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Use of Social Media to Teach Global Reconstructive Surgery: Initiation of a Secret Facebook Group

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Background: The ReSurge Global Training Program (RGTP) is a model for building reconstructive surgery capacity in low- and middle-income countries.[1] The aim of this study is to assess attitudes toward social media, to develop an initial RGTP Facebook Education Group, and to assess the early results of the group's implementation.

Methods: A survey of the RGTP community assessed group demographic, interests, concerns, and familiarity with Facebook from July to August of 2018. A "secret" Facebook group was launched on October 30, 2018. Narrated lectures were posted weekly to the group. Educational cases were shared on the group's discussion page. Facebook "Group Insights" and individual post review were used to obtain group statistics.

Results: Senior faculty were less likely to have an existing Facebook account (58% vs 93%, $P < 0.05$). Trainees were more confident using Facebook (97% vs 54%, $P < 0.05$) and favored viewing the training curriculum through Facebook (93.0%, $P < 0.05$). At 6 months, the group enrolled 103 members from 14 countries. Twenty-two lectures were posted, obtaining an average of 59.4 views (range, 36–78). Fourteen cases were presented for group discussion with an average of 61.1 views (range, 43–87).

Conclusions: The RGTP Facebook group has continued to expand in its early months. This group allows our community to view RGTP's training curriculum, while providing global access to expert opinion and collaboration. The secret Facebook group can be used as an effective and easy-to-use platform for educational outreach in global reconstructive surgery. *(Plast Reconstr Surg Glob Open 2020;8:e2676; doi: 10.1097/GOX.0000000000002676; Published online 24 March 2020.)*

INTRODUCTION

ReSurge International is nongovernmental organization that delivers and teaches all aspects of reconstructive surgery in developing countries. It has developed the ReSurge Global Training Program (RGTP), a comprehensive training program for building global reconstructive surgery capacity.[1] While the RGTP has met early success, the challenge remains in continuing to develop teaching strategies, specifically for the next generation of reconstructive surgeons in low- and middle-income countries (LMICs).[1]

The notion that social media can be used for medical education has been discussed previously.[2–12] The benefits of social media include their potential as a source for educational content, clinical support, quality improvement, mentorship, research, and even emotional support.[11–13] Educational outreach in global surgery is one area poised to benefit from the use of social media.[4,14,15] Of all platforms, Facebook is the most popular, with 2.38 billion users worldwide.[16] Facebook has been touted as an ideal platform for educational use, with its ability to host video, photography, live video, files, links, and text posts.[4,11]

The objective of this study was to determine if social media in the form of a secret Facebook group can be used to teach global reconstructive surgery. We sought to assess the RGTP's attitudes and interests toward social media, develop an initial RGTP Facebook group, and assess the early results of the group's first 6 months of implementation.

METHODS

A survey was designed to capture demographic data and attitudes of the RGTP members (both faculty and trainees) toward Facebook and social media. Separate versions of

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the survey were designed for faculty and trainees. Surveys were created using an online survey tool (Surveymonkey. com, Palo Alto, CA). The survey contained multiple-choice, open-ended, and 1–5 Likert scale responses. The survey was pretested for instrument optimization by 2 faculty and 2 trainees. This critical review confirmed content and face validity of our survey. Survey responses were collected anonymously from July 15 to August 10, 2018.

A secret Facebook group for the RGTP was developed. This group privacy setting is the most exclusive on the Facebook platform. Here, only those invited can see the group and gain access. Group rules and an "Access Agreement" were developed with legal counsel assistance. Rules included adherence to patient privacy standards according to the Health Insurance Portability and Accountabilty Act with continuous moderator oversight. The Facebook group was launched on October 30, 2018. Invitations were sent to RGTP members by e-mail. Participation in the Facebook group was voluntary. Narrated RGTP curriculum lectures were posted weekly. Cases for discussion were spontaneously posted by group members. Files including journal articles and clinical tools were shared to the group. Off-platform communication to the group moderator was recorded anonymously.

Data were collected from the Facebook group at 6 months (April 30, 2019). Facebook Analytics and individual post-review were used to obtain group statistics. Individual posts were categorized as "lectures," "cases," "files," "administrative," "intraoperative video," and "other." Content was evaluated for exposures in protected healthcare information (PHI). Posts removed by Facebook for violations in "Community Standards" were recorded.

