

Utilization of Rhinoplasty Worksheets among Practicing Facial Plastic Surgeons

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Background: Rhinoplasty is the most commonly performed procedure by facial plastic surgeons, yet many consider it the most complex and variable surgery performed. Yet no standardized surgical worksheet has been established to document the maneuvers and anatomical changes made despite the known high rate of revision surgery. This study aimed to assess the utility and utilization of rhinoplasty surgical worksheets amongst facial plastic surgeons, as well as the perceptions and attitudes toward standardization of a common rhinoplasty surgical worksheet.

Method: We distributed an online survey to all active members of the American Academy of Facial Plastic and Reconstructive Surgery, in order to assess trends in utilization of surgical worksheets and the willingness of physicians to adhere to a standardized worksheet to be included in patient's medical records.

Results: When surveyed, 84 of the 130 respondents reported using a surgical worksheet, with 63 of 84 mentioned using a variation of their own custom worksheets. Of the 84 surgeons, 45 used these worksheets "often" or "always" during follow-up appointments. However, 111 of the 130 reported "never" or "rarely" receiving a surgical worksheet from another provider for revision rhinoplasties. In total, 96 of the 130 respondents were "strongly in favor" or "in favor" of sharing worksheets with other providers and 87/130 were in favor of establishing a standardized rhinoplasty worksheet for all rhinoplasty patients.

Conclusions: A majority of respondents reported using surgical worksheets for rhinoplasties with very few reporting ever receiving other surgeons' worksheets prior to revision rhinoplasties. Roughly three fourths of respondents were in favor of sharing worksheets along with a majority in favor of a standardized worksheet. This would represent a significant change in practice along with potentially increased collaboration between surgeons and subsequent advancement of patient care. (*Plast Reconstr Surg Glob Open* 2021;9:e3756; doi: 10.1097/GOX.0000000000003756; Published online 23 August 2021.)

INTRODUCTION

Rhinoplasty is one of the oldest surgical procedures still in use today, with the first description of the procedure dating back to 600 BC by Sushruta, who performed the procedure for reconstructive purposes in India.¹ Over the centuries, the procedure has continued to evolve and become refined. A survey in 2018 noted that rhinoplasty continues to be the most common surgical procedure among members of the American Academy of Facial Plastic and Reconstructive Surgery (AAFPRS).² However,

despite being such a commonly performed procedure, it is also one of the most technically variable procedures due to the complexity and individuality of the nasal anatomy, coupled with the diversity in surgical techniques available to the rhinoplasty surgeon.³⁻⁶ The variability in the procedure and individual anatomy of patients can make the procedure prone to complications and difficulties with revision cases.^{6,7}

With better understanding of the anatomical characteristics contributing to nasal deformities over the past decades, surgical techniques have improved and adapted to address these specific problems. Rhinoplasty's evolution has been a result of the willingness of surgeons to share and learn together. Throughout the history of rhinoplasty, illustrations served as successful tools in describing

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technical details, however, there was not consistency in the description of the manipulations that occurred during rhinoplasty surgery. It was not until 1989 when Dr. Jack Gunter attempted to establish a methodic pictorial representation of what was done. During his rhinoplasty surgeries, he supplemented a diagram to his operative record. Exact surgical manipulations were drawn onto this diagram, as seen in [Figure 2](#), which he included in the patient’s records. Dr. Gunter felt that this addition helped refresh his memory when patients returned for postoperative appointments, but also helped detail cases that he wished to use for teaching and for inclusion in lectures.^{8,9}

The acceptance and adaptation of the rhinoplasty surgical worksheet can be evidenced by its presence in research papers and national conferences as adjunct visual aids to help describe procedures performed, as well as a teaching tool. It has also been adapted by many surgeons in their daily practice for these very reasons.

