



Emerging social media trends in thyroid and parathyroid surgery

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Abstract: Social media is an evolving phenomenon with the potential to impact an increasingly sophisticated thyroid and parathyroid patient population. Although there is steady growth in the number of social media users, the reluctance of physicians to participate in online communication with their patients emanates from perceived legal and ethical dilemmas online. Despite these concerns, it is vital for physicians, including those involved in thyroid and parathyroid surgery, to actively engage in their online presence to ensure accurate information is presented on their behalf. A well run online practice creates a centralized location for patients to find additional resources regarding their endocrine-related health. In addition, surgeons can facilitate search engine optimization algorithms driving traffic to their sites. When used well, social media has the ability to define a physician's online narrative by creating a space for constructive communication, to help build a successful thyroid and parathyroid surgery practice.

Keywords: Social media; thyroid and parathyroid surgery; online professional practice

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Introduction

As of 2019, the American Cancer Society estimated 52,070 new cases of thyroid cancer are being diagnosed annually in the United States (1) and hundreds of thousands more thyroid cancer survivors are currently alive in the U.S. Despite the wealth of personal experience, trustworthy resources for patients are often lacking in detail and authenticity. Physicians conventionally have provided advice and counsel to their patients, but due to ease of access many also seek outside opinions in the form of internet searches. With over 40% of adults utilizing search engines, information can be found almost instantly, some of which is inaccurate (2,3). Beyond search engines, the modern patient uses numerous social media platforms and blogs to obtain medical information, with over 80% using social

media as their major form of communication (2,4). Equally problematic is the physician component—despite being aware of patients' increased use of social media to gain medical advice, physicians have yet to fully leverage these platforms. Much of this stems from an uneasiness regarding physician-to-patient online interaction and uncertainty of patient expectations following these communications (5-7).

Despite these fears, one of the most powerful tools to create a successful practice is a well-crafted social media presence. Within this review article we focus on the usefulness of social media to build a successful thyroid/parathyroid surgery practice. We outline in detail what resources a physician can use to build their online presence and pitfalls one should avoid. Although there is little direct data on social media specific to thyroid/parathyroid surgery, many findings may be suitably extrapolated to this discipline.

Social media fears

A 2019 study revealed that there are approximately 4.4 billion internet users and 3.5 billion social media users, with the worldwide total growing by 288 million (9%) since 2018 (8). According to a 2014 report by Nielsen, the average American accessed approximately 26 applications on their smartphones per month and spent over 37 hours and 28 minutes using these applications (9). With approximately 3.26 billion people using social media on their mobile devices, mobile applications are becoming increasingly important (8). The evolution of these platforms is evident in their viewing capability and their growing following. Using social media simply as a way to stay connected with family members or friends is an antiquated concept: now these platforms offer several “paths” to find content and resources, including advice about one's health.

Despite steady growth of social media users, the reluctance to engage in online interaction with patients stems from the possibility of encountering legal and ethical dilemmas online (5). Brown *et al.* aimed to empirically quantify online use and examine physician attitudes when faced with ethical and professional dilemmas. The authors argued that current best practices regarding physician and patient interaction online were insufficient, as current policies follow a traditional model of face-to-face interactions (5,10-12). The 2014 study selected a random sample of physicians from the Australasian Medical Publishing Company (AMPCo) database. Participants were sent a questionnaire which covered broad areas of patient-doctor online interaction: general behavior, doctor's personal information online, patient information online, current usage and appropriate patient-doctor online interaction (5). The study revealed that a quarter of the doctors use some form of social media at least once per week (25.7%) and that Facebook was the most preferred site of use (59.9%). There was also a linear relationship between increasing age and decreasing social media use. The majority of physicians believed that online communication was inappropriate through social media as only 1 out of all of the respondents had done so (5). Therefore, it is unsurprising that a physician might decline a friend request from a patient (34.8%), with only (2.6%) accepting the friend request. The apprehension physicians encounter navigating through social media stems from an uneasiness regarding possible ethical and legal implications when communicating with patients online. Secondly, most medical professionals, especially surgeons, also take a

conservative approach limiting their online activity, to avoid both violation of institutional policies and privacy rights of patients (2,13).