Statistical analysis was conducted using Fisher's exact test and Student's t test, where P values less than 0.05 indicated statistical significance. Posts that were removed from the group were excluded from statistical analysis.

RESULTS

Survey Data

Our survey was sent to 220 members of the RGTP. Eighty-six responses were returned, resulting in a response rate of 39.1%. Demographic data are summarized in Table 1. Significant findings included average age differences between faculty and trainees (56.1 vs 38.4 years, $P < 0.05$). Surgeon average years in practice also differed significantly (faculty 22.3 vs trainee 7.25, $P < 0.05$). Both faculty and trainees were predominantly men (faculty 86.0%, trainees 72.4%). The majority of faculty practice at academic centers and represent diverse subspecialty backgrounds. The majority of trainees were formally trained in plastic surgery and expressed a need for additional training in craniofacial, cosmetic, hand, and microsurgery (Table 1).

Facebook was the most popular social media platform (70.0% of survey responders). Other social media platforms used included YouTube (43.0%), LinkedIn (33.3%), and Instagram (30.2%) (Fig. 1). A significantly greater proportion of trainees had a Facebook account compared to surgeon faculty (93.1% vs 57.9%, $P < 0.05$) (Table 2). A larger proportion of trainees indicated that they were confident in using Facebook compared to faculty (96.6% vs 54.4%, $P < 0.05$) (Table 2). Trainees were significantly more likely to use Facebook professionally compared to faculty (65.5% vs 17.5%, $P < 0.05$) (Fig. 2). Trainees were already members of closed Facebook groups compared to faculty (68.5% vs 28.1%, $P < 0.05$) (Table 2). Both groups similarly were able to identify concerns related Facebook use (Fig. 3). Most commonly reported concerns were potential breaches in patient privacy, desire to maintain distinction between personal and professional life, and potential breaches in professionalism. Trainees were also more likely to find value in Facebook compared to faculty (Fig. 4). The most valuable

Table 1. Survey Demographic Data

	Surgeon Faculty						
Survey response rate (%)	47 (57/122)						
Age in years (average, range)	56.1* (36–80)						
Gender (% men, % women)	86.0, 14.0						
Years in practice (average, range)	22.3* (3–45)						
ReSurge trip participation (No. trips)	7.6 (0–48)						
Surgeon faculty practice							
Type of practice (%)	Academic			Private		Retired	
	71.9			12.3		15.8	
Subspecialties in plastic surgery that you have expertise in (%)	Cosmetic	Craniofacial		Hand	Burn	Microsurgery	
	31.6	50.9		54.4	43.9	50.9	
Country (%)	USA	Canada	India	Brazil	Nepal	France	Peru
	82.5	3.5	3.5	3.5	3.5	1.75	1.75

	Trainee						
Survey response rate (%)	30 (29/98)						
Age in years (average, range)	38.4* (24–57)						
Gender (% men, % women)	72.4, 27.6						
Years in practice (average, range)	7.25* (1–29)						
ReSurge trip participation (No. trips)	9.2 (0–100)						
Trainees							
Type of practice (%)	Academic	Private	Government	Other**	Resident or fellow		
	24.14	6.9	31.03	20.69	17.24		
Subspecialties in plastic surgery where you require additional training (%)	Cosmetic	Craniofacial		Hand	Burn	Microsurgery	
	62.1	55.2		66.0	24.0	72.4	
Surgical specialties in which you are formally trained (%)	Plastic Surgery	General Surgery		Orthopedic Surgery	Otolaryngology	Oral Maxillofacial	
	62.0	13.8		13.8	7.0	3.4	
Country (%)	Bangladesh	Nepal	Vietnam	Ecuador	Zimbabwe	Mozambique	Mali	Bhutan
	20.7	20.7	17.2	13.8	13.8	6.9	3.45	3.45

