

BRIEF ARTICLE

Assessing Patient Reported Quality of Care and Safety in Mohs Surgery During the COVID-19 Pandemic

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ABSTRACT

COVID-19 has greatly impacted patients' ability to receive medical care. Early on during the pandemic, skin cancer diagnosis and treatment were often delayed due to fear of viral spread. In certain locales, executive orders have prevented physicians from performing procedures that were not immediately lifesaving. This study aims to assess patient-reported quality of care and sense of safety while receiving Mohs micrographic surgery (MMS) during the pandemic. The intent of this study is to identify patient-specific factors that influence concerns and feelings of safety, and thus guide future safety measures. A telephone survey was administered to assess patient concerns about treatment delay, feelings of safety, and satisfaction. A retrospective chart review was performed to collect demographics, comorbidities, tumor characteristics, etc. A total of 144 patients (102 male, 42 female; average 71.9 years old) completed the study. Overall, patients felt safe and satisfied, with 75.7% reporting 10/10 safety (average 9.5/10) and 84% reporting 10/10 satisfaction (average 9.7/10). Patients had more notable levels of concern regarding pandemic-related treatment delays (median 2/10), compared to the risk of contracting COVID during their visit (median 1/10). Concerns regarding treatment delay included an increase in cancer size, spread, pain, and scarring. This study demonstrates that high levels of patient feelings of safety and satisfaction can be obtained with MMS during the pandemic. As the pandemic continues, it is imperative that patients can receive high quality and timely care without compromising safety. Outpatient dermatologic surgery can continue without jeopardizing patients' overall feeling of safety and satisfaction.

INTRODUCTION

The SARS-CoV-2 coronavirus (COVID-19) has impacted care across all fields of medicine, including Mohs micrographic surgery (MMS). A survey of Mohs surgeons in the UK reported impacts of COVID-19 on MMS, with 49% cessation of MMS in the early months of the pandemic¹. Another study demonstrated a low risk of contracting COVID during outpatient surgery when utilizing appropriate precautions². The dermatologic surgery clinic at our institution

implemented patient safety protocols during the pandemic, considering published guidelines and CDC recommendations^{3,4}. This includes masking, increased PPE, pre-operative COVID testing for treatment around the nose and mouth, etc. We also increased the use of dissolvable sutures and utilized patient portal messaging and/or telehealth. It is important to better understand patients' experiences with care during the pandemic. The study's objective is to assess patient-reported quality of care and sense of safety while receiving MMS during the pandemic, identify factors that

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influence feelings of safety, and guide future safety measures.

Design & Methods

This study received IRB approval from the University of Texas Southwestern (UTSW). This study included patients treated with MMS at the UTSW dermatologic surgery clinic from March 16, 2020 to June 30, 2020. Patients referred for outside repair or who received Mohs for >1 skin cancer on the same date or on >1 occasion during the study period were excluded. 277 patients met inclusion criteria and 144 patients (102 male, 42 female) participated. All patients were contacted via telephone, and data collection was performed between August 28, 2020 and November 16, 2020.

Survey data included patient satisfaction, treatment concerns (i.e. bleeding, pain, etc.), surgery delay concerns, fears of contracting COVID-19, and additional precautions patients feel could improve safety. Patients were asked to rate responses on a 10-point scale.

The second aspect of the study was a retrospective chart review gathering patient age, sex, immunosuppression, history of prior MMS at UTSW, tumor type, size, location, number of stages, method of repair, and use of telehealth and/or patient portal messaging.

Statistical Analysis

Domains of level of concern were assessed using median and interquartile ranges as the data was significantly skewed. Demographic, clinicopathologic, and treatment characteristics were compared between the groups who felt satisfied or safe as compared to those who did not using chi-

squared analyses or t-tests, where appropriate. Univariate logistic regression was used to assess if the variables were significantly associated with the odds of feeling completely safe or satisfied. Statistical significance was set at $p < 0.05$. All analyses were completed using SPSS version 24 (IBM Armonk, NY).