However, neither Gunter’s original worksheet nor any other worksheet has been widely accepted as a standardized format. We also do not know what the utilization rate of these surgical worksheets are amongst facial plastic surgeons. This study aimed to elucidate practice patterns with regard to surgical rhinoplasty worksheet use, surgeon perceived utility, and attitudes toward standardization of a worksheet through a survey sent to members of the AAFPRS.

METHODS

SUNY Upstate Medical Center institutional review board approval was received for this study. An online survey was submitted to all active members of the AAFPRS via email, 1430 active members were sent the survey and a total of 130 members completed the survey.

Data were collected anonymously through the REDCap (Research Electronic Data Capture) web application. All responses were unique by Internet Protocol address and completely anonymous. Inclusion criteria included all current AAFPRS members with an active email address. Subgroup statistical analysis was performed using chi-square and Fisher exact tests using the SPSS statistical software (version 22; IBM Corp, Armonk, N.Y.).

RESULTS

Of the 1430 members, we had responses from 130. An estimated 127 of the 130 members who responded fully completed the survey, and three were considered partial surveys but included in our analysis given exclusion of demographic data only (active membership status). When asked how long they had been practicing, the majority of the respondents (49/130) reported practicing for over 20 years, 35 of 130 practiced between 11 and 20 years, and 46 of the 130 respondents practiced for 10 years or less ([Table 1](#)). The majority of surgeons (71/130) reported that they did not work with surgical residents in their daily practice, but of those who did, 47 of 59 respondents reported working with them often. (See [table, Supplemental Digital Content 1](#), which displays the response rate of the survey. <http://links.lww.com/PRSGO/B750>.)

Takeaways

Question: What is the utilization of rhinoplasty worksheets among facial plastic surgeons and are worksheets shared amongst surgeons?

Findings: Of the 130 respondents, 84 used a surgical worksheet with 63 of 84 respondents using a custom-made worksheet. Of these respondents, 111 rarely received outside worksheets, but 87 were strongly in favor of a universal surgical worksheet.

Meaning: A large proportion of facial plastics surgeons use surgical worksheets, but rarely received outside worksheets. Most members of the American Academy Facial Plastic and Reconstructive Surgeons were in favor of a universal worksheet, indicating a greater need for inter-collaboration and standardization among surgeons when documenting their rhinoplasty procedures.

Table 1. Demographic Information

Demographic Characteristics	Response
Overall response	130/1430
Practice length	
>20 years	49/130
11–20 years	35/130
<10 years	46/130
Work with surgical residents	59/130
Work with surgical residents often	47/59
Annual rhinoplasty experience	
1–20	23/130
21–50	39/130
51–100	40/130
>100	24/130
Type of rhinoplasty	
Cosmetic only	37.59%
Functional only	32.24%
Both functional and cosmetic	36.81%
Perform revision rhinoplasties	126/130
Percent of rhinoplasties that are revisions	28.73%
Revision rhinoplasties first surgery by different surgeon	85.3%

Surgeons who responded performed a wide range of rhinoplasties yearly, with 23 of the 130 performing 1–20 cases yearly, 39 of 130 performing between 21 and 50 cases, 40 of the 130 performing 51–100 cases, and 24 of 130 reporting over 100 cases a year. Of the rhinoplasty cases, respondents reported that a mean of 37.59% cases were cosmetic only, with a distribution between 0% and 100% and a SD of 28.09%. The respondents also reported a mean of 32.24% of rhinoplasties were classified as functional only with a distribution between 0% and 95% and a SD of 26.59%. Finally, the surgeons reported a mean of 36.81% of rhinoplasty cases are classified as both functional and cosmetic with a distribution between 0% and 98% and a SD of 22.62%.

The survey revealed that 126 of 130 of respondents performed revision rhinoplasties. Surgeons revealed a mean of 28.73% for rhinoplasty cases that were revision, with a range between 5% and 75% and an SD of 16.15%. Of these revision rhinoplasties, 85.3% were cases where the first surgery was performed by another surgeon with a distribution between 0% and 100% with an SD of 17.21%.