*Statistically significant, $P < 0.05$.
**Both government and private, charity hospital, public health concern trust.
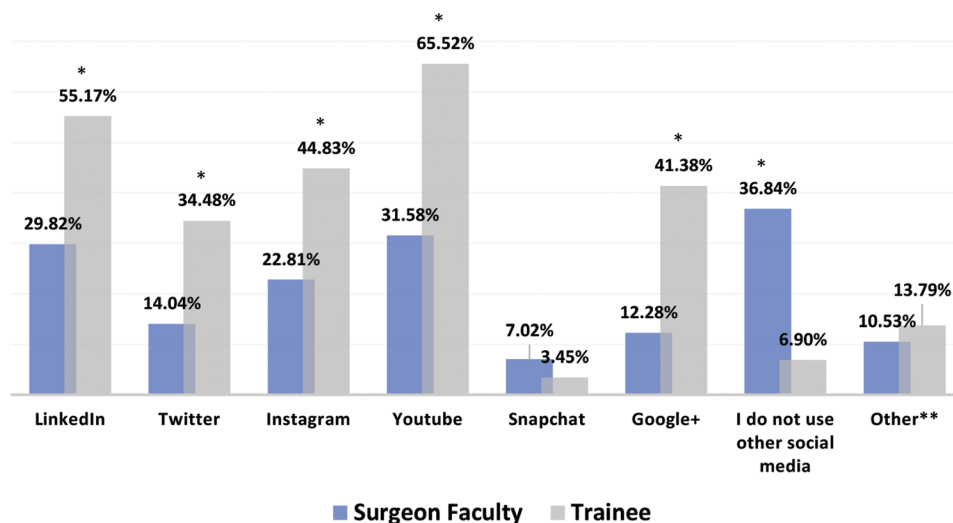
Fig. 1. Other social media platforms used by RGTP members: faculty vs trainee.*Statistically significant, $P < 0.05$ **Viber, Whatsapp, WeChat, Doximity.

Table 2. Familiarity with Facebook: Faculty vs Trainee

Questions on Facebook Familiarity	Faculty	Trainee
Do you have a Facebook account?	57.9%*	93.1%*
Confidence in using Facebook	54.5%*	96.6%*
Member of a "closed" Facebook group	28.1%*	65.5%*

*Statistically significant, $P < 0.05$.

aspects of Facebook included personal use, networking, and continuing medical education.

On average, both faculty and trainees indicated that Facebook had the potential to network plastic surgeons globally and share new information related to global plastic surgery (Table 3). Additionally, responders indicated that Facebook can be used to share clinical pearls and images, while also being useful for research collaboration. Statistical significance between group averages was only detected in "I would like to see an increase in ReSurge's utilization of Facebook" (4.0 trainee vs 3.2 faculty, $P < 0.05$) (Table 3).

Trainees were more interested in live video lectures compared to faculty (96.6% vs 47.4%, $P < 0.05$) (Table 4). 93.1% of trainees were interested in a Facebook-based mentorship program compared to 57.1% of faculty ($P < 0.05$). Lastly, 93.1% of trainees responded positively toward the question, "Are you interested in viewing the ReSurge Curriculum on Facebook?" ($P < 0.05$).

Facebook Group Data at 6 Months

At 6 months, the RGTP secret Facebook group enrolled 103 members: 17 surgeon faculty, 82 trainees, and 4 group administrators (Fig. 5). Excluding group administrators, our Facebook group represented 45.0% of the 220 RGTP members. Only 14.0% (17/122) of ReSurge faculty were successfully recruited to the group, while 83.0% (81/98) of trainees joined the group ($P < 0.05$). Group members represent 14 different countries (Fig. 6).

