Google Ranking of Plastic Surgeons Values Social Media Presence Over Academic Pedigree and Experience

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Robert G. Dorfman, MSc; Eitezaz Mahmood, BA;
Albert Ren, BA; Sergey Y. Turin, MD; Elbert E. Vaca, MD;
Neil A. Fine, MD, FACS; and Clark F. Schierle, MD, PhD, FACS

Abstract

Background: Patients increasingly rely on online resources to make healthcare decisions. Google dominates the search engine market; first-page results receive most of the web traffic and therefore serve as an important indicator of consumer reach.

Objectives: Our objective was to analyze the respective importance of physician academic pedigree, experience, and social media presence on plastic surgeon Google first-page search result placement.

Methods: A Google.com search was conducted in the top 25 United States metropolitan areas to identify the top 20 websites of board-certified plastic surgeons. Social media presence was quantified by tracking the number of followers on Facebook, Twitter, and Instagram for every surgeon as well as medical school and year of graduation. The primary outcome was website ranking in the first page of Google search results. To identify the independent predictors of presence on the front page, we performed a multivariate logistic regression.

Results: Total number of social medial followers was associated with Google front-page placement ($P < 0.001$), whereas medical school ranking and years in practice were not ($P = 0.17$ and 0.39, respectively). A total 19.6% of plastic surgeon practices in our study cohort still had no social media accounts whatsoever.

Conclusions: For the past few decades, plastic surgery practices relied on referrals, word of mouth, and the surgeon's reputation and academic pedigree to attract new patients. It is now clear that this practice-building model is being rapidly supplanted by a new paradigm based on social media presence to reach potential patients.

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Over the past decades and into the beginning of the new millennium, aesthetic surgery practices anecdotally relied on referrals, word of mouth, and the surgeon's reputation and pedigree to attract new patients.[1] Residents were taught that providing excellent results and taking good care of patients would lead to a good reputation in the community, which would attract future patients. It is now clear that this practice-building model is being rapidly supplanted by a new paradigm based on social media presence to reach potential patients.

Patients have been increasingly using online resources to make healthcare decisions.[2-4] Moreover, patients tend to trust these resources and place a high value on the ratings that providers receive online.[5,6] As the consumption of social media has grown, it has become a natural marketing venue for providers of aesthetic surgery due to its low cost and ability to reach a wide audience.[7-9] The proliferation of preoperative and postoperative photos, intraoperative videos, and graphic explanations of the procedures offered

From the Division of Plastic and Reconstructive Surgery, Northwestern Memorial Hospital, Chicago, IL.

Corresponding Author:
Dr Clark F. Schierle, 676 North Saint Clair Street, Suite 1575, Chicago, IL 60611, USA.
E-mail: drschierle@northwesternplastics.com; Twitter: @drpacocanales

clearly appeals to many potential patients, as evidenced by many of the hugely popular accounts belonging to aesthetic surgery providers.[10-12] However, this has also raised questions regarding professional etiquette on these media channels,[13] especially in light of some aesthetic providers' harmful behavior.[14]

Although individual practices may be able to track their own patient recruitment patterns, the impact of social media presence across the specialty has not yet been studied compared with the existing pattern of relying on a surgeon's pedigree and track record. To examine this, we conducted a study of board-certified plastic surgeons practicing in the United States, employing their websites' ranking on Google as a proxy for new patient interest given that the vast majority of search engine users do not go past the first page of search results.[15] Medical school alma mater and years since graduation were taken to serve as a proxy for "reputation and pedigree" and compared with their social media presence to identify the variables most correlated to a top web search ranking.

METHODS

We conducted an internet search through Google (http://www.google.com) on June 2, 2018 with the phrase "Plastic Surgery <city name>" for the top 25 metropolitan areas in the United States. The top 20 websites of board-certified plastic surgeons by the American Board of Plastic Surgery (ABPS) were included in our study. ABPS board-eligible surgeons and non-plastic surgeons were excluded. We then quantified the social media presence of our sample by tracking the number of followers and number of posts on Facebook, Twitter, and Instagram for every surgeon. The total number of social media followers was calculated by combining the followers on Facebook, Instagram, and Twitter. The total number of posts from Instagram and Twitter were extracted as well. The medical school attended and graduation year of included plastic surgeons were extracted from their website or by searching their name through their state-specific medical license database. For a practice with multiple physicians, the senior physician of the group was used. Medical schools were classified as ranking within the top 15 or below based on the 2018 US News and World Report Rankings.[16] The primary outcome was website ranking in the first page of Google search results. Variables were compared using the chi-square test for categorical variables and the *t* test for continuous variables.

