

Comparing Histological Preparation and Tumor Debulking Techniques in Mohs Micrographic Surgery: A Cross-Sectional Survey

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INTRODUCTION

Single-section Mohs (SSM) allows for the most accurate histological representation of tissue's in vivo architecture during Mohs Micrographic Surgery (MMS).¹ Traditional debulking involves pre-surgical curettage and taking tumor layers using a 45-degree bevel. In comparison, some surgeons perform sharp debulking with a scalpel along with bevel angles as high as 90 degrees.² It is unclear if these debulking preferences impact surgical outcomes, particularly the number of layers required to complete a case (compared with the average of 1.74 layers per case recently reported across all Mohs surgeons).³ The purpose of the study was to establish a current cross-sectional view of the preferences for tumor debulking and histological tissue preparation among practicing Mohs surgeons.

An Institutional Review Board (IRB) and American College of Mohs Surgery (ACMS) approved survey was created to establish current debulking preferences when performing MMS and sent to ACMS-fellowship trained Mohs surgeons. Comparisons were made between debulking preferences and provider demographics using t-tests and fisher exact tests ($P < 0.05$ considered statistically significant).¹

A total of 96 Mohs surgeons completed the survey (74% in a private setting), with 73% reporting average layers per MMS case of under 1.7 (Table 1). Tumor debulking of any type was performed in 75.5% of cases with no differences between practice setting or years of experience. Curettage debulking was used more often than sharp debulking (51% vs 30% of respondents reporting its use). Using a 45-degree bevel to take tumor layers was used by 78.7% of respondents (with the remaining surgeons preferring a 90-degree bevel; Table 1).

SSM was utilized by 61% of Mohs surgeons (87.0% with a 45-degree bevel and 13.0% with a 90-degree bevel; Table 1). In comparison, multi-section Mohs was utilized by the remaining 39% of respondents (70.4% of these surgeons a 45-degree bevel and 29.6% with a 90-degree bevel). Fifty-nine percent of those who sharp debulk utilize SSM compared with 52% of those who debulk with a curette ($P = 0.6298$). Eighty-seven percent of surgeons who curette debulk use 45-degree bevel angles to take layers compared with 74.5% of those who use sharp debulking ($P = 0.1229$).

TABLE 1.

Patient Demographics and Debulking Preferences	
n	96
Male (%)	69
Age (%)	
25-32	7.3
33-40	32.3
41-48	20.8
49-56	20.8
57-64	14.6
≥65	4.2
Experience (yrs.)	
0-9	47%
>10	53%
Location (%)	
Southeast	28
Midwest	17
Northeast	20
West	16
Southwest	15
Outside of US	4
Practice Setting (%)	
Private	74
Academic	22
Average layers per case (%)	
<1.3	4
1.3-1.4	12
1.41-1.5	13
1.51-1.6	19
1.61-1.7	21
1.71-1.8	10
1.81-1.9	3
1.91-2.0	2
>2	1
Unsure	10

TABLE 1. (CONTINUED)

Patient Demographics and Debulking Preferences	
Mohs utilized in practice (%)	
Single section 90-degree bevel	17
Single section 45-degree bevel	52
Multi section 90-degree bevel	7
Multi section 45-degree bevel	24
Percentage of Mohs cases debulked	76
Preferred debulking technique (%)	
Curettage	51
Sharp	30
Equal	14
Neither	4
Other	10
Factors influencing debulking (%)	
Size of lesion	60
Type of malignancy	51
Location of lesion	48
Patient past medical history	3
Debulk every time	34
Never debulk	2

The percentage of respondents reporting an average layer per MMS case under 1.7 was similar regardless of debulking preferences, bevel angle, and whether SSM was performed. Lesion size, location, and type of malignancy were the most important factors for deciding to debulk (selected by 60%, 51%, and 48% of respondents; Table 1). Approximately one-third of respondents debulk in all instances (Table 1). There was no difference in rates of curettage vs sharp debulking based on practice setting or experience level.

For larger lesions and to reduce the risk of avulsing surrounding normal tissue, most surgeons viewed sharp debulking as superior (67% and 61% of respondents; Table 2). In comparison, curettage debulking was viewed as superior in identifying the gross extent of the tumor (65% of respondents; Table 2). Surgeons were most frequently neutral between these techniques when considering total surgical or histotechnician time; and the average number of Mohs layers required to complete a case (Table 2). Anatomical areas preferred for curettage debulking included all areas except the eyelid (Table 2).

TABLE 2.

Debulking Preferences					
Preferred technique per anatomical site (%)	Curettage	Sharp	Neither		
Scalp	64	28	9		
Eyelid	28	32	40		
Ear	64	26	11		
Cheek	56	33	11		
Nose	67	24	9		
Mucosal Lip	44	33	23		
Arm	55	33	12		
Dorsal Hand	52	36	12		
Penis	34	32	34		
Shin	60	29	11		
Preferred technique per clinical factor (%)	Curettage (Strongly)	Curettage (Somewhat)	Neutral	Sharp (Somewhat)	Sharp (Strongly)
Margin Size	27	15	35	11	11
Larger Lesions	8	7	19	31	36
Ability to perform single section Mohs	10	14	55	9	12
Ease of grossing fresh tissue specimen	7	5	49	20	20
Ability to identify gross extent of tumor	40	25	20	7	9
Lower risk of avulsing adjacent normal tissue	8	11	21	29	32
Lower risk of pushing tumor down deeper in tissue	1	2	60	19	18
Total debulking time	15	21	37	11	16
Total surgical time	12	13	53	12	10
Average number of Mohs layers	13	11	57	13	7
Histotechnician time	4	2	64	18	11

Clinical factor answer choices: "curettage (strongly prefer)", "curettage (somewhat prefer)", "neutral (both are similarly effective)", "sharp (somewhat prefer)", and "sharp (strongly prefer)"

Despite the high frequency of debulking utilized during MMS cases, not much is known about how debulking and histological preparation are incorporated into clinical practice. Our findings suggest that curettage debulking, 45-degree beveling, and SSM are more frequently utilized. In addition, surgeons also noted some technical and histological advantages of sharp debulking. Future research directly comparing the efficacy of these techniques would prove beneficial.

DISCLOSURES

The authors have no conflicts of interest to declare.

IRB Approval Status: Reviewed and approved by KU IRB.

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