Outcome Measures

The first outcome measure was to determine feelings of safety. The second outcome measure was to determine if demographic, health, or tumor related factors influenced feelings of safety.

RESULTS

Overall, patients felt safe and satisfied, with 75.7% of patients reporting 10/10 safety and 84% reporting 10/10 satisfaction. Patients reported higher levels of concern regarding treatment delays because of the pandemic over contracting COVID-19 (Table 1).

A total of 86/111 (77.5%) patients with sutured wounds had dissolvable sutures and 97.7% (84/86) reported being satisfied with not having to return for suture removal. Of those that required follow-up, 22.4% utilized telehealth and 100% were satisfied with this. Patients who felt completely safe were less likely to receive dissolvable sutures than those who did not feel completely safe (73.0% vs. 95.5%, $p = 0.024$). There were no other significant differences between demographic, clinicopathologic, or treatment characteristics regarding safety or satisfaction (Table 2). However, on logistic regression, the use of dissolvable suture appeared to be negatively related with feelings of safety, but this relationship fell just short of significance (OR=0.13, $p = 0.051$) (Table 3).

Table 1. Level of concern and safety results from the survey and telephone encounters

Level of Concern Questions	
Initial Level of Concern (0-10 scale), median (IQR)	
Skin cancer	2 (0-6)
Treatment delay	2 (0-5)
Increased skin cancer size	18.8%
Distant cancer spread	17.3%
Increased pain	2.1%
Increased scarring	4.9%
Increased risk of infection	0.7%
Risk that surgery may never happen	0.7%
COVID contraction	1 (0-3)
Other concerns, N (%)	
Non-COVID related	20 (13.9%)
Postoperative pain	3.4%
Increased scarring	1.4%
Hypertension-related complications	0.7%
Bleeding	0.7%
Incomplete cancer removal	0.7%
Inadequate patient PPE	1 (0.7%)
Inadequate staff PPE	7 (4.9%)
Inadequate social distancing	11 (7.6%)
Change in concern on arrival, N (%)	
No change	103 (71.5%)
Improve slightly	17 (11.8%)
Improve significantly	24 (16.7%)
Worsen	0 (0.0%)
Safety Concerns	
Feeling of safety with precautions, mean (SD)	9.5 (1.0)
Feel more precautions needed, N (%)	3 (2.1%)
Follow-Up Characteristics	
Dissolvable sutures used, n (%)	86 (77.5%)
Telehealth post-op visit, n (%)	13 (22.4%)
Overall satisfaction (0-10 scale), mean (SD)	9.7 (1.0)

Table 2. Demographic and surgical differences between patients who felt completely vs. not completely safe and satisfied

	Total (N=144)	Feeling of Safety			Patient Satisfaction		
		Not Completely (N=35, 24.3%)	Completely (N=109, 75.7%)	P- Value	Not Completely (N=23, 16.0%)	Completely (N=121, 84.0%)	P- Value
Sex, N (%)				0.072			0.393
Female	42 (29.2%)	6 (17.1%)	36 (33.0%)		5 (21.7%)	37 (30.6%)	
Male	102 (70.8%)	29 (82.9%)	73 (67.0%)		18 (78.3%)	84 (69.4%)	
Age, mean (SD)	71.9 (10.6)	72.2 (9.1)	71.9 (11.1)	0.882	69.8 (13.7)	72.3 (10.0)	0.301
Days between biopsy and surgery, mean (SD)	47.0 (44.3)	49.5 (41.6)	46.2 (45.3)	0.703	42.7 (37.8)	47.8 (45.5)	0.612
Immunosuppression, N (%)				0.801			0.574
None	97 (67.4%)	26 (74.3%)	71 (65.1%)		17 (73.9%)	80 (66.1%)	
Diabetes Mellitus	18 (12.5%)	3 (8.6%)	15 (13.8%)		2 (8.7%)	16 (13.2%)	
HIV	2 (1.4%)	1 (2.9%)	1 (1.0%)		1 (4.3%)	1 (0.8%)	
Leukemia/Lymphoma	5 (3.5%)	1 (2.9%)	4 (3.7%)		1 (4.3%)	4 (3.3%)	
Medication induced	8 (5.6%)	1 (2.9%)	7 (6.4%)		0 (0.0%)	8 (6.6%)	
Transplant	14 (9.7%)	3 (8.6%)	11 (10.1%)		2 (8.7%)	12 (9.9%)	
Cancer type, N (%)				0.310			0.324
Basal cell carcinoma	60 (41.7%)	20 (57.1%)	40 (36.7%)		9 (39.1%)	51 (42.1%)	
Squamous cell carcinoma in situ	26 (18.1%)	4 (11.4%)	22 (20.2%)		4 (17.4%)	22 (18.2%)	
Squamous cell carcinoma	45 (31.3%)	10 (28.6%)	35 (32.1%)		7 (30.4%)	38 (31.4%)	
Melanoma in situ	10 (6.9%)	1 (2.9%)	9 (8.3%)		2 (8.7%)	8 (6.6%)	
Melanoma	1 (0.7%)	0 (0.0%)	1 (0.9%)		1 (4.3%)	0 (0.0%)	
Other	2 (1.4%)	0 (0.0%)	2 (1.8%)		0 (0.0%)	2 (1.7%)	