Physician review sites

Today nearly 60% of patients utilize a review site to gain further information regarding their physician prior to initial consultation. The information obtained from the review site will in turn affect the selection of the physician (14,15). The “googled” physician typically has several online profiles, with many created by third party generated review sites (e.g., Healthgrades.com or Vitals.com). Although third party physician sites do offer some factual information, such as a provider's education, the information provided is limited. Thus online profiles created on these third party sites are only semi-representative of the type of quality physicians provide to patients (16). A 2016 cross-sectional study analyzed the structure and quality of the content provided on commercial physician rating websites. The study reviewed 8,133 quantitative reviews, with 1,784 having narrative comments over 28 websites. From the sampled physicians approximately 34% had no reviews on their online profiles. Those with reviews still showed no added value or improvement to the quality of their online profile. Overall the results indicated the reviews and content provided on these sites did not accurately relay patients' experience, nor the quality of care physicians would provide (14). Although physician reviews have increased on these sites in comparison to a 2009 study (14,17), the authors found no observed significance in the growing volume of reviews and their usefulness to improving patient experience. The authors concluded that commercial physician rating websites had limitations in their structure and function which hampered the ability to capture meaningful data regarding patient experiences (14).

In contrast to third party generated review sites, large health institutions have developed other methods to gather and publish patient feedback (14,18) such as surveys which offer qualitative data from recent patient experience surveys (14,19). Medical institutions such as Cedars-Sinai conduct a comprehensive survey following a patient's outpatient visit. The goal of the patient ratings and comments is to provide transparency regarding the patient experience at Cedars-Sinai. The survey is proctored by an independent research company, NCR Health, which gathers and analyzes the data. The narratives collected from the patient comments and experiences are posted

verbatim and in their entirety, and a minimum of 30 reviews must be collected for a provider before a rating can be generated online (20). The threshold is designed to create a comprehensive, well rounded profile of the physician online. This contrasts heavily with reviews that may be biased, nonrepresentative, or even planted. With a greater amount of validated reviews on a physician's hospital profile, such profiles may displace third party sites with Google search algorithms prioritizing hospital sites versus commercial physician rating websites such as Vitals.com (21-23). Surveys similar to Cedars-Sinai patient experience questionnaire are being administered throughout the United States, such as Stanford University which offers a Medical Practice survey, which is sent to randomly selected patients following their visit (24). Overall, the systematic data collection of patient experiences through surveys or questionnaires offer a more comprehensive review, allowing future patients to make inferences regarding a physician's history of patient care (14).

Finally, Yelp in most recent years has grown in popularity and can be used by patients to filter reviews regarding physicians and physician practices or hospitals. A 2018 study analyzed Yelp reviews between Urgent Care and Emergency Departments. The study found that despite differences between EDs and Urgent Care centers they typically follow the same trends as other services and businesses on Yelp (25). Overall, urgent care centers are rated higher than EDs, with a much higher proportion of the ratings with 1 star reviews being Emergency Departments (47%) and Urgent Care centers (30%) (25). Yelp's growing success in the field of healthcare stems from the site's presentation of searchable review information, which allows the public to read others experiences "before, during, or after their own encounter" (25). Yelp uses several algorithms including a proprietary algorithm which measures the quality, reliability, and activity of the reviews left on pages to ensure the authenticity of each review (25,26). Despite Yelp's stringent review policies, there is a tendency for either highly negative or highly positive reviews skewing results to either side of the spectrum. Although Yelp's algorithms may try to mitigate this, there is still some degree of selection bias. Therefore, the random selection of patients to complete satisfaction questionnaires is far more representative of the quality of care a physician provides their patients.

