doi:10.36849/JDD.5742

Opioid Prescriptions and Pain-Related Patient-Initiated Communication After Mohs Micrographic Surgery: A Retrospective Cohort Study

Christian Carr MPH, Oliver Taylor MD, Antonio Garcia BS, Sophia Tran BS, Divya Srivastava MD, Rajiv I. Nijhawan MD

Department of Dermatology, University of Texas Southwestern Medical School, Dallas, TX

ABSTRACT

Background: There is a wide variety in utilization of opioids during Mohs Micrographic Surgery (MMS) despite evidence that a multi-modality approach may be more beneficial.

Objective: To evaluate prescription opioid use at our institution and subsequent pain-related patient communication following MMS.

Methods: This was a retrospective cohort study involving 2360 patients who underwent MMS. Patient and operative characteristics in relation to opioid use in the peri-operative period were compared using univariate and bivariate statistical measures.

Results: A total of 306 patients (13%) were prescribed opioids postoperatively. However, receipt of opioids is associated with greater odds of pain-related patient communication (OR=6.2; 95% CI:3.3–11.4). Opioid type was not significantly associated with reported pain (OR=0.7; 95% CI:0.3–1.8).

Conclusion: Consistent with existing guidelines, certain patient and operative characteristics such as age, number of Mohs stages, repair type, and anatomic site were associated with greater odds of receiving opioids. While certain patients may require opioids for adequate pain control, in our cohort, opioid use was associated with increased odds of pain-related patient communication post MMS.

J Drugs Dermatol. 2022;21(5):551-554. doi:10.36849/JDD.5742

INTRODUCTION

Mohs micrographic surgery (MMS) is typically associated with mild to moderate pain on the day of surgery and first postoperative day that is often well-managed with over the counter analgesics.[1] However, dermatologists' practice patterns regarding prescription pain medications vary.[2,3] Anatomic site, repair size/type, and patient pain tolerance should be considered if/when deciding to prescribe opioids.[4,5] Of note, postoperative pain has been reported to be the third most common reason patients initiate communication after MMS.[6] This study reviews our institution's opioid prescribing practice while examining pain-related patient-initiated communication after MMS. We hypothesized that pain-related communication is infrequent following MMS with multi-modality analgesia (eg, rest, ice, alternating acetaminophen with non-steroidal anti-inflammatory, etc.) and judicious use of opioids.

MATERIALS AND METHODS

Retrospective chart review was performed of 2360 patients with 2770 lesions who underwent MMS at a single institution with two surgeons over the course of 17 months (2017-2018). Data collected included demographics, operative characteristics, opioid prescriptions prescribed, and follow-up pain-related patient concerns. Of note, an attempt is made the evening post-surgery to contact all patients to assess for concerns. If significant concerns for pain are noted, we follow expert consensus guidelines to determine whether an opioid prescription may be of benefit to the patient. If a decision is made to prescribe opioids, no more than three days (6-10 tablets) are given. Univariate and bivariate measures were used to evaluate the sample. Alpha <0.05 was used to determine significance. All analyses were performed using SAS 9.4.

RESULTS

Table 1 includes summary statistics and bivariate odds ratios for demographics and operative characteristics. Briefly, 306 patients (13.0%) were prescribed opioids post-operatively. Hydrocodone-acetaminophen 5-325 mg (n=190) was more commonly prescribed than tramadol 50 mg (n=116), although tramadol was more often given to ages >74 (n=56, 53.8%). Ages 22–40 were most likely to receive opioids post-operatively [OR=2.5; 95% CI=1.1–6.0]. Gender was not associated with opiate prescriptions.

TABLE 1.

