



# Social Media and Plastic Surgery Practice Building: A Thin Line Between Efficient Marketing, Professionalism, and Ethics

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**Abstract** Social media sites and platforms have grown in numbers with an enormous potential to reach and disseminate information in real time. They are impacting tremendously for better or for worse on the current practice of plastic surgery. As the demand for elective plastic surgery, in particular for aesthetic procedures, continues to rise, there is a need to determine the influence of social media advertisements and how it motivates the public to undergo cosmetic procedures. Most importantly, there is an urgent need to determine how the social media are impacting plastic surgery practice building and what is proper and efficient marketing while upholding ethics of the medical profession? A thorough PICO tool-based comprehensive literature search was conducted. Fifty-one peer-reviewed publications, 15 patient-centered, 33 provider-centered, and three combined patient/provider were identified to be relevant to the use of social media in plastic surgery and were selected for this review. Evidence on how social media influences the medical practice and helps in practice building remains scarce; nevertheless, reliance of plastic surgeons on social media to improve their practice has been increasing steadily. Social media may be a powerful tool to promote one's career. It presents, however, serious professional, legal, and ethical challenges

including maintenance of professionalism and protecting patient confidentiality. If misused, it may be a quick way to end a plastic surgery practice.

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## Introduction

Today's world is changing faster than ever due to worldwide accessibility of the Internet [1]. With the rise of social media mass communication that has revolutionized the way we interact with people and our culture, an unstoppable shift in the dramatically changing social mind-set and consciousness has resulted from the “new media” revolution [1–3]. Six Degrees, the first recognizable social media platform, was created in 1997. In 1999, the first blogging sites became popular, following which social media began to explode in popularity. Sites like MySpace and LinkedIn gained prominence in the early 2000s. Culture and social engagement witnessed drastic changes since the advent of Facebook in 2004. YouTube came out in 2005 and by 2006 Facebook and Twitter became available to users throughout the world. The tremendous variety of social networking sites available today has created an environment with endless possibilities of interactive communication where users can reach specific audiences and a maximum number of people [4–6].

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The use of Internet for collecting health-related information is increasing among the general population and has changed how information related to medicine might be obtained [7]. Due to cultural predisposition, aesthetic plastic surgery is inherently receiving more attention [8]. Moreover, as we are embracing the evolution of marketing strategies, the use of social media sites and platforms has grown in numbers by leaps and bounds with an enormous seemingly limitless potential to reach and geographical locations [4, 9–14]. Social media, the most powerful marketing tools one can use to portray a sense of expertise and promote his practice, are impacting tremendously for better or for worse on the current practice of plastic surgery. It has undoubtedly changed the way plastic surgeons engage with their patients [15–17]. With social media, a surgeon's sphere of influence is strongly amplified [18]. When used correctly, social media can offer tremendous benefits, for both educational and marketing purposes, particularly for the growing millennial population [19, 20].

Surgeons utilize now social media for marketing and branding, educating the public, communicating directly with patients, and for the maintenance of a successful practice [5, 17, 21]. Given the current cultural climate and the expectations of the public, social media engagement is inevitable [5]. Apart from the traditional ways to measure the success of a physician, “social media currency” will be tomorrow's yardstick by which professional success, potential, and public influence of a surgeon might be measured [11]. There is, however, a gap between what is being shared and how likely the intended audience is to understand it [14]. Regardless of some negative consequences, there is no doubt that the marriage of aesthetic plastic surgery and electronic platforms is here to stay for at least the foreseeable future [16, 19].

As the demand for elective plastic surgery, in particular for aesthetic procedures, continues to rise, there is a need to evaluate the influence of social media advertisements, how it motivates the public to undergo plastic surgery procedures, and how it impacts on the practice of plastic surgery [4, 22]. Most importantly, there is an urgent need to determine how the social media are impacting plastic surgery practice building and what is proper and efficient marketing while upholding ethics of the medical profession? [1].

## Materials and Methods

A PubMed search of title and abstract keywords “plastic surgery,” “aesthetic surgery,” and “social media” of related publications over the very limited time frame of the last 2 years from 2018 till present identified 42 papers and 28 letters-to-the-editor, discussions, and comments that

were most relevant witnessing to the great importance and the interest this topic elicits in modern aesthetic plastic surgery practice.

A more thorough PICO tool-based comprehensive literature search for “social media versus no social media for practice of plastic or cosmetic or aesthetic surgeon or surgeries” was conducted from 2015 till present. Advanced PubMed search for the terms (((“social media” OR “social-media”) AND (“plastic surg\*” OR “aesthetic surg\*” OR “cosmetic surg\*”) AND (career))) OR ((“social media” OR “social-media”) AND (“plastic surg\*” OR “aesthetic surg\*” OR “cosmetic surg\*”) AND “consult\*”) OR ((“social media” OR “social-media”) AND (“plastic surg\*” OR “aesthetic surg\*” OR “cosmetic surg\*”) AND (refer\*)) identified 107 publications. After reviewing all the titles, 32 publications were excluded for irrelevance. Excluding also letters-to-the-editor, comments, and editorials, 59 peer-reviewed publications with abstracts were found to be relevant to the use of social media in plastic surgery and were selected for this review. After viewing all selected manuscripts, eight general reviews, analyses, and presentations were excluded leaving 52 publications for the final analysis.