To identify the independent predictors of presence on the front page, we performed a multivariate logistic regression. The adjusted odd ratio and 95% confidence interval of all covariates are reported. The performance of our model was assessed using the C-statistic, which is defined as the area under the curve for the receiver operating curve. Statistical significance was defined as $P < 0.05$. All analyses were conducted in SAS 9.4 (SAS Institute, Inc., Cary, NC).

Table 1. Variables Extracted and Analyzed for 520 Surgeons

Variable	Not on front page* (n = 300)	On front page* (n = 220)	*P* value
Top 15 medical school	260 (91.55%)	164 (87.7%)	0.17
Followers on Facebook	963 (2117)	5424 (21,558)	0.002
Followers on Instagram	613 (396)	5644 (2190)	0.004
Followers on Twitter	324 (203)	1156 (8274)	0.131
Total followers on social media	1901 (3403)	12,226 (43,500)	0.0005
Total posts on Instagram	70 (161)	198 (402)	<.0001
Total posts on Twitter	582 (1349)	1841(7914)	<.0001
Years since graduation from medical school	28.58 (10.59)	27.69 (9.66)	0.3926

* Averages presented with standard deviations in parenthesis

RESULTS

A total of 520 websites were included in our sample, of which 220 (42%) were on the front page of Google. Facebook was the most widely used social media website (n = 374), followed by Twitter (n = 301) and Instagram (n = 189). Miami was the city with the highest number of total social media followers per surgeon (average, 34,903), followed by Austin (average, 24,649) and Los Angeles (average, 14,759). Memphis had the least number of total followers per surgeon (average, 803). Table 1 compares the extracted variables vs front-page status for the surgeon's website. Among all plastic surgery practice websites, Twitter was the social media platform on which plastic surgeons posted the most content (with an average of 882 posts per website compared with 188 Instagram posts). The average total number of social media followers per plastic surgery practice was significantly associated with placement on the front page of Google vs the second page (6090 vs.705, $P = 0.002$). Examining the "pedigree" variables, 18.4% physicians attended a top 15 medical school and graduated on average 28 years ago (range, 8-56; standard deviation, 10.2). Neither of these variables was a statistically significant predictor of front-page placement ($P = 0.17$ and 0.39, respectively). After multivariate adjustment of years of experience and medical school education (detailed in Table 2), social media usage remained an independent predictor of front-page placement on

Table 2. Details of Multivariate Analysis Examining Variables Correlating with Ranking in the First Page of Google Search Results

Parameter	Odd ratio (95% confidence interval)	*P* value
Top medical school	.67 (0.35-13)	0.21
Years since graduation	.999 (0.98-1.02)	0.92
Total followers	1 (1-1)	0.0003

Google ($P = 0.0003$). The c statistic of our model was 0.67, demonstrating moderate predictability.

Directly examining the correlation between social media presence and search engine ranking, we found that 101 (19.4%) board-certified plastic surgeon practices appearing on the first 3 pages of the search results had one social media account, 188 (36.2%) had 2 accounts, and 129 (24.8%) had accounts on all 3 social media venues examined. Consequently, 102 (19.6%) plastic surgeon practices in our study cohort had no accounts on Instagram, Facebook, or Twitter yet were still ranked in the top 3 pages of search results.

DISCUSSION

Google dominates the search engine space with 63.2% of core and 93% of mobile search queries in the United States in 2018.[17] More than 90% of web traffic goes through the first page of search results, with a whopping 32.5% of overall traffic going to the first search result and 17.6% going to the second.[18] This explains the importance of optimal search result ranking for a website. Referred to as "Search Engine Optimization (SEO)", this has become a $65 billion market where countless firms offer services to improve search result ranking.[19] Due to their ability to direct traffic, front-page search results serve as an important indicator of website traffic and thus consumer reach.[20,21]

Unfortunately, online business exposure may come at the expense of patient safety regarding elective cosmetic surgery.[22] Evidence supports improved outcomes in the hands of board-certified plastic surgeons compared with non-plastic surgeons.[23] Moreover, the overwhelming majority (90%) of patients also express preference for board-certified plastic surgeons when compared with non-core providers.[24] However, approximately half of the same surveyed group were unaware that such credentials and training are not a requirement to advertise as a cosmetic surgery provider. This is dramatically illustrated in a recent study of the social media platform Instagram, finding that board-certified plastic surgeons represented only 17.8% of physicians posting top plastic surgery-related content and the remaining 82.2% of posts coming from obstetricians, family practice physicians, barbers, and even hair salons.[25]

These studies all converge on a common point: it is not sufficient to be a board-certified plastic surgeon with an established practice and pedigree to steer online views towards the practice. SEO is a level playing field, such that the presumably more qualified providers (board-certified plastic surgeons) must compete for clicks with the presumably least qualified (non-core aesthetic providers and non-medical professionals).[26] It is therefore of the utmost importance to understand the factors that are key to improving search engine rankings.