Nevertheless, as the number of reviews and unverified online profiles are created on behalf of physicians increases,

minimal action has been undertaken by physicians to combat misinformation and misrepresentation of their online narrative. Studies show that although physicians are particularly concerned regarding their online persona and patients' accessibility to professional information prior to an initial consult, many had little understanding of how to remove unfavorable content about themselves online (5). A similar study conducted by Gilbert *et al.*, showed that fewer than 10% of radiologists had updated their profiles on commercial physician rating websites (21,27). Managing their online narrative by monitoring online profiles is rare and even distasteful for many physicians, though a high percentage of potential patients embrace the data they uncover on the internet.

Social media sites what works

When used well, social media has the ability to promote a physician's practice and define a personal narrative online. Initiating a social media presence begins with a rudimentary understanding of the platform one wishes to engage in. Major social media sites include: Facebook, Instagram, Twitter and YouTube. Not all social media sites are created with the same intention or audience. It is therefore not necessary to have an online presence within all of them. An endocrine surgeon with a limited amount of time or an individual who may be unfamiliar with the platforms, may need only 1 or 2 well run sites to get started (*Table 1*). It has been suggested that clarifying a practice's needs and the physician's time commitment will help focus the effort. Although creating a social media presence may seem like a daunting task for those unfamiliar with social media, a simple approach is to follow their hospital or institutional social media accounts for a few weeks prior to uploading their own content. Discovering how to properly leverage these platforms will set a physician up for success later on (2). Once educated surrounding the functionality and structure of the platform, creating a narrower focus surrounding the online practice benefits both the audience and the physician (2). The field of thyroid/parathyroid surgery is an extensive field, with the American Thyroid Association and Thyroid Cancer Survivors Association (ThyCa) offering a wide range of information and resources for both physicians and patients. Therefore, a more focused narrative surrounding the online endocrine practice captures a subset of patients from the wider population. As interest grows surrounding the newly created online practice, so too will the flexibility of the content provided on the site. In

Table 1 Social media

Social media	URL	Average age range (yrs) of active users	Best for
Facebook	Facebook.com	25–34	Disease-centric groups; live streaming
Instagram	Instagram.com	25–34	Photos; memes
Twitter	Twitter.com	18–29	Hashtags; chat sessions
YouTube	YouTube.com	18–24	Video content; instructional

addition, social media sites are ‘generational’ to an extent, meaning that on average certain age groups may favor one platform over another. But, regardless of which social media site a physician chooses to use, by engaging in online activity they will further their personal narrative helping to build an online practice.

Facebook

Facebook has over 185 million daily active users in the United States alone. The powerful social media platform reported a 10% growth in social media users between 2018 and 2019 and had a steady five-year growth record (8). Facebook allows for the greatest amount of upload capability and offers strict privacy settings (2). Physicians can also create a Facebook Business page for their online practice, adding to the privacy and security of content. Facebook also offers communities which are created with the intention of focusing on a certain cause or issue. Membership to these Facebook groups may require invitation or may be public depending on the privacy settings created by the moderator. With the continued growth of Facebook, disease-centric patient groups have become increasingly common. These communities offer an open meeting space for patients suffering from similar diseases. For example those with chronic conditions (i.e., hyperparathyroidism, hypothyroidism, thyroid cancer) often use social media platforms to acquire relevant medical information and connect with a larger network of individuals facing similar circumstances (28–31). Although the majority of disease-centric groups are created by patients for patients, there is still ample opportunity for clinicians to utilize these communities, by advertising Facebook Live events or an upcoming Twitter Chat.

When used well virtual “meetups” such as Facebook Live events can be used as an educational tool to build awareness surrounding a certain topic. The power of influence from

online communities including those from Facebook, should not be underestimated. A 2016 study reviewed healthcare advocacy campaigns that had originated from online patient groups. The study found that at least 35% resulted in an increase to patient access to experimental drugs and later FDA approval (21,32). Finally, closed Facebook groups that are physician formed can provide support among surgeons with similar interests and they can be used as a place to share literature and ask questions.