## Results

Of these 51 peer-reviewed publications, 15 are patient-centered, 33 provider-centered 13 of which are descriptive, and three combined patient/provider by the same first author. One patient-centered and 15 provider-centered manuscripts are reviews or general analyses. Patient-centered studies focus was on patient greatest use, engagement, and perspective regarding social media, while provider-centered reports dealt with plastic surgery perceptions in social media, patterns of use, plastic surgeons' communication methods with the public, practice promotion, and ethical considerations.

Seventeen manuscripts are studies based on surveys, seven patient-centered, seven provider-centered, and three combined patient/provider studies. Others were mostly Web site searches of various posts, platforms, and trends. Details of all publications included in this review are provided in Tables 1, 2, and 3 and Fig. 1.

## Discussion

Social media is defined as Web-based and mobile technologies intended to make communication an interactive dialogue, and social media marketing is the use of these social networking sites to promote commercial enterprises [51, 54]. In a medical practice, the primary role of social

**Table 1** Patient-centered manuscripts included in the review

References	Study design	Conclusion
Sorice et al. [23]	Cross-sectional study in a single aesthetic practice of two plastic surgeons by surveying 100 consecutive patients	Facebook had the greatest patient use and engagement, with YouTube second in use and Instagram second in number of engaged users. The least popular network was Twitter
Chopan et al. [24]	Over 1 million tweets collected with the keywords “plastic,” “cosmetic,” “aesthetic,” and “reconstruction” surgery spanning from 2012 to 2016	Tweets containing the term “plastic” surgery trended toward negativity. Conversely, related terms such as “aesthetic,” “cosmetic,” and “reconstruction” were more favorably regarded
Fan et al. [25]	Anonymous 31-question survey	33% follow plastic surgeons on social media; those aged younger than 35 years 3.9 times more likely to do so. Google was the first place people would look for a plastic surgeon (46%). Practice Web site is most influential of all online methods for selecting a surgeon (21%), but social media platforms as a whole ranked higher (35%). Clear differences in engagement and perception exist in the public based on age, sex, parental status, and reported country of origin
Dorfman et al. [26]	Google.com search was conducted to identify the top 20 Web sites of board-certified plastic surgeons in the USA. Social media presence was quantified by tracking the number of followers on Facebook, Twitter, and Instagram	19.6% of plastic surgeon practices still had no social media accounts. Plastic surgery practices relied on referrals, word of mouth, and the surgeon’s reputation and academic pedigree. This practice-building model is being rapidly supplanted by a new paradigm based on social media presence
Ward et al. [27]	Analyzing Google search data using Google Trends, impact of highly publicized plastic surgery-related events on the interest level of the general population in specific search terms was analyzed	Interest level in fillers increased by 30.31 points after Kylie Jenner announced that she received Juvéderm lip injections. The interest level in plastic surgery was decreased by 21.3% the month after Joan Rivers’ death
Shome et al. [28]	How taking, altering, and posting selfies on social media affects individuals’ self-esteem, confidence, body image perception, and mood was assessed in 300 participants from four Indian cities	Deleterious effects of uploading selfies on well-being
Ross et al. [29]	Anonymous institutional review board-approved survey during initial cosmetic visit	Patients indicated a desire for provider educational materials. Social media can improve patient education, collaboration, recruitment, and online professional image, leading to healthier patient-centered care
Schlichte et al. [30]	Investigate the current preferences of patients regarding cosmetic nonsurgical, surgical, and dental treatments on RealSelf and in the documented medical literature. On a single day of data collection, all cosmetic treatments or procedures reviewed on the RealSelf Web site were tabulated	Social media sites such as RealSelf may offer information helpful to decision making and enable cosmetic treatment providers to build reputations and expand practices. “Worth it” ratings on RealSelf may represent a more transparent view of cosmetic treatment
Janik et al. [1]	Two-cohort study was conducted in aesthetic plastic surgery clinic and public department of plastic and surgery by surveying consecutive first-time patients	Word of mouth from other patients remains the most-valued source of information about plastic surgery. However, proper use of social media in a professional manner can attract more patients to the aesthetic plastic surgery practice
Wilson et al. [31]	Data were collected using Google Trends for breast augmentation and associated search terms from January 2004 to May 2017. Case volume was obtained from the American Society of Plastic Surgeons (ASPS) annual reports	Statistically significant positive correlation between average annual Google search volume of “breast augmentation” and the annual volume of breast augmentations performed in the USA
Aldosari et al. [4]	Cross-sectional study of patients attending cosmetic clinics in Saudi Arabia. Questionnaire about the reason for the trending of plastic surgeries	Majority of patients visiting plastic surgery clinics were positively affected, but not exclusively, by media coverage of cosmetic surgery results. 65.7% confirmed that before-and-after pictures of social media have an effect on the trend of cosmetic procedures
Tang et al. [32]	Observational study of posts pertaining to autologous and implant-based breast reconstruction from active Facebook groups	DIAP flap breast reconstruction had relatively high individual satisfaction despite difficult postoperative recovery. Social media provide informational and emotional support to patients and can be used to gather unbiased information of patients’ experience to inform clinical conversation and guide clinical practice