When the respondents were polled on whether they used rhinoplasty worksheets for their rhinoplasties, 84 of

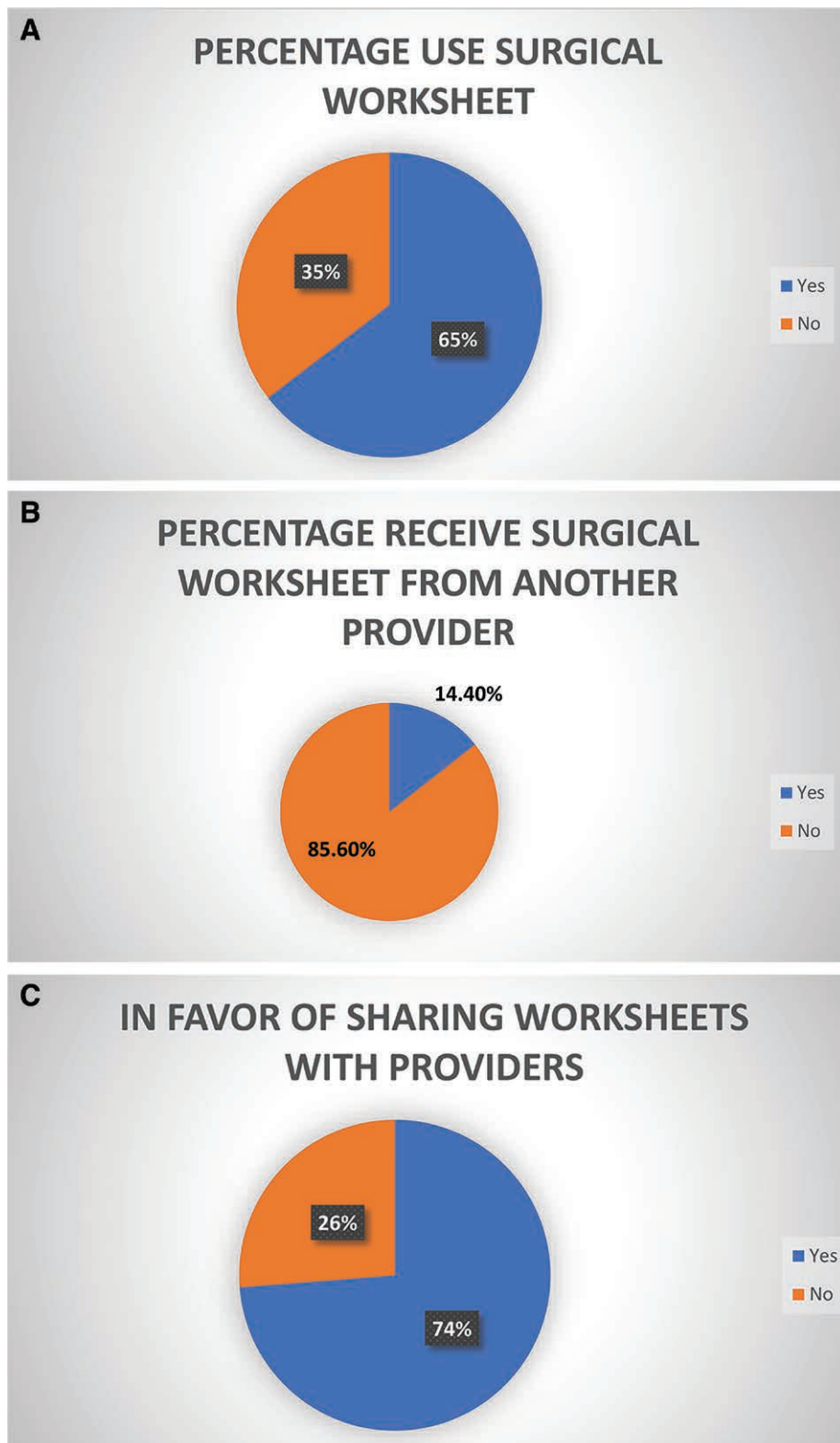


Fig. 1. Surgical worksheet utilization and dissemination amongst surgeons. A, Respondents who use surgical worksheets. B, Respondents who receive surgical worksheets for surgical planning. C, Respondents in favor of sharing surgical worksheets.