Instagram

Instagram has approximately 895 million active users around the world (8). Although the platform was originally a sharing site for photos, the social media site has evolved into a platform with considerable usefulness in disseminating medically related information to a large audience. As of May 2019, 33.8% of U.S. Instagram users were between 25 and 34 years old (33). Instagram’s platform allows users to post photos, videos, and create Instagram stories, all of which notify followers of the users activities. Some of the benefits Instagram offer specific to medicine include, advocacy space for patients, mentorship opportunities and the ability for physicians and medical students to become influencers within the medical Instagram world (34). Instagram to some degree also humanizes physicians, providing a platform to post stories and posts regarding their experiences (34). The openness and vulnerability by physicians provide deeper insight for patients into the world of medicine and paints the physician in a different light.

Twitter

As of January 2019 Twitter had approximately 250.8 million registered users (8). A Twitter account allows users to provide information in a succinct format. With a character count of 280, the concise and deliberate

Table 2 Endocrine surgery hashtags

General Tag	Disease Tag	Educational Tag	Condition Tag	Surgery Tag
#Thyroid	#ThyroidCancer	#CheckYourThyroid	#hyperthyroidism	#ThyroidSurgery
#endocrine	#parathyroidcancer	#CheckYourNeck	#hypercalcemia	#ParathyroidSurgery
#gland		#ThyCa	#hypothyroidism	
		#CheckYourCalcium		

presentation of information is vital to entice followers to a physician's message. Twitter also offers Twitter Chats which are scheduled public chats typically advertised several weeks in advance. These live events are moderated by a host and are conducted completely on the social media site including both healthcare providers and patients. Furthermore, physicians can use a Twitter account in association with another social media platform (35). For example users can frequently “tweet” something and add a link to their other social media sites, personal websites or channels (35). Unlike Facebook's stringent privacy settings, “tweets” become publicly searchable content once sent (2). Therefore tweets can be a double-edged sword in that information is quickly sent to the masses, always available for patients to reference, but unsending a tweet is difficult to do. Thoughtful consideration is needed prior to posting for thyroid and parathyroid surgeons, especially since the risks and extent of particular operations may not be universally applicable.

Relevant to almost all of social media sites, especially Twitter and Instagram, is the use of hashtags. Dr. David Tom Cooke from the University of California Davis has been active on social media since 2012 with more than 1,500 Twitter followers and over 5,000 tweets containing the hashtag #LCSM which he created in 2013 after cofounding Lung Cancer Social Media (2). Similarly to LCSM, the Breast Cancer Social Media group #BCSM has a large following within the Twitter network (21). Recent initiatives to create data banks of commonly used hashtags focused around a central issue now allow patients to tag content related to their particular disease (21). Using tags in a thoughtful manner throughout a social media profile allows for mineable data later. Currently there are both ontology database for the fields of Radiology and Oncology hosted by the data company Symplur (36). Although there is not a specific thyroid/parathyroid ontology database, there are hashtags with a large following currently related to the field of endocrinology and thyroid disorders (*Table 2*). By

utilizing these features one can capture a larger audience and increase a providers following for their online presence.

YouTube

Although creating video content is not for everyone, YouTube provides a great deal of freedom for a physician to express their views, information, and further resources in a short or lengthy video. Moreover, YouTube allows for the individual to create playlists allowing for categorization of video content, such a feature is useful in providing video content related to different diseases, or treatment options. A randomized trial of patients undergoing hip or knee replacement surgery experienced an improvement in their preoperative anxiety after they were provided access to a YouTube library with several videos related to their upcoming surgery (21,37). Similar to Twitter it would be beneficial for the physician to have a second social media platform linked to the YouTube channel, allowing one to sync multiple sites together.

Physician website

Social media provides a platform to cultivate and market a surgeons message, with the creation of a website one can bridge all accounts to a central location. Although a website is not a social network its creation adds several benefits in building an online presence. The website's URL could later be added to all social media platforms, thus generating traffic to the site. Depending on the needs and goals of the endocrine surgical practice, a websites level of complexity can vary greatly, from basic, intermediate, to complex. Regardless of the type of website or social media platform one selects, each site must be curated and tended to overtime in order to develop a following. Building a successful online presence takes time and effort- this important aspect is often overlooked or not recognized by individuals seeking to attract new patients.