**Table 1** continued

References	Study design	Conclusion
Nayyar et al. [33]	Choice-based conjoint analysis survey to analyze the preferences of patients seeking three common aesthetic procedures	The choice of social media platform is the most important factor for patients, and they indicated a preference for comprehensive information delivered by the surgeon via live video on Facebook
Eggerstedt et al. [34]	Investigate the most common angles employed by various user cohorts of full face photographs published on the social media platform Instagram™ with the tag #selfie	Common photography practices employed within selfie photographs utilize angles not captured in standard perioperative photographs. Implementation of a selfie photograph into the standard set of pre- and postoperative photographs taken by aesthetic surgeons is recommended
Domanski and Cavale [35]	The “worth it” percentage, average cost, and number of respondents were recorded for all topics evaluated on the aesthetic procedure social media site <a href="http://www.realself.com">www.realself.com</a> . A literature search was also performed for the most commonly rated surgical procedures, and the satisfaction rates were compared	The highest-rated surgical procedure was abdominoplasty, with 93% of the 1589 self-selected respondents expressing that abdominoplasty was “worth it.” No statistically significant correlations between literature satisfaction scores and realself.com “worth it” scores were found

media is to provide information [61]; however, it is taken for granted by most surgeons that attracting more patients and increasing revenue is the main goal in creating or increasing Web presence [57].

Plastic surgery is a unique deep-rooted service-based surgical practice with many cutting-edge developments. It relies essentially on word-of-mouth referrals from other physicians and patients’ family and friends [39, 44]. Word of mouth is a most persuasive form of promotion allowing direct to consumer marketing. It is essential for early branding to rapidly grow a new practice base; however, it does not necessarily offer continued growth [18]. Given the consumer-driven nature of plastic surgery and its high public profile that relies on visual results, its services have been significantly affected by the new media revolution that has provided a new platform of interaction greatly magnifying word-of-mouth benefits ensuring as well the potential for sustained and continued practice growth [3, 11, 18].

Despite the fact that online communication cannot substitute for the patient–physician encounter, 59–70% of plastic surgery patients believe that the Internet and the social media are a source of unbiased opinion and are a valuable resource for evaluating surgeons and understanding potential surgical procedures [1, 5, 11, 43, 65]. A vast majority of plastic surgery patients, particularly with higher income and education, utilize online rating services nowadays to identify a plastic surgeon and are increasingly searching the Internet before a consultation. Patients are most interested in before and after photographs and information about the surgeon’s practice; live videos are considered as their favorite social media format. Potential patients are also interested in real patient testimonials, treatment videos, doctor’s videos, doctor’s blogs, and in

posts of contests to win a free treatment or product [11, 36, 66]. There is, however, in general, lack of studies conducted to determine the factors that influence the decision of patients to undergo a plastic surgery procedure or treatment after viewing these posts and advertisements [22].

The competitive market, coupled with patients’ growing expectation of continuous personal contact and mounting new technological and conceptual challenges, poses new challenges to the plastic surgeon [11]. Failure to adopt new methods of communication to stay visible and to meet the increasing number of patients searching online for information would render a surgeon obsolete rapidly leading to irrelevance and failure of his business as a whole. It may lead patients down a path toward less qualified “cosmetic surgeons” [51, 67, 68]. The days of relying on word-of-mouth and academic pedigrees for practice building seem to be long gone [36]. At present, a significant determinant for patients’ decision to undergo cosmetic surgery, particularly for patients 21–30 years old, is surgeon’s self-advertisement on any form of social media [4]. Those aged younger than 35 years are 3.9 times more likely to follow plastic surgeons on social media than older patients who are 3.13 times more likely to rely on their friends’ opinion and are 1.92 times more likely to be indifferent to a plastic surgeons’ social media professional activity [25]. A recent survey utilizing several new research tools, importantly Amazon Mechanical Turk (Mech Turk) and presenting a crowd-sourcing-based assessment of patient preferences related to social media conducted by Nayyar et al. [33] on Internet users considering having a facial rejuvenation procedure with a mean age of 40 years (range 22–74 years), concluded that only 33% ranked social media as the most important attribute determining their

