Department of Orthopedic Surgery, Cleveland Clinic, Cleveland, Ohio, USA.

One or more of the authors has declared the following potential conflict of interest or source of funding: J.R. is a paid speaker for and has received hospitality payments from Smith & Nephew. R.W.W. has received educational support from Smith & Nephew and Arthrex and hospitality payments from Smith & Nephew and Medical Device Business Services. AOSSM checks author disclosures against the Open Payments Database (OPD). AOSSM has not conducted an independent investigation on the OPD and disclaims any liability or responsibility relating thereto.

Ethical approval was not sought for the present study.

TABLE 1
Summary of Hip Arthroscopy Instagram Content

	n (%)
Media format	
Picture	1556 (84.1)
Video	294 (15.9)
Perspective	
Patient	1688 (91.2)
Family or friend	5 (0.3)
Physician	109 (5.9)
Hospital or physical therapy group	34 (1.8)
Professional organization	1 (0.1)
News media	0 (0)
Industry	13 (0.7)
Timing	
Preoperative	114 (6.2)
Postoperative	1654 (89.4)
Nonoperative	82 (4.4)
Perioperative period	265 (14.3)
Tone	
Positive	979 (52.9)
Negative	239 (12.9)
Neutral	632 (34.2)
Content	
Surgical site (sutures, incision, dressings)	108 (5.8)
Hospital or surgeon	203 (11.0)
Imaging	63 (3.4)
Rehabilitation	1178 (63.7)
Activities of daily living	331 (17.9)
Return to work	50 (2.7)
Instrument or device	159 (8.6)
Education	103 (5.6)
Not applicable	153 (8.3)
Post popularity, average No. of likes	95.8

United States and 4 international posts, representing 3 different countries.

DISCUSSION

Although the rate of hip arthroscopy has increased in recent years, evidence regarding outcomes of the procedure is limited because of a lack of prospective data, relatively small patient cohorts, and limited follow-up.[3,25,28,29] Social media provides a unique platform for gathering patient perspectives throughout the treatment course, as patients frequently post their candid thoughts regarding their procedure. Thus, this study sought to evaluate topics that patients emphasize in their planning and recovery in order to more fully appreciate the patient experience during hip arthroscopy.

Overall, a majority of posts analyzed had a positive tone. Although 53% of Instagram posts in this study had a positive tone, prior social media analyses of ACL, total joint, scoliosis, and shoulder-elbow procedures reported 87% to 93% of posts as positive, suggesting that the recovery protocol following hip arthroscopy may affect short-term patient satisfaction.[11,19-22] Thus, longer term follow-up studies may be needed to fully understand postoperative

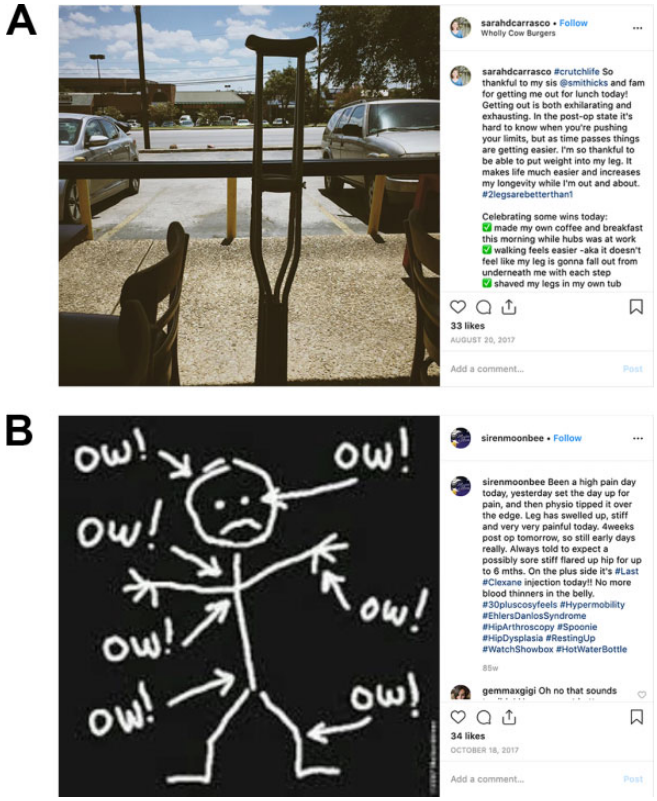

Figure 1. (A) Positive sample post from hip arthroscopy patient, 4 weeks after hip arthroscopy. (B) Negative sample post from patient, 4 weeks after hip arthroscopy.

recovery. A majority of posts on Instagram were generated by patients, with the most commonly referenced content being rehabilitation, ADLs, and hospital or surgeon. Rehabilitation posts included a discussion of PT and RTP, suggesting that this is a major focus for patients. This emphasis on RTP from patients' posts parallels the focus on RTP in athletes following hip arthroscopy in the literature, highlighting the importance of effective postoperative physical therapy.[2,8,9,17,23] This focus on rehabilitation by patients was demonstrated on both Instagram (55.4%) and Twitter (54.1%), although Instagram posts by patients were more likely to have a positive tone (51.3% vs 40.5%) and less likely to have a neutral tone (34.7% vs 45.9%).