Table 3 Doximity features tailored to physicians

Doximity features
Publicly accessible website
Earn CME/CE credit
Networking site connecting over 1 million medical providers
Free HIPAA-secure internet fax service
Sign, edit, annotate documents securely
Compare salaries and research new job opportunities
Doximity has its own search engine

Basic

A simple and free option includes a physician's own hospital or university profile. Ensuring that the profile is well managed and frequently updated to include recent awards and publications is an easy way to provide accurate and well represented information to the general public.

Intermediate

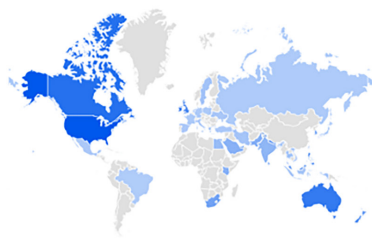
Doximity is a free service similar to LinkedIn that is specific to physicians, and offers a quick and easy website creation. Doximity has advanced its popularity by adapting regularly to demand and changes within the medical community (38). Doximity offers its users more than just streamlined personal websites, with its growing membership users can now stay connected with colleagues and grow their network with clinicians throughout the United States. Doximity ensures that its members are only U.S. physicians, medical students and other clinically-practicing medical professionals such as Nurse Practitioners and Physician Assistants (39). A list of other features offered by Doximity can be found in (Table 3). The popularity of Doximity within the medical community stems from the original goal of creating a website with the physician in mind. In keeping with this message Doximity has a diverse team from across the technical and medical world. In addition, they receive input from physician ambassadors, similar to consulting physicians (38). There are over a million U.S medical professionals within the network and 70% of those are physicians (39).

Complex

Advanced websites are an option for physicians, who find that a well crafted Doximity or LinkedIn profile are insufficient. The website should be updated regularly, easy to navigate, and maintain a simple aesthetic so as not to overwhelm the viewer. The goal is to create an inviting environment so that patients can regularly use the site as an added resource. In order to gain visibility of a practices newly created webpage, keywords known as medical search engine optimizers (SEO) can preferentially place physicians websites as top searches (40). Algorithms from the most widely used search engines such as Google, Bing, and Yahoo look for certain factors when returning webpages to its users, including keywords or phrases. Medical SEOs help increase both the quality and quantity of website traffic through non-paid (also known as “organic”) search engine results. SEOs work by finding repeated words throughout a website or recent blog that are relevant to the users search criteria, it is recommended to have at least four to five keywords per post (40). In addition to SEOs physicians can also use search engine marketing (SEM) which are paid advertisement on major search engines [GoogleAd:Words, BingAds, Yahoo:SearchAds] (40). Physicians can also pay an SEO marketing firm to streamline a site to ensure higher traffic. In addition, Google offers free tools and viewable data banks, such as Google Trends, which allows for download of aggregate data collected since 2004. The tool also allows for the filtering of information based off of trending topics and shows relative search interests over a period of time and geographic area (Figure 1).

Conclusion

As social media continues to evolve, so too will the physician. When used well social media is an effective tool to build a successful thyroid and parathyroid surgery practice. This is especially imperative as such patients increasingly seek information online, learn from influential blogs or forums specific to endocrine disorders, and leverage the experiences of cancer survivors and thyroidectomy/parathyroidectomy patients. Maintaining an active online presence allows physicians to craft their narrative and provide patients with further resources and information.



Data gathered from Google trends showing thyroid cancer web searches over the past 12 months August 2018-August 2019

1 United States	100	<div style="width: 100%;"></div>
2 Trinidad & Tobago	93	<div style="width: 93%;"></div>
3 Canada	79	<div style="width: 79%;"></div>
4 Philippines	73	<div style="width: 73%;"></div>
5 Australia	71	<div style="width: 71%;"></div>

Figure 1 Google data trends.

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