Mohs Patient Demographics: A quality improvement study analyzing patient demographics and access to Mohs Surgery for basal cell carcinoma and squamous cell carcinoma

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Mohs Patient Demographics:
A quality improvement study analyzing patient demographics and access to Mohs Surgery for basal cell carcinoma and squamous cell carcinoma

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Background

- #1 cancer in the US : Non-melanoma skin cancer (NMSC), squamous cell carcinoma (SCC) and basal cell carcinoma (BCC)

- Mohs surgery is used to treat skin cancer
  - thin layers of cancer-containing skin are progressively removed
  - preserves normal tissue, a five-year recurrence-free survival rate of 99%.[1]
- Risk of metastasis and mortality is low, but NMSCs destroy tissue.[2]
- Wait times in the US have been increasing
- longer time, means further spread leading to larger surgery and defect
- factors that lengthen surgical delay for melanoma patients.[3,4,5,6,7]
  - type of insurance a patient effects the time from biopsy to definitive treatment.[2]
  - one study : type of insurance affects the quality of care for a variety of ailments within the same hospital system.[3]

Problem Statement

Are there geographic, demographic or healthcare related factors that influence time to Mohs surgery and thus local destruction/metastasis ?

Methods

- A retrospective chart review of **1020 patients** who underwent Mohs micrographic for SCC or BCC over 12 months from **October 1, 2016 to September 30, 2017.**
- Patient records and the following information was gathered:
  - referring provider
  - biopsy location
  - date of biopsy, age of patient
  - gender of patient
  - date of Moh's surgery
  - type of insurance (private, Medicare, Medicare Advantage, Medicaid, VA, Charity Care)
  - type of cancer
  - pre-operative lesion size
  - post-operative size
  - repair (Moh's, plastic surgery or Ear, Nose and Throat)
  - date of referral
- Repeated measures mixed models : estimate the association between time from biopsy and referral to surgery
  - post-surgical size and change in size were fit as outcome measures
- Pearson correlation coefficient assess the relationship
  - size of the Mohs defect and the length of the interval from biopsy/referral.
  - power to detect an effect size of 0.15, with power of 80% and a two-sided alpha, with 750 in each group.

Results

Table 1: Patient Characteristics

Gender	
Male	546 (64%)
Female	312 (36%)
Age	
30-39	13 (22%)
40-49	21 (36%)
50-59	12 (21%)
60-69	7 (12%)
70+	5 (9%)
Referring Provider	
WFBMC provider	503 (59%)
Outside provider	341 (40%)
Veterans Affairs provider	14 (2%)
Biopsy Setting	
WFBMC	498 (58%)
Outside provider	359 (42%)
Cancer Type	
SCC	284 (33%)
BCC	574 (67%)
Insurance Payor	
Private	210 (24%)
Medicare	330 (38%)
Medicare Advantage	263 (31%)
Medicaid	13 (2%)
Veterans Affairs	23 (3%)
Charity Care	19. 2%)

Table 2 : Mean Time from Biopsy to Mohs

	Days (95% confidence interval)	P-value
Age		0.44
Gender		
Male	47 (10.7, 83.8)	0.39
Female	54 (5.5, 102.6)	
Insurance Payor		
Private	43 (0, 102.5)	0.36
Other	63 (18.2, 85.3)	
Biopsy Setting		
WFBMC	43 (36.4, 48.7)	0.001
Outside provider	60 (52.3, 66.6)	
Cancer Type		
SCC	36 (28.9, 44.0)	<0.0001
BCC	56 (50.7, 61.8)	
Closure performed by		
Mohs surgeon	41 (35.4, 46.2)	<0.0001
Other surgical specialist	79 (69.7, 88.5)	
Pre-operative size		0.0002

Table 3 : Mean Time from Referral to Mohs Surgery

	Days (95% confidence interval)	P-value
Age		0.072
Gender		
Male	33.2 (6.1, 60.3)	0.28
Female	40.7 (4.5, 76.9)	
Insurance Payor		
Private	35.8 (0, 80.2)	0.99
Other	35.9 (10.9, 60.9)	
Biopsy Setting		
WFBMC	36.6 (32.0, 41.3)	0.57
Outside provider	34.7 (29.3, 40.2)	
Cancer Type		
SCC	28.6 (22.8, 34.4)	0.003
BCC	39.5 (35.3, 43.7)	
Closure performed by		
Mohs surgeon	31.2 (27.1, 35.3)	<0.0001
Other surgical specialist	51.5 (44.3, 58.7)	
Pre-operative size		0.13

Discussion

- Compared to other publications, shorter surgical waiting times
  - average : 50 days between biopsy and surgery
  - Vs. 70, 90, and 133 days .[2,8,9]
- No significant association between demographic factors and NMSC surgical wait times
  - no correlation between age, sex, or insurance payor with surgical delay
  - unlike the results of many articles focused on melanoma
    - delays with older age and female gender
    - Medicaid patients compared to patients with private insurance and for nonwhite patients.[7]
- Place of Biopsy and Healthcare system coordination
  - Biopsy inside network
  - Future studies should focus on evaluating the workflow to identify the cause of delays and actions that can be taken to streamline this process.
- Non-dermatologist specialty surgeon performed the closure causing delays
  - difficulty coordinating the schedules of the two surgeons involved
  - Lott et al. found that for melanomas, the minimum probability of surgical delay over 45 days occurred when a dermatologist performed both the biopsy and the excision, whereas the maximum probability occurred when a dermatologist performed the biopsy followed by excision by a primary care physician.[5]
  - Improving communication between specialties or reserving total care of NMSCs for dermatologists, when feasible, may decrease surgical wait times.

Conclusions

- Project aimed to identify patient's barriers of care when seeking Moh's surgery for NMSC.
- A retrospective chart review of Moh's surgical patients found that surgical delay was not associated with age, sex, or insurance payor.
- SELECT principles such as barriers to care and communication between specialties
- In the future, this project may be expanded by looking at social and psychosocial limitations that may have influenced the timeliness of pursuit of Moh's micrographic surgery in the treatment of NMSC.

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