Group content included 65 posts: 22 lectures, 14 cases, 13 administrative posts, 2 intraoperative videos, 6 files, and 8 "other" (Fig. 7). Lecture topics included 4 burn, 2
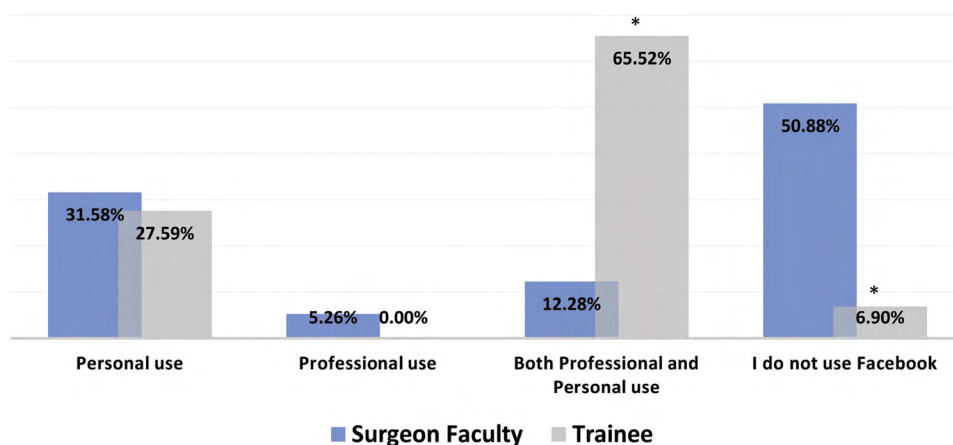

Fig. 2. Personal and professional patterns of Facebook use: faculty vs trainee.*Statistically significant, $P < 0.05$
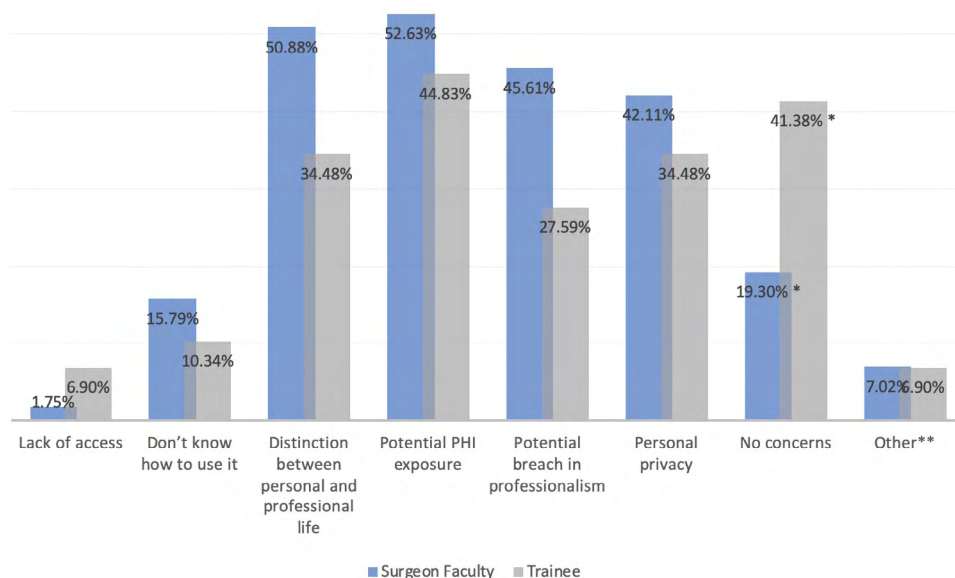
3

Fig. 3. Concerns with Facebook: faculty vs trainee. *Statistically significant, $P < 0.05$. **"I feel it is intrusive," "I don't want patients following me," "I don't want to invest more time in another social media."
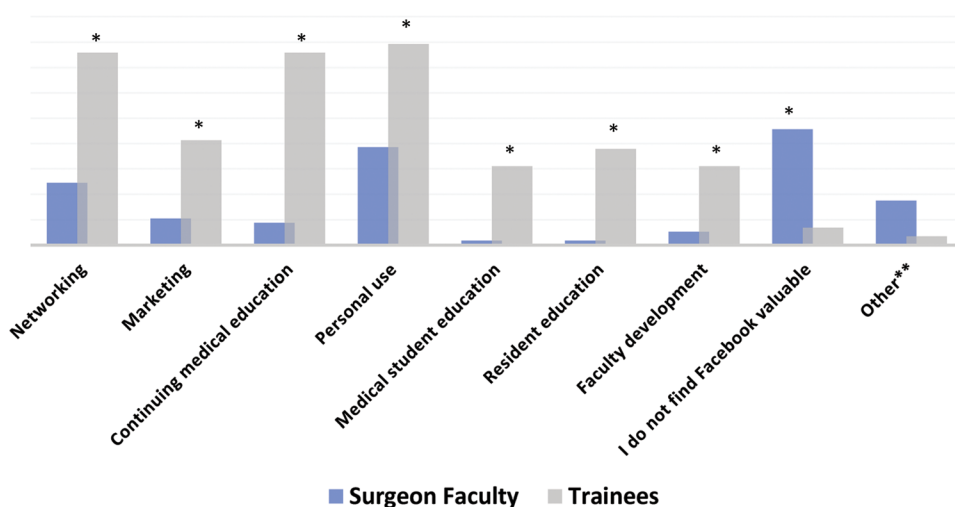