Patient Characteristics by Receipt of Post-Surgical Opiates			
	No Opioid Given – N (%)	Opioid Given – N (%)	OR (95% CI)
Age			
22-40	24 (77.4)	7 (22.6)	2.5 (1.1, 6.0)*
41-59	199 (81.6)	45 (18.4)	2.0 (1.3, 2.9)***
60-74	932 (86.1)	150 (13.9)	1.4 (1.1, 1.8)*
>74	899 (89.6)	104 (10.4)	Ref
Gender			
Female	526 (89.2)	64 (10.8)	0.8 (0.6, 1.0)
Male	1525 (86.3)	242 (13.7)	Ref
Defect Size (Mean and SD in cm^2)	1.9 (1.1)	2.6 (1.6)	-8.1*** (T value)
Multiple Lesions			
No	1691 (88.1)	228 (11.9)	Ref
Yes	317 (86.1)	51 (13.9)	1.2 (0.9, 1.7)
Surgery Site			
Forehead/Cheek/Chin	980 (87.0)	146 (13.0)	Ref
Scalp	266 (87.5)	38 (12.5)	0.9 (0.7, 1.4)
Ear	213 (85.9)	35 (14.1)	1.1 (0.7, 1.7)
Nose	279 (80.2)	69 (19.8)	1.7 (1.2, 2.3)**
Lip	29 (63.0)	17 (37.0)	4.0 (2.1, 7.4)***
Neck	181 (95.3)	9 (4.7)	0.4 (0.2, 0.7)**
Trunk	79 (94.1)	5 (5.9)	0.5 (0.2, 1.1)
Upper Extremity	65 (84.4)	12 (15.6)	1.3 (0.7, 2.4)
Hand	106 (92.2)	9 (7.8)	0.6 (0.3, 1.2)
Proximal Lower Extremity	5 (83.3)	1 (16.7)	1.8 (0.3, 12.9)
Below the Knee	116 (98.3)	2 (1.7)	0.1 (0.04, 0.5)**
Foot	11 (84.6)	2 (15.4)	1.5 (0.3, 6.1)
Genitalia/Groin	13 (100)	0	0.2 (0.01, 4.7)
Other/Multiple	26 (72.2)	10 (27.8)	2.7 (1.3, 5.6)*
Repair Type			
Secondary Intention/Granulation	550 (94.7)	31 (5.3)	0.6 (0.4, 0.9)*
Porcine Xenograft	46 (86.8)	7 (13.2)	1.7 (0.8, 3.9)
Single Stage Flap	253 (64.7)	138 (35.3)	5.9 (4.5, 7.8)***
Interpolation/Pedicle Flap	18 (54.6)	15 (45.4)	9.1 (4.5, 18.4)***
Cartilage Graft	5 (83.3)	1 (16.7)	3.0 (0.4, 20.9)
Skin Graft	113 (81.9)	25 (18.1)	2.4 (1.5, 3.9)***
Linear	1357 (91.6)	125 (8.4)	Ref
Dermabrasion	1 (100)	0 (0.0)	3.6 (0.04, 334.2)
Other	32 (71.1)	13 (28.9)	4.5 (2.3, 8.8)***
Mohs Stages			
1	1423 (92.8)	110 (7.2)	Ref
2	782 (82.1)	170 (17.9)	2.8 (2.2, 3.6)***
≥3	169 (69.3)	75 (30.7)	5.7 (4.1, 8.0)***
Tumor Type			
Basal Cell Carcinoma	1140 (85.0)	202 (15.0)	Ref
Squamous Cell Carcinoma	1104 (90.6)	115 (9.4)	0.6 (0.5, 0.8)***
Melanoma in Situ	97 (75.8)	31 (24.2)	1.8 (1.2, 2.8)**
Collision	1 (50.0)	1 (50.0)	5.6 (0.4, 90.6)
Other	26 (83.9)	5 (16.1)	1.1 (0.4, 2.9)

*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$

TABLE 2.

Odds of Reported Pain While Controlling for Opioid Prescription					
	No opioids given on day of surgery		Opioids given on day of surgery		OR (95% CI)
	Number who did not call w/ concern re: pain - N (%)	Number who called with concern re: pain - N (%)	Number who did not call w/ concern re: pain - N (%)	Number who called with concern re: pain - N (%)	
Opioid Prescribed Day of Surgery	2031 (98.9)	23 (1.1)	286 (93.5)	20 (6.5)	6.2 (3.3, 11.4)***
Age					
22-40	24 (100)	0 (0)	6 (85.7)	1 (14.3)	2.4 (0.3, 20.2)
41-59	197 (9.7)	2 (8.7)	41 (91.1)	4 (8.9)	2.0 (0.7, 5.7)
60-74	916 (98.3)	16 (1.7)	140 (93.3)	10 (6.7)	2.2 (1.1, 4.7)*
>74	894 (99.4)	5 (0.6)	99 (95.2)	5 (4.8)	Ref
Gender					
Female	517 (98.3)	9 (1.7)	60 (93.8)	4 (6.2)	1.4 (0.7, 2.8)
Male	1511 (99.1)	14 (0.9)	226 (93.4)	16 (6.6)	Ref
Defect Size (Mean & SD)	1.9 (1.1)	1.9 (0.8)	2.6 (1.5)	3.1 (2.2)	1.1 (0.9, 1.3)
Multiple Lesions					
No	1670 (98.8)	21 (1.2)	212 (92.9)	16 (7.1)	Ref
Yes	315 (99.4)	2 (0.6)	48 (94.1)	3 (5.9)	0.7 (0.3, 1.7)
Surgery Site					
Face	970 (99.1)	9 (0.9)	134 (91.8)	12 (8.2)	Ref
Scalp	266 (100)	0 (0)	37 (97.4)	1 (2.6)	0.3 (0.05, 1.3)
Ear	207 (97.2)	6 (2.8)	31 (88.6)	4 (11.4)	2.2 (1.04, 4.8)*
Nose	274 (98.2)	5 (1.8)	69 (100)	0 (0)	0.7 (0.3, 1.8)
Lip	29 (100)	0 (0)	17 (100)	0 (0)	0.3 (0.02, 5.5)
Neck	181 (100)	0 (0)	8 (88.9)	1 (11.1)	0.5 (0.1, 2.9)
Trunk	79 (100)	0 (0)	4 (80.0)	1 (20.0)	1.2 (0.2, 6.3)
Upper Extremity	63 (96.9)	2 (3.1)	11 (91.7)	1 (8.3)	2.3 (0.7, 7.4)
Hand	106 (100)	0 (0)	8 (88.9)	1 (11.1)	0.8 (0.1, 4.2)
Proximal Lower Extremity	5 (100)	0 (0)	1 (100)	0 (0)	3.3 (0.1, 97.0)
Below the Knee	115 (99.1)	1 (0.9)	2 (100)	0 (0)	1.0 (0.2, 5.3)
Foot	11 (100)	0 (0)	2 (100)	0 (0)	1.7 (0.08, 37.0)
Genitalia/Groin	N/A	N/A	N/A	N/A	
Other/Multiple	25 (96.2)	1 (3.8)	9 (90.0)	1 (10.0)	2.6 (0.6, 10.7)
Opioid Prescribed Day of Surgery	2031 (98.9)	23 (1.1)	286 (93.5)	20 (6.5)	6.2 (3.3, 11.4)***