**Table 2** Provider-centered manuscripts included in the review

References	Study design	Conclusion
Mess et al. [36]	Case study of how, why, when, and what social media are being used by ASPS members	Significant disconnect between plastic surgeons and the highest impact platforms reported in the literature such as Instagram, YouTube, Snapchat, and Facebook. Plastic surgeons currently prefer to focus electronic marketing efforts on practice Web sites over social media platforms
Ben Naftali et al. [11]	Prospective analysis of three popular, global social media networks performed using the English language key phrases “plastic surgery” and “#plastic_surgery”	63% of the posts on Instagram originated with plastic surgeons, compared with 18% on Facebook and only 13% on YouTube
Economides et al. [37]	16-item questionnaire was sent electronically to board-certified plastic surgeons to investigate professional social media use and perceptions	Professional social media use is rising within plastic surgery. However, a dichotomy exists in acceptance. Private practice, younger surgeons are more likely to view social media as an acceptable method of reaching patients
Fan et al. [38]	Top five influencers of each category were determined, and their 300 most recent tweets were analyzed for educational, promotional, or personal content	Private practice surgeons represented 68% of the top tweeters. Academicians were only 8%. American board-certified surgeons represented 55% of the top tweeters. Nonphysicians were more likely to have promotional and less likely to have educational posts
Gould et al. [39]*	Descriptive article presenting several key resources that can be utilized in social media. Benefits of social media to a plastic surgery practice are discussed	Social media should be used by plastic surgeons to engage with their patients and their societies. Furthermore, social media should be used to educate the public and to raise the profile of the practitioners of plastic surgery
Gould and Nazarian [18]	A start-up plastic surgery practice in Beverly Hills, Los Angeles, was profiled to examine the effects of multiple marketing tools	Social media has a relatively high return on investment
Vardanian et al. [40]	Anonymous survey on the use of social media was distributed to members of the American Society of Plastic Surgeons. Prevalent patterns of social media implementation were elucidated	Incorporation of social media into medical practice is inevitable (56.7%) that they are an effective marketing tool (52.1%) and that they provide a forum for patient education (49%)
Chen et al. [41]*	Descriptive article to help plastic surgeons to: 1. identify the key social media platforms to use, 2. recall the primary components of the code of conduct when using social media, 3. recognize how to build a social media presence and brand, and 4. summarize the primary applications of social media in plastic surgery	The different platforms available, code of conduct, how to build a social media presence, and the main applications of advertising, education, and research, as based on evidence-based recommendations, are presented
Branford et al. [42]	Prospective analysis of 2880 “tweets” containing the words “plastic surgery.” The following were assessed: identity of author, use of the hashtag #PlasticSurgery, subject matter, whether link to study was provided, and whether posts by surgeons were self-promotional or educational	Social media posting about plastic surgery is dominated by the public, accounting for 70.6% of posts versus only 6.0% by plastic surgeons. 61.3% of posts by plastic surgeons were about aesthetic surgery. Of posts by plastic surgeons, 37.0% were self-promotional
Bennet and Vercler [43]*	Descriptive article about basic guidelines for using patient images on social media	It is critical for plastic surgeons who use patient images for this purpose to facilitate fully informed consent, consider both context of use and the patient–physician power differential, and put patients’ interests ahead of their own
Jalalabadi et al. [44]*	Descriptive article exploring the frontier of developing novel ideas and products to advance the field of plastic surgery	Venture capital (VC) funding to be a pivotal source for helping a business survive in its early stages. Plastic surgeons can benefit from learning how to seek out VC funding
McEvenue et al. [45]	Google search using publicly available lists of all plastic surgeons registered with the Royal College of Physicians and Surgeons of Canada (RCPSC) and the Canadian Society for Aesthetic Plastic Surgery (CSAPS)	42% of RCPSC plastic surgeons had a Web site, and 85% had a profile on social media. Younger RCPSC surgeons were significantly more likely to have a Web site and an active social media profile. Social media platform most used was RateMDs (81%), LinkedIn (28%), RealSelf (22%), Facebook (20%), Google+ (17%), and Twitter (16%)
Montemurro et al. [46]	All active members of the Swedish National Aesthetic Plastic Surgery Society were identified. Webpages, professional (LinkedIn), social media (Facebook, Twitter, Instagram), and video-sharing (YouTube) accounts as well as online patient forum (Plastikoperationsforum) and corresponding platform-specific metrics were analyzed	Most of the new practices are single-surgeon ones. Instagram and Facebook accounts of their clinics seem to be the most popular SoMe platforms. Younger surgeons were more likely to have a Facebook or Instagram account and to be using two or more social media platforms