Table 2 Continued.

Primary Site, N (%)				0.570			0.517
Head and neck	118 (81.9%)	28 (80.0%)	90 (82.5%)		18 (78.3%)	100 (82.6%)	
Trunk	4 (2.8%)	0 (0.0%)	4 (3.8%)		1 (4.3%)	3 (2.5%)	
Upper Extremity	12 (8.3%)	4 (11.4%)	8 (7.3%)		1 (4.3%)	11 (9.1%)	
Lower Extremity	10 (6.9%)	3 (8.6%)	7 (6.4%)		3 (13.0%)	7 (5.8%)	
Number of Stages, N (%)				0.161			0.165
One	87 (60.4%)	19 (54.3%)	68 (62.4%)		12 (52.2%)	75 (62.0%)	
Two	41 (28.5%)	14 (40.0%)	27 (24.7%)		10 (43.5%)	31 (25.6%)	
Three or more	16 (11.1%)	2 (5.7%)	14 (12.8%)		1 (4.3%)	15 (12.4%)	
Repair Type, N (%)				0.060			0.191
Primary closure	82 (56.9%)	19 (54.3%)	63 (57.8%)		9 (39.1%)	73 (60.3%)	
Secondary intention	33 (22.9%)	13 (37.1%)	20 (18.3%)		8 (34.8%)	25 (20.7%)	
Flap	26 (18.1%)	3 (8.6%)	23 (21.1%)		6 (26.0%)	20 (16.5%)	
Graft	3 (2.1%)	0 (0.0%)	3 (2.8%)		0 (0.0%)	3 (2.5%)	
Dissolvable sutures, N (%) [*]				0.024			0.679
Yes	86 (77.5%)	21 (95.5%)	65 (73.0%)		11 (73.3%)	75 (78.1%)	
No	25 (22.5%)	1 (4.5%)	24 (27.0%)		4 (26.7%)	21 (21.9%)	
Post-Op Telehealth Visit, N (%) ^{**}				0.116			0.809
Yes	13 (22.4%)	1 (7.1%)	12 (27.3%)		3 (25.0%)	10 (21.7%)	
No	45 (77.6%)	13 (92.9%)	32 (72.7%)		9 (75.0%)	36 (78.3%)	
Prior MMS Procedure, N (%)				0.929			0.642
Yes	69 (47.9%)	17 (48.6%)	52 (47.8%)		10 (43.5%)	59 (48.8%)	
No	75 (52.1%)	18 (51.4%)	57 (52.2%)		13 (56.5%)	62 (51.2%)	

^{*}Patients with secondary intention healing excluded (n=33)

^{**}Patients receiving dissolvable sutures excluded (n=86)