*$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$

Increased odds of prescription analgesics included utilization of single stage flap [OR=5.9; 95% CI:4.5–7.8], pedicle flap [OR=9.1; 95% CI:4.5–18.4], and skin graft compared to linear repair [OR=2.4; 95% CI:1.5–3.9], surgical site on the nose [OR=1.7; 95% CI:1.2– 2.3] and lip [OR=4.0, 95% CI:2.1–7.4] compared to other parts of the face, extirpation of melanoma in situ compared to basal cell carcinoma [OR=1.8, 95% CI:1.2–2.8], increasing Mohs stages, and larger defect size. In contrast, secondary intention healing was associated with lower odds of receiving a prescription for opioids [OR=0.6; 95% CI:0.4–0.9]. Surgery involving multiple lesions on the same day was not significantly associated with receipt of opioids [OR=1.2; 95% CI:0.9–1.7].

Of the 306 patients who received opioids on the day of surgery, 20 (6.5%) [OR=6.2;95%CI:3.3-11.4] called with concerns of pain versus 23 (1.1%) patients who did not receive opioids. The only surgical site associated with increased report of pain compared to the face was the ear [OR=2.2; 95% CI:1.04, -4.8]. Type of opioid prescribed was not significantly associated with post-surgery report of pain [OR=0.7; 95% CI:0.3-1.8].

CONCLUSION

Certain characteristics such as age, repair type, Mohs stages, and different anatomic sites likely increase the odds of prescribing opioids post-MMS and patient calls with pain concerns. Our findings confirm that most patients do not require opioid prescriptions. Interestingly, in our cohort, opioid prescriptions were significantly associated with subsequent pain concerns

indicating that patients at higher risk of reporting pain are being appropriately identified. However, additional counseling that pain is still likely but just more tolerable may be beneficial. Limitations include low power for assessing certain operative characteristics since pain is infrequent following MMS, and that this study was conducted retrospectively at a single institution.

DISCLOSURES

The authors report no relevant conflicts of interest.

REFERENCES

1. Limthongkul B, Samie F, Humphreys TR. Assessment of postoperative pain after Mohs micrographic surgery. *Dermatol Surg.* 2013;39(6):857-63.
2. Cao S, Karmouta R, Li DG, et al. Opioid Prescribing Patterns and Complications in the Dermatology Medicare Population. *JAMA Dermatol.* 2018. 154(3):317-322.
3. Kreicher KL, Bordeaux JS. Addressing Practice Gaps in Cutaneous Surgery: Advances in Diagnosis and Treatment. *JAMA Facial Plast Surg.* 2017;19(2):147-154.
4. McLawhorn JM, Stephany MP, Bruhn WE, et al., An expert panel consensus on opioid-prescribing guidelines for dermatologic procedures. *JAMA Dermatol.* 2020;82(3):700-708.
5. Donigan JM, Srivastava D, Maher I, et al, Opioid Prescribing recommendations after mohs micrographic surgery and reconstruction: a delphi consensus. *Dermatol Surg.* 2020 Aug 3. Online ahead of print.
6. Chitgopeker P, Sidey K, Aronson A, et al. Factors associated with patient-initiated communication after mohs micrographic surgery. *Dermatol Surg.* 2019;45(2):234-243.

AUTHOR CORRESPONDENCE

Rajiv I. Nijhawan MD

E-mail:..... rajiv.nijhawan@utsw.edu

SUPPLEMENTAL TABLE 1.

Relationship Between Age and Type of Opiate Prescribed			
	Tramadol N (%)	Hydrocodone-Acetominophen N (%)	Test Stastitic (p-value)
Age			17.7 (<0.001)
22-40	3 (42.3)	4 (57.7)	--
41-59	12 (26.7)	33 (73.3)	--
60-74	45 (30.0)	105 (70.0)	--
>74	56 (53.8)	48 (46.2)	--