**Table 2** continued

References	Study design	Conclusion
Cho et al. [17]*	Descriptive study reviewing current literature on social media use by residents	There is a paucity of literature on how residents should approach social media. Recommendations are made for young plastic surgeons
Nayak and Linkov [47]*	Descriptive article investigating ways of harnessing the burgeoning market of interactive media	There is no single best social network; instead, various networks exist with unique characteristics that each have the potential to drive traffic to a practice
Schoenbrunner et al. [48]*	Descriptive article presenting a review of the revised American Society of Plastic Surgeons Code of Ethics as it pertains to social media use and a review of existing professional society guidelines, including those of the American Board of Plastic Surgery and the American Society for Aesthetic Plastic Surgery	Guidelines synthesized into a framework for the ethical and professional generation of social media content. A proposed social media informed consent form is also provided
Azoury et al. [16]	Facebook, Instagram, and Twitter were queried for plastic surgery training program, program director, and chief/chair accounts	Facebook is the most popular social media platform among chiefs/chairs followed by Instagram and Twitter. Facebook is used more by program directors followed by Instagram and Twitter. The majority of Facebook and Twitter leadership accounts are for personal use, whereas Twitter is used primarily for professional purposes
Chang et al. [49]	Survey on Facebook use was distributed to two groups of plastic surgeons: 500 with professional Facebook pages and 500 without Facebook pages survey on Facebook use was distributed to two groups of plastic surgeons: 500 with professional Facebook pages and 500 without Facebook pages	Plastic surgeons tend to perceive Facebook's impact on their practices as positive, but most do not track its direct effects on professional Web site hits, new referrals, or conversion-to-surgery rates
Day et al. [3]*	In this descriptive article, online resources related to health care and the practice of plastic surgery are reviewed and summarized, including open access, mega-indices, whitelists, and electronic alerts	Navigating the academic new media landscape requires evidence-based principles, critical thinking, and learning about digital trends. How plastic surgeons negotiate virtual scholarly environments will define the new media digital academic complex moving forward
Wheeler et al. [50]	19-question Web-based survey was disseminated by e-mail to all board-certified or board-eligible American plastic surgeons	28.2% of respondents used social media in their practice, while 46.7% used it in their personal life. The majority of respondents who used social media in their practice claimed that their efforts were directed toward patient referrals
Kuechel [51]*	Descriptive article discussing social media as a means of communication between the aesthetic medical practice and clients	With all the different ways social media can influence practice, it is important to not lose sight of the basics of marketing
Mabvuure et al. [52]	Professional profiles of BAPRAS members were searched on Facebook, Twitter, LinkedIn, RealSelf, YouTube, ResearchGate. Additional surgeons were identified from the follower lists of @BAPRASvoice and @BAAPSMedia. Web site ownership was determined on Google	18% had no account on any platform, whereas 82% had at least one platform. The platform most surgeons use is LinkedIn (52%), while smaller proportions used Facebook (4%) and Twitter (22%)
Siegel et al. [53]	Instagram was queried with 15 plastic surgery-related hashtags. Only the top 50 posts of each hashtag were analyzed at a single time point	Medical professionals publish the majority of plastic surgery-related posts on Instagram; however, the utilization of plastic surgery hashtags by other specialties may be confusing or misleading to users who are unaware of interdisciplinary training differences
Laban [54]*	Descriptive article about how social media have radically changed medical marketing	To deploy a successful social media campaign, it is critical to have an understanding of what the practice hopes to get out of a social media marketing program, develop a robust plan, and create a specially balanced blend of unique and engaging promotional and nonpromotional content to be published on a daily basis
Cho et al. [55]	Electronic survey of plastic surgery trainees, candidates, and members of the American Society of Plastic Surgeons using SurveyMonkey	When compared with salaried surgeons, private practitioners used social media. Majority of plastic surgeons use social media to brand their practice, attract patients, and educate the public

**Table 2** continued

References	Study design	Conclusion
Miller [56]*	Descriptive article designed to help physicians in Web site creation. Traditionally viewed as a subjective component, a Web site can be crafted in such a way to build more positive initial impressions	With the aspects of Web site construction and promotion in mind, a surgeon should be in a good position to identify areas where common errors can occur and understand how to avoid such errors
Workman and Gupta [57]	Smartphone apps from all available markets were analyzed for various factors, including popularity among general consumers, ease of use, and functionality. Each app's content was further analyzed within the context of ethical obligations	The apps with the highest number of ratings were those offering the option to upload photographs and morph each photograph according to the user's own preference
Dong et al. [58]	Analysis following started the start of Hand Surgery International on LinkedIn	The LinkedIn group serves as an effective means for continuing professional development for hand surgeons. The number of members increased from 38 in the beginning to 4106 members by August 13, 2015, with members from all over the world
Irwin et al. [59]	Anonymous, voluntary survey among applicants applying to both the integrated and independent Harvard PRS residency programs	Residency program's social media platform "influenced their perception of a program or intended rank position of a program," and 72% indicated a positive effect on their perception of a program and its rank list position
Lifchez et al. [60]*	Review discussing the federal privacy and communications laws as they apply to a physician's use of social media	Physicians participating in social media as part of their practice must know and comply with the laws governing patient privacy and appropriate Internet communication; failure to do so can result in severe monetary penalties. Even more important is the maintenance of appropriate ethical and professional behavior in this communication
Wong and Gupta [61]	Web sites of aesthetic surgeons from seven US cities were compared and evaluated for the existence of Facebook, Twitter, or MySpace links and promotions	Surgeons practicing in Miami favored social media the most, with 50% Facebook page and 46% Twitter. Increase in the number of new Facebook memberships among cosmetic providers in the seven cities began in 2008 and reached a peak in 2009, with subsequent stabilization. The increase in the number of new Twitter memberships began in 2008 and remained at a steady rate
Klietz et al. [12]	An Instagram account called "doctor.aesthetics" was created. Content was produced and categorized into four groups. No bots or other Instagram-based promotions were utilized. Every post was evaluated regarding likes, comments, clicks, new followers, impressions, and savings	After 5 months and 37 posts, 10,500 people followed the account. "Aesthetics" posts were saved by most people
Dauwe et al. [21]*	Descriptive with no mention of objective data supporting the benefit of online social networking to a plastic surgery practice. Article is intended as a foundation for understanding the potential impact of social networks on a plastic surgery practice. The key for any surgeon is to establish communication between all networks, such that he or she maximizes exposure and the potential patient base	Article provides a raw tutorial on how to incorporate online networking sites into plastic surgery practices. Patients are searching surgeons' names, self-educating on procedures, and openly communicating online about our "brands." It is essential for the savvy plastic surgeon to tap into this movement and embrace the opportunity to improve/expand his or her practice