Table 3. Demographic and surgical differences between patients who felt completely vs. not completely safe and satisfied

	Feeling of Safety		Patient Satisfaction	
	OR	P-value	OR	P-value
Sex				
Female	Ref		Ref	
Male	0.42	0.078	0.63	0.396
Age	1.00	0.881	1.02	0.300
Days between biopsy and surgery	1.00	0.701	1.00	0.610
Immunosuppression				
None	Ref		Ref	
Diabetes Mellitus	1.83	0.369	1.70	0.505
HIV	0.37	0.483	0.21	0.282
Leukemia/Lymphoma	1.47	0.738	0.85	0.888
Medication induced	2.56	0.389	undef	0.999
Transplant	1.34	0.670	1.28	0.764
Cancer type				
Basal cell carcinoma	Ref		Ref	
Squamous cell carcinoma in situ	2.75	0.097	0.97	0.964
Squamous cell carcinoma	1.75	0.215	0.96	0.938
Melanoma in situ	4.5	0.167	0.71	0.689
Melanoma	undefined	1.000	0.00	1.000
Other	undefined	0.999	undefined	0.999
Primary Site				
Head and neck	Ref		Ref	
Trunk	undefined	0.999	0.54	0.602
Upper Extremity	0.62	0.465	1.98	0.525
Lower Extremity	0.73	0.658	0.42	0.239
Number of Stages				
One	Ref		Ref	
Two	0.54	0.140	0.50	0.143
Three or more	1.96	0.401	2.40	0.417
Repair Type				
Primary closure	Ref		Ref	
Secondary intention	0.46	0.082	0.39	0.076
Flap	2.31	0.209	0.41	0.128
Graft	undefined	0.999	undefined	0.999
Dissolvable Sutures Used	0.13	0.051	1.30	0.680
Post-op Telehealth Visit	4.88		0.147	
Prior MMS Procedure	1.04	0.929	0.81	0.642

DISCUSSION

Skin cancer is the most common type of cancer in the United States, so delays in treatment impact a substantial number of patients, potentially leading to an increase in cancer size, pain, and/or risk of metastasis^{5,6}. While postponing non-urgent treatment was initially helpful to slow viral spread, the pandemic has continued with repeated intermittent spikes in case numbers. Therefore, it is critical to continue the treatment of skin cancers with safety precautions that allow physicians to provide adequate and safe care. A recent study at an academic center in New York City detailed their implemented safety precautions to prevent transmission of COVID-19 in 262 excision cases⁷. This study, along with the other resources available, can serve as guides to facilitate adopting safety protocols for treatment during the pandemic.

With the utilization of clinic safety protocols, we found that patients' fears regarding delays in skin cancer treatment outweighed fears of contracting COVID-19. These findings are comparable to other survey results of patients receiving MMS in the UK during the pandemic⁸.

In this study, patients who did not feel completely safe were more likely to have received dissolvable sutures. While it is possible receiving dissolvable sutures could contribute to unsafe feelings for unclear reasons, it is more probable that patients who felt less safe were more likely to opt for having dissolvable sutures to avoid additional office visits. Additionally, most patients that required a follow up visit had an in-person visit. While this may partly depend on the nature of their repair or unfamiliarity with telehealth technology, it also suggests

that patients may also feel comfortable with in-person visits if appropriate safety protocols are in place.

Limitations of the study include evaluating patients at only a single center, possible recall bias due to the study's retrospective nature, and limitations of patient survey response rate.

CONCLUSION

COVID-19 has greatly impacted patients' ability to receive medical care, sometimes leading to delays in diagnosis and treatment. Although, prior to their visit, several patients expressed some degree of concern regarding skin cancer treatment during COVID-19, most patients reported feeling safe during their appointment and satisfied with their care. These findings support that skin cancer treatment during the pandemic is well-received by patients. As the pandemic continues or new health crises arise, outpatient dermatologic surgery can continue to operate without compromising patients' perception of safety if sufficient safety protocols that address patients' concerns are implemented.

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