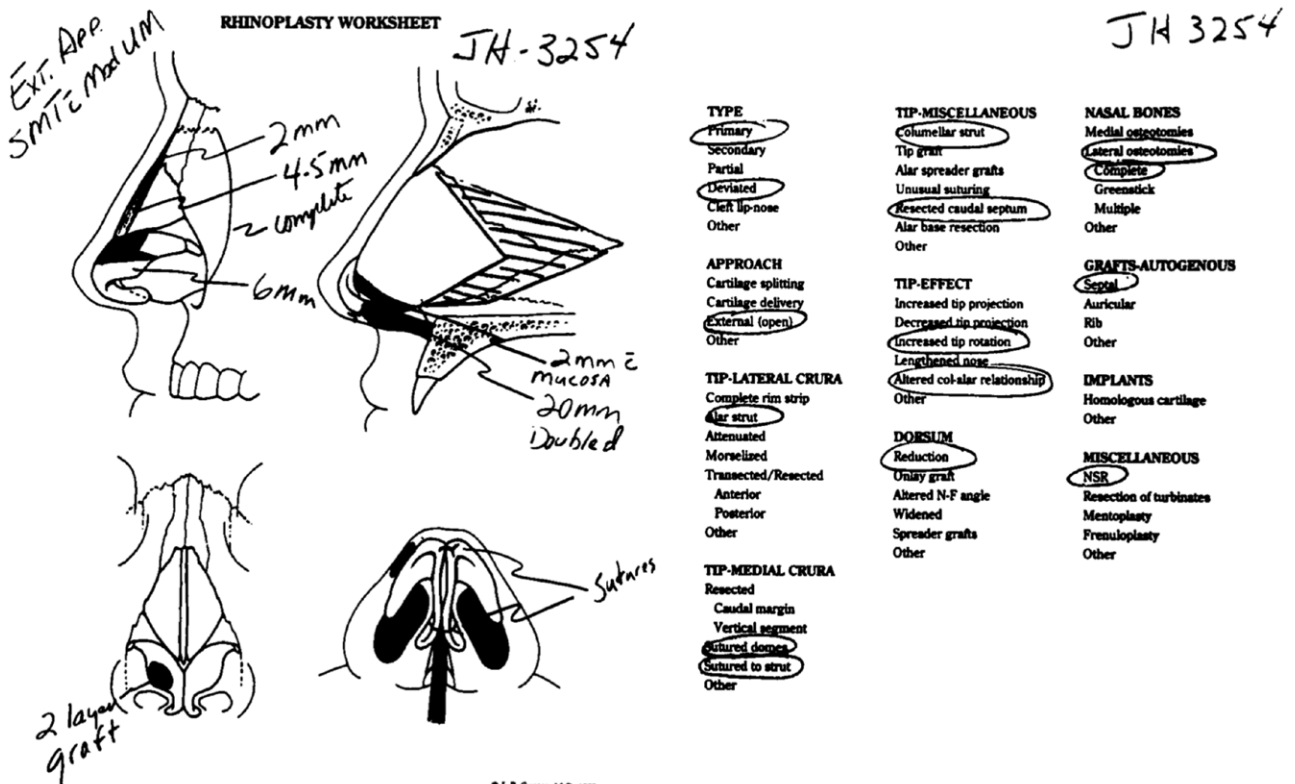


Fig. 2. Example of Gunter worksheet filled out. Reprinted with permission from *Plastic and Reconstructive Surgery* 1989;84(2):204–212.