Our study aimed to answer a simple question: what matters more for Google search result placement, traditional metrics of physician competence (ie, years of experience, graduating from a top 15 medical school) or savvy marketing skills (represented by number of followers on the social media sites Facebook, Twitter, and Instagram)? To isolate these variables, we controlled for physician specialty by examining only websites associated with ABPS certified plastic surgeons. Our data suggest that the biggest predictor of front-page placement was the total number of followers on social media ($P < 0.001$), whereas traditional metrics of physician competence such as medical school alma matter ranking and years since medical school graduation were not statistically significant predictors even after multivariate adjustment. Our findings reveal that social media presence is strongly correlated with the Google ranking algorithm, whereas other criteria we analyzed are not.[27] Google silos their paid search results (ie, advertisements) from their organic listings, which are a product of several hundred closely guarded proprietary factors. Therefore, paid advertisements were excluded from this analysis to minimize the impact of "pay per click" advertisements. It is important, however, to consider that variables such as medical school alma mater and years in practice are likely not weighed at all in the Google ranking algorithm.

If we consider the importance of the internet and social media in patients' choice of providers and the influence of search engine ranking on directing these potential patients' traffic, it becomes obvious that a strong online presence and search engine ranking can be crucial to attracting new patients to a practice.[28] There are currently no data available to make a rigorous comparison of the patient volume that established practices are able to derive from online presence compared with existing relationships with other providers and old-fashioned "word of mouth." However, it is likely reasonable to assume online presence is much more important for fledgling practices that are yet to establish these more traditional patient referral channels, even though approximately 38% of the surgeons examined in this study were still ranked on the first 3 pages of search results despite not having any social media accounts.

Limitations of the current study include a single time point for data collection as we queried the included

search-terms for a single date. Top posts for any given search term can potentially change daily, though it is unlikely to be significantly different on any given day vs another. Researchers of future studies may wish to evaluate seasonal variations in cosmetic surgery medical marketing. This is balanced by the strength of using online search data to perform analysis over a wide geographic area. In their recent study employing Twitter to evaluate lung cancer surgery outcomes, Cooke and colleagues suggest that the Internet and social media enable a more diverse population to be sampled than possible with focus groups or individual interviews.[29]

Social media scoring parameters for our study were based on content posted on each social media site (ie, Facebook, Twitter, and Instagram) per se to provide the most accurate representation of the impact of each channel. Accordingly, a possible limitation of this study is that duplicate posts shared across multiple platforms are counted towards the score of each respective social media platform on which it was placed. The study still allows us to discern the impact of the total number of posts on each platform and thus the impact of that platform, regardless of the specific nature of the posts and their content. We also recognize that first-page Google search website and social media presence is not a direct measure of prospective patient visits and executed surgical procedures. However, it is well established that Google search results influence consumer choices and therefore it is a critical avenue to reach potential patients.[30] Another limitation is that only the Google search engine was used. Future studies may include other search engines; however, Google dominates the search engine market share and is the most commonly used search engine by potential patients.[31] Furthermore, our study analyzed content from the top 25 largest US cities. Forthcoming studies should examine additional cities to validate our findings as well as better understand the full extent of medical marketing online. Future studies may wish to broaden the search terms queried to include those applicable to board-certified facial plastic surgeons, oculoplastic surgeons, and physicians performing aesthetic procedures out-of-scope of their medical training. These data will help compare first-page search engine presence of practitioners offering aesthetic procedures between core plastic surgery-trained physicians and physicians without plastic surgery training.

CONCLUSIONS

In the digital age, the internet and social media have radically transformed the way prospective patients find cosmetic surgeons and collect information about procedures. Our study demonstrates that number of followers on social media was the strongest predictor ($P < 0.001$) of a plastic surgeon's website ranking in the front page of Google results compared with graduating from a top 15 medical school and years since graduation from medical school. Google search results heavily favor providers with social media presence compared with more experienced surgeons. Given that nearly all prospective patients seeking cosmetic surgery are utilizing the internet to search for their provider and seek health-related information, our findings present significant support for the importance of social media and online presence in directing online traffic and therefore patient flow.

Disclosures

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