Fig. 4. What is useful about Facebook? faculty vs trainee. *Statistically significant, $P < 0.05$.
**"Do not use due to HIPPA compliance," "Recently deleted my Facebook account," "I only use Twitter," "Concerns with them selling info to a variety of entities," "To see what family is doing," "Case management and other educational Facebook groups."

Table 3. To What Extent Do You Agree with the Following Statements? 1–5 Likert Scale Responses

Statement	Faculty Average	Trainee Average
Facebook has potential to network plastic surgeons globally.	3.8	4.0
Facebook facilitates sharing of new information related to global plastic surgery.	3.6	3.9
Facebook can be used to share clinical pearls and images.	3.5	3.9
Facebook can be used for research collaboration.	3.4	3.7
I would like to see an increase in ReSurge International's use of Facebook for educational outreach.	3.2*	4.0*

*Statistically significant, $P < 0.05$.

Table 4. Interest in Prospective Facebook Group Features: Faculty vs Trainee

Prospective Facebook Group Feature	Faculty Interest	Trainee Interest
Live video lecture	47.4%*	96.6%*
Mentorship program	57.1%*	93.1%*
Interest in viewing ReSurge curriculum on Facebook (trainees only)	—	93.1%*

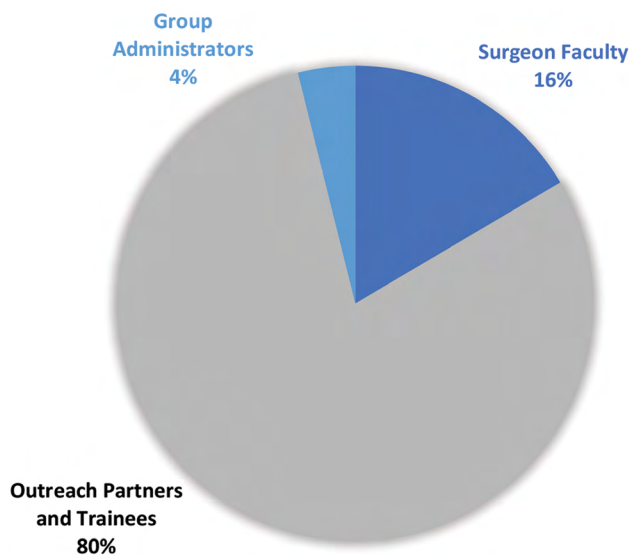*Statistically significant, $P < 0.05$.

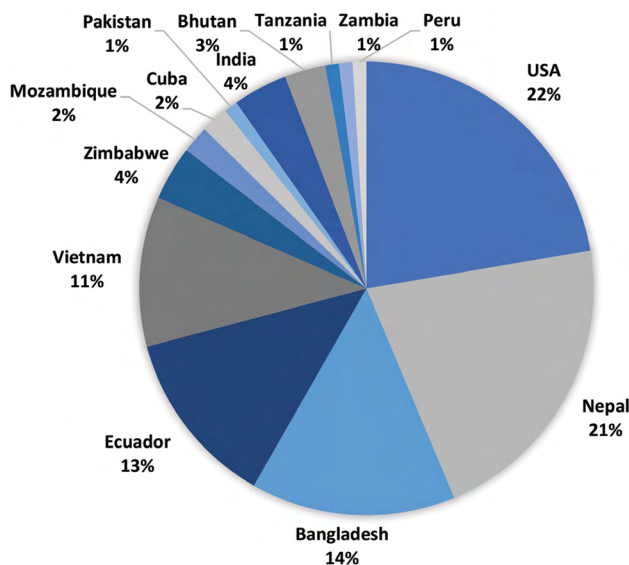**Fig. 5.** RGTP Facebook group member breakdown.