130 reported that they did use a worksheet (Fig. 1). Of those that used surgical worksheets, 54 of 84 reported using a paper version of their own custom surgical worksheet. Overall, 21 of 84 respondents used a version of the original Gunter surgical worksheet in either a paper or digital form (Table 2). Of the 84 respondents, 63 reported using a custom surgical worksheet in either paper or digital form (Table 2). Of the 84 surgeons, 65 included these surgical worksheets as a part of the patient’s medical records. The survey also revealed that of those that use surgical worksheets, 45 of 84 used these worksheets on follow-up

Table 2. Surgical Worksheet Information

Type of Surgical Worksheet Used	Response
Custom form paper version	54/84
Original Gunter form paper version	13/84
Original Gunter form digital version	9/84
Custom form digital version	8/84
Purpose of surgical worksheet	Response
Review or recall old nasal anatomy/deformity	50/84
Review or recall previously placed implants/grafts	62/84
Assessment of bone and cartilage available for reconstruction	53/84
Personal improvement	56/84
Resident education	26/84
Research purposes	19/84
Characteristics	Response
Use rhinoplasty work-shop at follow-up	70/130
Never or rarely receive surgical worksheet from other provider for revision rhinoplasty	111/130
Strongly in favor or in favor of sharing surgical worksheets with other providers for revisions	96/130
In favor of standardized rhinoplasty worksheet	87/130

appointments “often” or “always” along with 53 of 84 respondents reporting that they “always” refer back to the rhinoplasty worksheets for their own revision rhinoplasties. However, when asked if a surgical worksheet or procedural note is provided when performing a revision rhinoplasty on a patient where the primary surgery was performed by another surgeon, 111 of 130 respondents reported either “never” or “rarely” receiving a surgical worksheet from the other provider (Fig. 1B).

When asked for what purpose respondents use surgical worksheets primarily, the primary responses were to review or recall old nasal anatomy/deformity (50/84), review or recall previously placed implants/grafts (62/84), assessment of bone and cartilage available for reconstruction (52/84), personal improvement (56/84), resident education (26/84), and research purposes (19/84). When asked whether, in their opinion, rhinoplasty surgical worksheets should become part of the patient’s medical record available to all providers and the patient, 85 of the 130 respondents said they should be included. The survey also revealed that when asked their opinion on sharing surgical worksheets with another provider for a revision case, 96 of the 130 were “strongly in favor” or “in favor.” Of the four respondents who were against sharing these worksheets, three cited medical-legal consequences as their primary reasoning to not share the worksheets. Finally, when asked if there would be a benefit to establishing a standardized rhinoplasty worksheet for all rhinoplasty patients, 87 of the 130 respondents were in favor (Fig. 1C).

DISCUSSION

Thirty years ago, Dr. Gunter introduced his original pictorial surgical worksheet, a simple paper template to be filled out after each procedure. Our survey shows that this tool has stood the test of time and there is wide adaptation of this form of record keeping amongst AAFPRS members, with 84 of 130 respondents reporting use of some version of a surgical worksheet. Interestingly, despite the technological advances and the expansion of electronic medical records, there still seems to be a preference for use of a paper worksheet, with 68 of 84 worksheet users preferring paper format over a digital one. Since the digital revolution of the early 2000s, there have been a few attempts to modernize the surgical worksheet by adapting it to mobile technology and transitioning to 3D models, but these do not seem to have gained wide acceptance.^{10,11}

A surprising observation from our analysis is that while 65 of 84 surgeons who used a worksheet reported including this as part of the medical record, 111 of 130 respondents reported rarely or never having a surgical worksheet available for review during a revision rhinoplasty consultation. Although this may be a consequence of our fragmented medical system and a result of our more globalized nomadic society, it offers insight into an area of potential improvement within our field.