Over half of the Twitter posts were from physicians, and the most common content was education, hospital or surgeon, and rehabilitation. Additionally, physician posts were more likely to discuss education on Twitter compared with Instagram (85.5% vs 56.9%). The greater engagement by physicians on Twitter and the emphasis on education suggest that this social media platform may have a more academic focus, while Instagram posts are primarily patient-generated posts describing their treatment course. This discrepancy in platforms used by patients versus physicians suggests limited engagement between the 2 groups. Additionally, the rates of engagement differed between the 2 platforms, with an average of 95.8 likes per post on Instagram compared with 4.9 likes per post on Twitter,

TABLE 2
Summary of Hip Arthroscopy Twitter Content

	n (%)
Media format	
Picture	93 (57.1)
Video	7 (4.3)
Text	63 (38.7)
Perspective	
Patient	37 (22.7)
Family or friend	5 (3.1)
Physician	83 (50.9)
Hospital or physical therapy group	14 (8.6)
Professional organization	20 (12.3)
News media	3 (1.8)
Industry	1 (0.6)
Timing	
Preoperative	32 (19.6)
Postoperative	102 (62.6)
Nonoperative	29 (17.8)
Perioperative period	22 (13.5)
Tone	
Positive	83 (50.9)
Negative	7 (4.3)
Neutral	73 (44.8)
Content	
Surgical site (sutures, incision, dressings)	1 (0.6)
Hospital or surgeon	48 (29.4)
Imaging	20 (12.3)
Rehabilitation	39 (23.9)
Activities of daily living	8 (4.9)
Return to work	2 (1.2)
Instrument or device	4 (2.5)
Education	105 (64.4)
Not applicable	6 (3.7)
Post popularity, average No. of likes	4.9

suggesting a discrepancy in how each platform is used, with the possibility of Instagram being used as a community for patients to interact with each other.

Limitations

This study is not without limitations. Because of the nature of the social media platforms used, only public posts with the selected hashtags were analyzed. Thus, a large number of posts were not included, as they were made private by the user or did not include a relevant hashtag. Yet, the search included a total of 2013 posts, generating a representative sample for analysis. In general, users tend to highlight positive aspects of their subject, potentially creating a bias toward positive outcomes while failing to capture the negative experiences that patients undergoing hip arthroscopy may face.[12] Another limitation of this study is the potential age bias of social media users. In recent years, the use of social media by older users has increased, with 78% of Americans aged 30 to 49 years and 64% of those aged 50 to 64 years using social media; thus, social media may provide a representative sample of patients who undergo hip arthroscopy, whose average age is approximately 37 years.[14,24] Although other social media sites such as Facebook and Snapchat are popular among social media users, Instagram and Twitter were chosen for their ability to provide a large data set of public posts with relevant hashtags that could be objectively analyzed for content.

CONCLUSION

Patients reported an overall positive experience with hip arthroscopy on social media, which provides a powerful tool for analyzing characteristics that are important to patients. Instagram posts were made more often by patients and focus on rehabilitation and ADLs, while Twitter posts were more frequently made by surgeons and tend to be educational or to reference a hospital or surgeon.