Fig. 6. RGTP Facebook group member countries.

lower extremity, 4 hand, 10 head and neck, and 2 breast reconstruction lectures. Lectures received an average of 59.4 views (range, 36–78), 5.7 reactions (range, 2–12), and 0.4 comments (range, 0–3). The 14 cases posted for discussion included 4 burn reconstruction cases, 3 head and neck reconstruction cases, 4 lower extremity reconstruction cases, and 2 hand reconstruction cases. Cases received an average of 61.1 views (range, 43–87), 1.6 reactions (range, 0–3), and 4.3 comments (range, 2–9). Cases received an average of 2.2 surgeon faculty comments (range, 1–6).

Intraoperative video content included 2 hand operations, which received an average of 36.5 views (range, 23–50), 2 likes (range, 2–2), and 0 comments (range, 0–0). Files posted to the group contained the group's access agreement as well as 5 open-access journal articles.
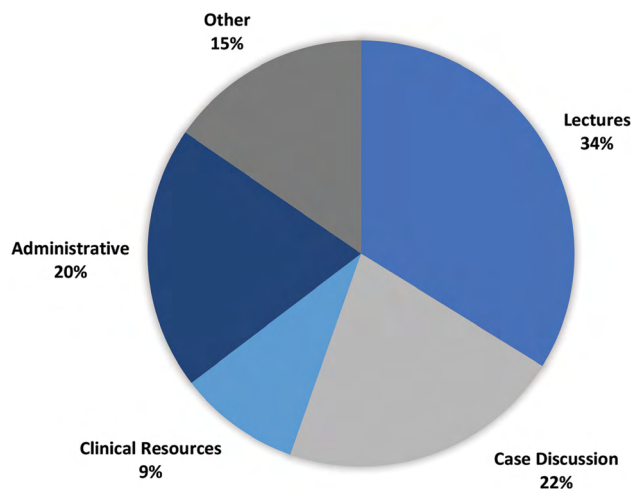

Fig. 7. RGTP Facebook group content breakdown.

"Other" posts were promotional videos, photographs from mission trips, and text posts. Five text-only posts all consisted of messages of gratitude for the group's creation. A total of 35 photographs were posted to the group: 25 clinical photographs and 10 photographs of members on recent mission trips. Videos made up 44.6% (29/65) of group content: 22 narrated lectures, 2 intraoperative, 1 discussion case, 1 animated lecture on group rules, and 4 ReSurge International promotional videos.

There were 20 unique off-platform e-mail and private message communications to the group moderator (Table 5). Ten communications centered on issues with initial group access, 8 centered on group technical support, and 2 critiques of the Facebook platform by faculty.

Two posts contained exposures in PHI (3.1%), which involved posting of radiographic studies by trainees. Exposures were quickly identified and removed from the group. The moderator then edited the images to exclude PHI and reposted the newly compliant images. Messages were also sent to the offending member notifying them of their violation of group policy. These group members did not include PHI in their future posts.

Three posts were removed by Facebook itself for violating "Community Standards" (4.6%): 2 breast reconstruction lectures and 1 pediatric burn case. Our group was notified by Facebook that these posts "[go] against our Community Standards on nudity or sexual activity."[17] These posts were submitted for review by Facebook's Community Operations team. Following review, the breast reconstruction lectures were reposted. The pediatric burn case was not allowed to be reposted to the group.

DISCUSSION

Closed Facebook groups have been described as successful tools for surgical education.[6,11,18–20] The "International Hernia Collaboration" facilitates discussion of techniques and challenges in the field of hernia surgery.[6] The Society of American Gastrointestinal and Endoscopic Surgeons created a series of Facebook groups with the goals of education, improving outcomes,