\*Descriptive observational articles

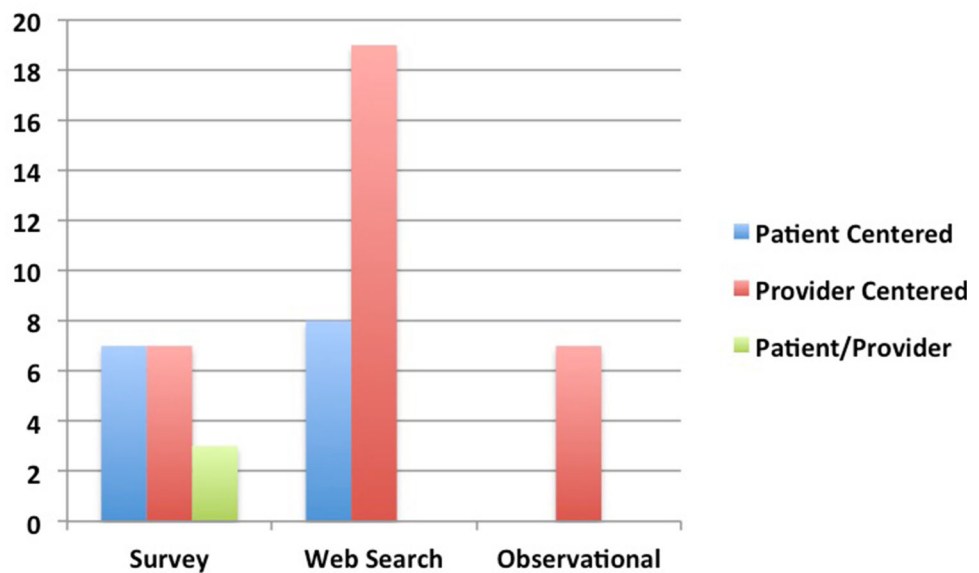
choice with the most preferred platform being Facebook (53.65%) followed by YouTube (44.72%).

Few years ago, social media were believed to have no impact on practice building. Now, some years later, they became a popular means of advertisements for professional providers [22, 36]. In an increasingly competitive market with many presenting themselves as plastic surgeons performing procedures outside the scope of their training [68, 69, 53], social media have been demonstrated to be a powerful tool for genuine plastic surgery marketing,

branding, communicating, and educating the public, particularly in cosmetic surgery and medicine [1, 11, 22, 43, 67]. Social media are even gradually eclipsing plastic surgeons' practice Web sites and other traditional electronic marketing platforms [36]. Similar to private practice, social media use in academic plastic surgery is growing exponentially to promote plastic surgery training programs and improve their reputation. Nevertheless, academic surgeons are still reluctant to adopt a higher acceptance of social media use [16, 19, 20, 53].

**Table 3** Combined patient-/provider-centered manuscripts included in the review

References	Study design	Conclusion
Montemurro et al. [62]	Questionnaire to 648 consecutive patients who attended a clinic for consultation for primary breast augmentation. A separate “surgeons’ questionnaire” to 138 plastic surgeons who were either practicing in branches of the clinic, had previously done fellowship in it, or were visiting the clinic	91.4% of patients searched online and 61.4% searched in specific online groups for information on breast augmentation. 88.9% looked for clinical photographs, and 73.4% searched for unfavorable reviews of the surgeon. 72.5% of surgeons thought that over 75% of patients gather information on the Internet, while only 20.3% over 75% of patients use social media for their information. 52.5% of surgeons have noticed that social media affected their consultations
Montemurro et al. [63]	500 consecutive patients completed a questionnaire prior to their consultation with a plastic surgeon at a clinic. A questionnaire was also completed by 128 plastic surgeons practicing in 19 different countries. A literature review was also performed	95% of patients used the Internet to collect information prior to consultation, for 68% being their first search method. Social media were used by 46% of patients, and 40% were strongly influenced when choosing a specific doctor. 85% of plastic surgeons thought the information found on social media could lead to unrealistic expectations; 45% believed that their consultations became easier after the advent of social media. Literature review showed a high percentage of poor-quality Internet Web sites regarding plastic surgery and an increase in use of social media among plastic surgeons
Montemurro et al. [64]	A questionnaire to patients consulting for primary breast augmentation at a clinic. Plastic surgeons who worked at or visited the clinic completed a separate questionnaire	The increase in use and influence of the Internet and SoMe on patients and surgeons is rapid