REFERENCES

1. Aprato A, Jayasekera N, Villar RN. Does the modified Harris hip score reflect patient satisfaction after hip arthroscopy? *Am J Sports Med*. 2012;40(11):2557-2560.
2. Begly JP, Buckley PS, Utsunomiya H, Briggs KK, Philippon MJ. Femoroacetabular impingement in professional basketball players: return to play, career length, and performance after hip arthroscopy. *Am J Sports Med*. 2018;46(13):3090-3096.
3. Bonazza NA, Homcha B, Liu G, Leslie DL, Dhawan A. Surgical trends in arthroscopic hip surgery using a large national database. *Arthroscopy*. 2018;34(6):1825-1830.
4. Bozic KJ, Chan V, Valone FH, Feeley BT, Vail TP. Trends in hip arthroscopy utilization in the United States. *J Arthroplasty*. 2013; 28(Suppl 8):140-143.
5. Degen RM, Bernard JA, Pan TJ, et al. Hip arthroscopy utilization and associated complications: a population-based analysis. *J Hip Preserv Surg*. 2017;4(3):240-249.
6. Duymus TM, Karadeniz H, Çaçan MA, et al. Internet and social media usage of orthopaedic patients: a questionnaire-based survey. *World J Orthop*. 2017;8(2):178.
7. Duymuş TM, Karadeniz H, Şükür E, Atiç R, Zehir S, Azboy İ. Social media and internet usage of orthopaedic surgeons. *J Clin Orthop Trauma*. 2017;8(1):25-30.
8. Frangiamore SJ, Mannava S, Briggs KK, McNamara S, Philippon MJ. Career length and performance among professional baseball players returning to play after hip arthroscopy. *Am J Sports Med*. 2018;46(11): 2588-2593.
9. Glaws KR, Ellis TJ, Hewett TE, Di Stasi SL. Return to sport rates in physically active individuals six months after arthroscopy for femoroacetabular impingement syndrome [published online October 15, 2018]. *J Sport Rehabil*. doi:10.1123/jsr.2017-0138.
10. Gupta A, Redmond JM, Stake CE, Dunne KF, Domb BG. Does primary hip arthroscopy result in improved clinical outcomes? *Am J Sports Med*. 2016;44(1):74-82.
11. Haeberle HS, Egger AC, Navarro SM, et al. Social media and pediatric scoliosis: an analysis of patient and surgeon use. *Surg Technol Int*. 2017;31:189-196.
12. Herron PD. Opportunities and ethical challenges for the practice of medicine in the digital era. *Curr Rev Musculoskelet Med*. 2015;8(2): 113-117.
13. McDonald JE, Herzog MM, Philippon MJ. Return to play after hip arthroscopy with microfracture in elite athletes. *Arthroscopy*. 2013; 29(2):330-335.
14. Nakano N, Lisenda L, Khanduja V, Jones TL, Loveday DT. Complications following arthroscopic surgery of the hip: a systematic review of 36 761 cases. *Bone Joint J*. 2017;99(12):1577-1583.
15. Ng JP, Tarazi N, Byrne DP, Baker JF, McCabe JP. Scoliosis and the social media: Facebook as a means of information exchange. *Spine Deform*. 2017;5(2):102-108.

16. Nwachukwu BU, Chang B, Adjei J, et al. Time required to achieve minimal clinically important difference and substantial clinical benefit after arthroscopic treatment of femoroacetabular impingement. *Am J Sports Med*. 2018;46(11):2601-2606.
17. O'Connor M, Minkara AA, Westermann RW, Rosneck J, Lynch TS. Return to play after hip arthroscopy: a systematic review and meta-analysis. *Am J Sports Med*. 2018;46(11):2780-2788.
18. Perets I, Hartigan DE, Chaharbakhshi EO, Ashberg L, Ortiz-Declet V, Domb BG. Outcomes of hip arthroscopy in competitive athletes. *Arthroscopy*. 2017;33(8):1521-1529.
19. Ramkumar PN, La T, Fisch E, et al. Integrating social media and anterior cruciate ligament surgery: an analysis of patient, surgeon, and hospital use. *Arthroscopy*. 2017;33(3):579-585.
20. Ramkumar PN, Navarro SM, Cornaghie MM, et al. Social media in shoulder & elbow surgery: an analysis of Twitter and Instagram. *Int J Sports Med*. 2018;39(7):564-570.
21. Ramkumar PN, Navarro SM, Haeberle HS, et al. Cellular therapy injections in today's orthopedic market: a social media analysis. *Cytotherapy*. 2017;19(12):1392-1399.
22. Ramkumar PN, Navarro SM, Haeberle HS, Chughtai M, Flynn ME, Mont MA. Social media and total joint arthroplasty: an analysis of patient utilization on Instagram. *J Arthroplasty*. 2017;32(9): 2694-2700.
23. Schallmo MS, Fitzpatrick TH, Yancey HB, Marquez-Lara A, Luo TD, Stubbs AJ. Return-to-play and performance outcomes of professional athletes in North America after hip arthroscopy from 1999 to 2016. *Am J Sports Med*. 2018;46(8):1959-1969.
24. Smith A, Anderson M. Social media use 2018: demographics and statistics. Pew Research Center. http://www.pewinternet.org/2018/03/01/social-media-use-in-2018/. Published 2018. Accessed November 17, 2018.
25. Smith KM, Gerrie BJ, McCulloch PC, et al. Arthroscopic hip preservation surgery practice patterns: an international survey. *J Hip Preserv Surg*. 2016;4(1):18-29.
26. Sochacki KR, Jack RA, Safran MR, Nho SJ, Harris JD. There is a significant discrepancy between "big data" database and original research publications on hip arthroscopy outcomes: a systematic review. *Arthroscopy*. 2018;34(6):1998-2004.
27. Thomas Byrd JWT, Jones KS. Hip arthroscopy in high-level baseball players. *Arthroscopy*. 2015;31(8):1507-1510.
28. Truntzer JN, Hoppe DJ, Shapiro LM, Abrams GD, Safran M. Complication rates for hip arthroscopy are underestimated: a population-based study. *Arthroscopy*. 2017;33(6):1194-1201.
29. Truntzer JN, Shapiro LM, Hoppe DJ, Abrams GD, Safran MR. Hip arthroscopy in the United States: an update following coding changes in 2011. *J hip Preserv Surg*. 2017;4(3):250-257.