Table 5. Off-platform Communication with Group Moderator

Messages to Moderator	Members
How do I create a Facebook account?	2 faculty
Can I use my old Facebook account that I no longer access?	1 faculty
Can you send invitation to another e-mail address?	3 faculty
Can't log into my Facebook account.	1 faculty
Can I change the e-mail address linked to my Facebook account?	1 faculty
Can I assign another e-mail address to be the primary on my Facebook account?	1 trainee
How can I confirm that I am accepted into the group?	1 faculty
Can't find the "I'm Done" button.	2 faculty, 1 trainee
Can I add someone to the group?	1 faculty
"Do I have to be on Facebook for this? No go there. We will find some other way."	1 faculty
"Thanks for invite to Facebook group. I do not have an account and given security and ethical concerns and data mining of this platform, I do not want a Facebook account. Consider a list server which I have used for a Med consulting group in the past. Better security and no data mining."	1 faculty
Requests for assistance in formatting and posting a case.	4 trainees

and sharing clinical information.[11,19] The "International Microsurgeons Club" fosters collaboration through the Facebook platform in the field of microsurgery.[18] The "Robotic Surgery Collaboration" is another Facebook group that delivers surgical education through peer interactions.[20] These groups include content on operative technique, patient management, discussion of challenging cases, professional networking, sharing resources, and research collaboration.[6,18–20]

Our Facebook group similarly engages a community of surgeons. However, our group is uniquely composed predominantly of trainees from LMICs. The aim of our group is also different in its effort to develop global reconstructive surgery capacity. Our group also differs in that a formal curriculum of narrated lectures is a predominant feature.

In 6 months, the group recruited almost half of RGTP members, including 83% of RGTP trainees. All posted educational content yielded good engagement in terms of unique user views. Case discussion saw higher engagement in terms of comments and reactions. Case discussion, narrated lecture, and intraoperative video were often posted in a linked fashion. In this light, these findings suggest that case discussion facilitates better group engagement when compared to linked narrated lecture and intraoperative video. Surgeon faculty, representing a minority in our Facebook group, provided sufficient expert support in this early period. Overall, the RGTP Facebook group has had a successful early implementation.

This body of work is the first description of a secret Facebook group used as an educational tool in the medical literature. A "secret group" represents the most exclusive type of group on the Facebook platform. Here, the group is only visible to members and those invited to the group. The closed group is another type of group that allows the broader Facebook community to search and see the group. Any user of Facebook may request access to the group, but ultimately requires approval from the group administrator. The closed Facebook group as a tool for medical education has been previously reported and is increasingly utilized.[11,20] Lastly, a public Facebook group is the least restrictive, where all users are able to search, see, and join the group freely without administrator approval.

There is a concern that the least restrictive public Facebook group may allow unqualified individuals to freely join. Unqualified individuals have the potential to contribute incorrect and harmful advice, as well as harbor conflicts of interest that could negatively impact patient care.[19] Screening group members by secret or closed group privacy settings can mitigate this problem.[11,19] The closed Facebook group, however, does not protect against individuals who list false credentials to gain access to the group.[15]

Closed and public privacy settings may allow a Facebook group to reach a broader audience compared to the more restrictive secret group. Jackson et al. discussed the phenomenon of "information anarchy" in their experience of a large group for foregut surgeons.[19] Here, there is little control over an overwhelming volume of information.[19] This opinion is contrasted by Kwon et al. who suggested that the quality of discussion is higher with a greater number of active group members.[18] Group administrators must consider the implications that privacy settings have on the size and quality of the group's educational content.

Our authors maintain that the quality of education in global reconstructive surgery must not be compromised, and therefore favor the secret group setting. Not surprisingly, our group is smaller compared to the groups mentioned previously.[6,18,19] The intimate nature of our secret Facebook group reinforces the relationships created between members of the RGTP. Most importantly, the secret group protects against unqualified members imparting unsafe surgical practices to our trainees. Lastly, from a moderation standpoint, a smaller secret Facebook group is more easily managed.

This study highlights the differences in attitudes and use of social media between faculty and younger trainees. Differences observed in this study follow previously described patterns.[5,12] Here, trainees had favorable attitudes toward social media and Facebook, and were more familiar with the Facebook platform. This study also demonstrated that a younger generation of surgeons have begun to integrate social media technologies into their professional lives. This trend is evident by survey response data and the ease in which a majority of trainees were recruited into the Facebook group. Generational differences are likely responsible for these findings, where trainees representing a younger generation were brought up with technology already being integrated into daily life.[5,12,21] This study supports the call for new educational

tools that are easily integrated into the lives of the next generation of medical professionals.[5,10]

Concerns regarding the use of social media in plastic surgery are well described and serve as barriers to its use in professional settings.[2,8,9,15] Most commonly cited concerns include patient privacy and maintaining professionalism.[2,11] Our experience falls in alignment with prior studies, as our 3 most common concerns involved patient privacy, personal privacy, and professionalism. Both faculty and trainees similarly identified these concerns without significant differences. While our group did encounter patient privacy issues, it did not experience problems with personal privacy or professionalism.