**Fig. 1** Distribution of manuscripts included in the review regarding study design

Although some surgeons feel social media have impacted them positively, others on the contrary describe their impact as negative [17]; nevertheless, reliance on social media to improve practice has been increasing steadily [11, 19, 48, 69]. Unfortunately, available evidence on how social media influences the medical practice and how it helps to promote one’s career is scarce [63]. Though it is widely acknowledged that number of aesthetic procedures performed can increase following posting on a physician’s social media review Web site [15], this current

literature search could demonstrate only few publications with hints as to its efficacy. In one study, a statistically significant positive correlation between average annual Google search volume of “breast augmentation” and the annual volume of breast augmentations performed in the USA was demonstrated by Wilson et al. [31]. Analyzing Google search data using Google Trends, Ward et al. [27] examined the impact of highly publicized plastic surgery-related events on the interest level of the general population. The authors reported that after Kylie Jenner



announced that she had lip augmentation injections, interest level in fillers increased by 30.31%, while interest level in plastic surgery decreased after Joan Rivers' death by 21.3%. To quantify the return on investment for social media in plastic surgery, Gould and Nazarian [18] conducted probably the first study to transparently quantify the value of social media in a start-up practice in Beverly Hills without preexisting clients and with a broad approach to marketing. They demonstrated that social media have a relatively high return on investment. They create the potential for better customer insight and better accuracy of market intelligence. Interestingly, the authors have observed that after the social media establishment phase of the practice, referrals from word of mouth begin to grow, confirming the critical importance of this traditional form in developing a patient base. This may explain why some platforms have no effect in established practices, as established referral patterns are already in place [18].

Choosing the right digital platform to attract the right public attention is certainly critical for effective engagement with prospective patients [11, 36]. There is, however, no single best social network; instead, various networks exist with unique characteristics and each has the potential to attract patients and promote a practice [47]. Nevertheless, the debate continues about the superiority of Facebook, Twitter, Instagram, Snapchat, Pinterest, or YouTube [3]. Studies have confirmed that Facebook has the greatest plastic surgery patient use and engagement with YouTube second in use; Instagram is second in number of engaged users, and Twitter is the least popular network [1, 24, 34, 36, 70]. Surprisingly, there is a significant disconnection between plastic surgeons and the highest impact platforms. Most still prefer to focus electronic marketing efforts on practice Web sites instead of social media platforms, and only 15% of them post on social media daily [1, 3, 36], 63% on Instagram compared with 18% on Facebook, and only 13% on YouTube [11]. Twitter is popular among plastic surgeons. Though this platform does not operate with a business-minded approach and may not be the best for commercial use, it is nevertheless a good platform for reaching patients offering a more personal experience with less negative behavior like shaming [11]. Unfortunately, most surgeons' posts on Instagram are not educational with 83% being self-promotional [11, 19, 53]. It is alarming also to note that the minority of social media content related to plastic surgery is produced by worthy well-trained experts. Most content is posted by patients or by providers with less training and expertise, or with no medical background at all. As an example, 70.6% of posts on Twitter are by patients versus only 6.0%, by plastic surgeons [42, 68]. Though use of professional social media by plastic surgeons is rising, a dichotomy in its acceptance as a valuable and efficient way to increase visibility and

develop a patient base still exists. Younger surgeons and surgeons in private practice are more likely to view social media as an acceptable method of reaching patients [37]. Plastic surgeons are certainly lagging behind in the growing competition for attention; very few know how to effectively take advantage of this expanding communication tool [11].

It is legitimate to advertise and make one's services known. Social marketing as a driver of growth is definitely understandable. It is understandable also that to ensure that their brands stay ahead of the competition, many plastic surgery practices are employing services of professional social media marketing companies capable of developing solid strategic and tactical plans [54]. But as plastic surgeons are engaging more frequently and forcefully in social media's many forms of communication, entertainment, and marketing, they are increasingly tempted to skirt the limits of professionalism [71]. Many are compelled to "outdo" competitors by pushing the boundaries of their posted contents [25]. Social media are a domain with potential professional pitfalls creating a nebulous zone of comfort between patient confidentiality and entertainment [19]. The line between innocent information and misleading deceptive information is very thin [11, 19]. Social media may convey certain controversial personal point of views that are lacking scientific basis [6, 53]. Platforms may be paid or sponsored to promote medical brands, and followers can be purchased same as viral marketing for Web top pages prominence. Thus, increased visibility and the number of followers do not reflect a surgeon's experience, skill, or dedication to education [3, 5, 6, 11, 19, 51] making rather obsolete the metric utilized to guide ranking and trending on which potential plastic surgery patients base their decisions [6]. While there are tools to distinguish automated bots from regular user accounts, plastic surgery consumers in particular have little or no experience with these tools. Moreover, they may not have experience with some forms of advertising in the social media space and may have great difficulty in distinguishing paid advertisement from independent organic user-generated content.