The formalization of a rhinoplasty pictorial worksheet has the potential to be extremely useful for rhinoplasty surgery, particularly now as there is a call for more outcome-focused research. Additionally, with rhinoplasty now more than ever going through a period of rapid evolution with techniques such a preservation rhinoplasty regaining popularity,^{12,13} and refinements to both endonasal and open rhinoplasty continuing to emerge, a universal format to describe rhinoplasty surgery seems necessary.^{5,14,15} With the high number of revision surgeries seen within rhinoplasty,¹⁶ the use of a common rhinoplasty surgical worksheet would allow surgeons to communicate in a universally accepted language.

Although surgical worksheets seem like a good and simple tool to use, a few considerations need to be taken into account before adaptation of this format of documentation. There have never been any validation studies looking at interpretational variability of worksheets, nor comparative studies looking at worksheet information comparisons when looking at written operative notes. Additional research in these areas may be useful. But for now in rhinoplasty, the old English adage may hold truest: “a picture is worth a thousand words.”

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REFERENCES

1. Brain DJ. The early history of rhinoplasty. *Facial Plast Surg.* 1993;9:81–88.
2. AAFRPS. 2018 Annual Survey reveals key trends in facial plastic surgery. PR Newswire. 2019. Available at <https://www.prnewswire.com/news-releases/aafprs-2018-annual-survey-reveals-key-trends-in-facial-plastic-surgery-300782534>. Accessed March 17, 2020.
3. Whitaker EG, Johnson CM Jr. The evolution of open structure rhinoplasty. *Arch Facial Plast Surg.* 2003;5:291–300.
4. Çakır B, Doğan T, Öreroğlu AR, et al. Rhinoplasty: Surface aesthetics and surgical techniques. *Aesthet Surg J.* 2013;33:363–375.
5. Kosins AM, Daniel RK. Decision making in preservation rhinoplasty: A 100 case series with one-year follow-Up. *Aesthet Surg J.* 2019;40:34–48.
6. Gyskiewicz JM, Gyskiewicz KM. Nasal osteotomies: A clinical comparison of the perforating methods versus the continuous technique. *Plast Reconstr Surg.* 2004;113:1445–56; discussion 1457.
7. Guarro G, Brunelli F, Rasile B, et al. Effects and changes on voice after rhinoplasty: A long-term report. *Plast Surg (Oakv).* 2019;27:230–236.
8. Webber WB. Rhinoplasty: The importance of consistent documentation and significant long-term follow-up. *Plast Reconstr Surg.* 1987;79:640–654.
9. Gunter JP. A graphic record of intraoperative maneuvers in rhinoplasty: The missing link for evaluating rhinoplasty results. *Plast Reconstr Surg.* 1989;84:204–212.
10. Codazzi D, Bruschi S, Mazzola RF, et al. Bergamo 3D Rhinoplasty Software: select, store, and share surgical maneuvers in a three-dimensional nasal model. *Plast Reconstr Surg.* 2016;137:313e–317e.
11. Kotler HS. Rhinoplasty perioperative database using a personal digital assistant. *Arch Facial Plast Surg.* 2004;6:321–327.
12. Saban Y, Daniel RK, Polselli R, et al. Dorsal preservation: The push down technique reassessed. *Aesthet Surg J.* 2018;38:117–131.
13. Patel PN, Mohamed A, Most SP. A review and modification of dorsal preservation rhinoplasty techniques. *Facial Plast Surg Aesthet Med.* 2020;22:71–79.
14. Davis RE. Lateral crural tensioning for refinement of the wide and underprojected nasal tip: Rethinking the lateral crural steal. *Facial Plast Surg Clin North Am.* 2015;23:23–53.
15. Çakır B, Öreroğlu AR, Daniel RK. Surface aesthetics in tip rhinoplasty: A step-by-step guide. *Aesthet Surg J.* 2014;34:941–955.
16. Yu K, Kim A, Pearlman SJ. Functional and aesthetic concerns of patients seeking revision rhinoplasty. *Arch Facial Plast Surg.* 2010;12:291–297.