Issues of Internet connectivity represented a small fraction of our community's concerns by survey (Fig. 3). Our Facebook group, which includes members from 14 different countries including LMICs, did not encounter this problem. This finding contrasts the idea that poor Internet connectivity in LMICs is a barrier to web-based educational tools.[5,8,15] Gaps in digital literacy did represent a barrier for surgeon faculty. The challenges of technological expertise and merging generation gaps were also noted by Curran et al.[5] There are also reports of academic institutions blocking the Facebook platform.[22] Members of our group did not report institutional restriction of Facebook access.

The majority of off-platform communications involved faculty (Table 5). Most involved issues with initial access to the Facebook platform, suggesting this was the most challenging aspect of joining the group. Technical challenges with the Facebook platform were also common. The technical challenges for faculty participating in social media groups are well described.[3] In our experience, technical challenges predominantly involved trainees asking for assistance in posting discussion cases to the group. This seems to contradict the high degree of trainee confidence in using Facebook that was detected by survey. However, other explanations including cultural and language barriers may account for this finding.

Our secret Facebook group does require group moderator technical expertise and administrative effort. The group moderator's responsibilities include: member recruitment, scheduled posting of lectures, ensuring compliance with Facebook "Community Standards," providing technical guidance, screening for PHI, and facilitating group discussion. These technical and administrative challenges are also described by other authors.[3]

Breaches in patient privacy can occur when using Facebook for medical education.[11] Posts containing PHI represented a minority of cases in our experience and in the literature.[11] Facebook does not police exposures of PHI; rather, the individual user and the group moderator are responsible to screen for exposures. Radiographic studies were the source of all PHI exposures in our group's experience. This observation suggests that particular attention must be applied when posting radiographic studies, where PHI can be easily overlooked.

Facebook identifies "Community Standards" violations through the use of technology, team review, and user reports.[17] Consequences of violations include content removal, obscuring content, account disabling, and escalation to external agencies.[17] Our group's 3 censored posts did comply with the "Community Standards" of Facebook, particularly as these posts were educational. Facebook states their nudity policies are "nuanced" and allow such content for educational or medical reasons.[17] Despite Facebook Community Operations Team review, one post was not allowed to be reposted. Our authors believe that the potential for inappropriate censorship should not exclude Facebook's use for educational outreach.

This study represents the early experience of one educational Facebook Group that does not have a similar group to draw comparison. Another limitation results from our inability to compare this educational tool to traditional means of teaching reconstructive surgery. Continued investigation into the group's implementation over a longer period of time is warranted. While we believe this group represents a useful educational tool, long-term outcomes on its impact in patient care are yet to be determined. Our authors did consider a "postimplementation" survey to compare with our preimplementation survey. However, inherent differences between the entire RGTP community and members successfully recruited into the Facebook group prevent any means of useful comparison. Our survey response rate of 39.1% is considered acceptable for medical professionals, though it likely contributes a nonresponse bias.[12] Our authors are responsible for the Facebook group's development and management, which represents an additional source of bias.

CONCLUSIONS

The RGTP secret Facebook group has had a successful early launch. There are inherent challenges in maintaining an educational Facebook group: technical expertise, administrative effort, social media training for members, ensuring PHI protection, encouraging engagement, and ensuring content is not inappropriately censored. The secret Facebook group represents a unique tool that can be used to teach global reconstructive surgery. Our Facebook group can be used as a template for educational outreach in other medical specialties. In the future, our authors hope to utilize other technical features of the Facebook group including live video and mentorship features. Lastly, lecture attendance and postcourse testing will increase the educational value of this group. The goal of future studies will ultimately aim to assess the group's long-term impact on patient care.

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