Sensational provocative and titillating content of some posts is even more disquieting [5]. The latest surge in video sharing and live broadcasts of aesthetic surgery operations is a source of real concern. These, besides being viewed as entertaining rather than educational and representation of patient care, may constitute potential but serious breaches of patient confidentiality that are not without serious consequences [5, 66, 72]. Moreover, photographs and videos graphically capturing sensitive anatomy in sometimes a casual manner render social media posts potentially unprofessional and disrespectful [5, 25, 67]. Little is known also about how the public stands on ethical debates

regarding surgeon's posting on his or her personal life and bluntly advertising one's skills and credentials [25].

Social media platforms are very difficult if not impossible to monitor, control, and regulate [5]. Lack of regulation, oversight, rating scales, authentication protocols, and enforceable accountability may increase social media users' vulnerability to exploitation [3]. Ultimately, the public expects professional conduct [8] and many question the ethics of surgeons' social media practices [72]. However, identifying inappropriate social media content is not given; there is no clear definition in the literature about what constitutes both professional and ethical conduct [5, 67]. Moreover, it is often unclear where ethics ends and professionalism begins [71]. As plastic surgeons, serious reflection is in order whether this is the trajectory we want for our profession. If not approached with caution, social media may invite significant risks particularly since a large percentage of its audience is young and likely immature [6, 19, 67]. It may well be a quick way to end a plastic surgery practice [19].

As bluntly stated by Devitt and Kenkel [6], currently "surgeons promote their work, they gain followers, their practices potentially become busier, they do more cases, and they make more money." Some colleagues unfortunately are becoming entertainers more concerned about their star image on social media than patient care. With more likes and followers, priorities unfortunately are shifting [6]. The real danger of social media resides also in the fact that nowadays patients can no longer decipher what a plastic surgeon really is. As stated in a recent editorial, "well-trained plastic surgeon" has been replaced by "influencer" or "public figure," "educator" replaced by "entertainer," "professional" replaced by "promoter" [19].

## Conclusion

To date, quantifying the value of social media in plastic surgery is still elusive [18] and delineating how the patients engage online remains largely undetermined [25]. Most reviewed publications are subjective opinions with limited objective data about the real impact of social media in plastic surgery. Unfortunately, scientific posts fail in attracting people [12]. A post that is 100% ethical and 100% professional may also be 100% ignored [73]. "The Social 80/20" principle advises that for effective and successful social media engagement, any business or practice should not "ask" for something on its social media pages any more than 20% of the time giving freely interesting information for the remainder of the interactions while refraining at the same time from self-serving messages

bragging about the qualities of the practice and the services it renders [54].

Social media platforms are powerful communication tools; with this power comes great responsibility [48]. Social media have been credited with the potential to transform medicine [74], but as in many other areas, plastic surgeons are at the frontier of developing novel ideas and products and have the opportunity to pioneer social media in medicine and set the bar high for all [20, 44]. Unfortunately, they are still lagging behind in this domain. It is probably the time now, as rightly stressed by Cho et al. [55], to recognize that plastic surgery residents should receive as part of their curricula special formal training in the proper and ethical use of social media. Ongoing courses online or at national and international conferences addressed to plastic surgeons in practice are also needed regardless of the fact that the most effective and professional manner to promote one's practice while respecting general medical ethics is still unknown territory. How to strike a fair balance remains a difficult question; it does not need, however, to be impossible.

The issue is certainly complex and the challenges are enormous, but obviously, as eloquently stated by Fan et al. [25], "engaging potential patients through their preferred methods of communication will be the key to continued growth of practices and the field as a whole." Facebook tends to be most favored among the older generation, while Instagram is more popular among younger patients with Twitter emerging as a new source for news and discussion [23, 25, 75]. When it comes to the ethical implications of social media, establishing ethical and professional guidelines is not easy. Even great philosophers might have been challenged by the task [73]. Moreover, rapid expansion and development of social media platforms are outpacing any codified ethical and professional guidelines [8]. It would be presumptuous for anyone or any organization to claim that strict regulations of social media content that may be difficult if not impossible to enforce would avert many of the pitfalls. Instead, expert guidance by professional national and international societies while keeping pace of the rapidly changing space and nature of the platforms is what is mostly needed. It must be kept, however, in mind that as familiarity with social media grows, attitudes toward practices may change with time and what was once abhorrent can become acceptable in a not so far future.

## Compliance with Ethical Standards

**Conflict of interest** The authors declare that they have no conflicts of interest to disclose.

**Ethical Approval** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed Consent** For this type of study, informed consent is not required.

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