

Arcadia University

**ScholarWorks@Arcadia**

---

Graduate Theses & Dissertations

Graduate Works

---

Spring 5-14-2020

## **In elderly patients with neurocognitive disorders, does the treatment of NMSC with MMS improve quality of life?**

Victoria LaSala

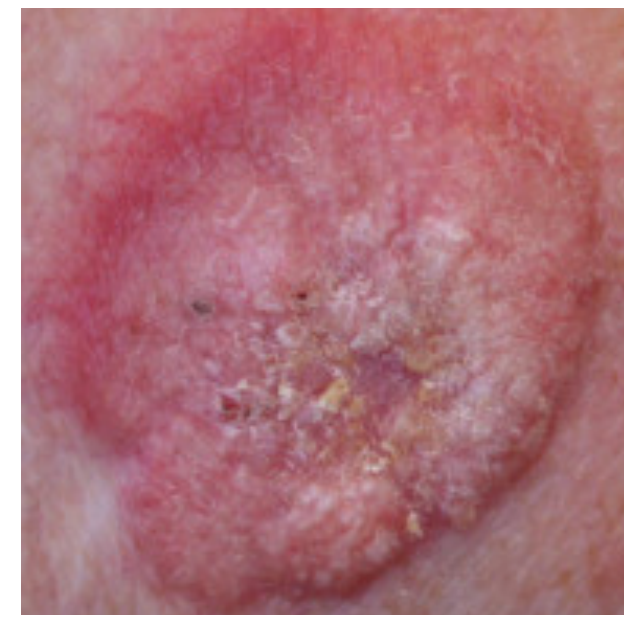
Follow this and additional works at: [https://scholarworks.arcadia.edu/grad\\_etd](https://scholarworks.arcadia.edu/grad_etd)



Part of the [Skin and Connective Tissue Diseases Commons](#)

---

# In elderly patients with neurocognitive disorders, does the treatment of non-melanoma skin cancers with Mohs micrographic surgery improve quality of life?



Basal cell carcinoma



Squamous cell carcinoma

**Victoria La Sala, MPH (c), MMS (c)**  
**Faculty Advisor: Kevin Basile, MD, PT**  
**Department of Medical Science**

## Abstract

Non-melanoma skin cancers (NMSC) contribute significantly to disease burden in elderly individuals. As life expectancy increases, the prevalence of NMSC, as well as other age related conditions such as neurocognitive deficits, will increase as well. An extensive literature search was performed in order to identify studies that evaluated treatment outcomes for elderly patients with NMSC and neurocognitive deficits. No such study to date specifically addresses treatment outcomes in this population subset. Results of the included studies indicate that patients with NMSC who are treated with Mohs micrographic skin cancer surgery (MMS) have increased satisfaction and quality of life (QoL) post-operatively regardless of age or tumor characteristics. The presence of comorbid disease, however, was not associated with improved satisfaction or QoL. The results help guide future clinical management of this particular population, as well as aid in suggestions for future research specific to these individuals.

## Introduction

- There are several disease processes that are associated with increasing age. Two conditions in particular that are seen in a large proportion of the elderly population  $\geq 65$  years are non-melanoma skin cancers (NMSC) and neurocognitive disorders, such as Alzheimer's disease or dementia.
- Mohs micrographic surgery (MMS) is considered the gold standard treatment due to its high cure rate (99%) and tissue sparing technique, which yields improved cosmetic results. Therefore, it is the most utilized therapy for NMSC. The total procedure is lengthy and requires post-op care and follow-up, however, which can be challenging for elderly patients with neurocognitive deficits and decreased functionality.
- Since NMSC rarely contribute to mortality and patients diagnosed with neurocognitive disease often have a limited life expectancy (LLE), the aim of this research is to discern whether or not benefits of surgically treating NMSC in these individuals outweighs risks, considering they are more prone to associated complications.

## Methods

### Literature search:

- Performed in November 2018 using PubMed, EBSCO, and Google Scholar
- Search terms included:
  - >"basal cell carcinoma" OR "squamous cell carcinoma" AND "Mohs micrographic surgery" AND "quality of life."
  - >"basal cell carcinoma" OR "squamous cell carcinoma" AND "cryosurgery" AND "Imiquimod" AND "quality of life."
- Inclusion Criteria: 1) only human studies, 2) studies published within the past 10 years and 3) research with subjects  $\geq 65$  years of age
- Exclusion Criteria: 1) meta-analyses or systematic reviews, 2) studies aimed at creating or validating a new QoL index, 3) the study measured QoL only before treatment

\*This search strategy yielded a total of 7 articles for further analysis

## Results

### Drew et al., 2017

- Aimed to compare the efficacy as well as patient satisfaction after treatment of their NMSC with either MMS or another therapy (topical chemotherapeutic)

### Asgari et al., 2009

- Prospective cohort study aimed at comparing short and long term patient satisfaction after treatment of their NMSC with either MMS or ED&C.

### Zhang et al., 2018

- Measured and compared QoL before and after treatment of NMSC with MMS. Identified variables that have a significant impact on post-op outcomes

### Asgari et al., 2011

- Identified pre-, intra-, and post-operatively variables that predicted positive or negative change in QoL after MMS

### Regula et al., 2017

- Analyzed post-op outcomes for patients treated with MMS who were categorized as either "high" or "low" functioning based on the presence of specific comorbid conditions.

### Camarero-Mulas et al., 2017

- Specifically investigated long term (1 yr post-op) outcomes for patients aged  $\geq 80$  yrs treated with MMS for their NMSC

### Viola et al., 2012

- Analyzed trends in utilization of MMS vs. wide excision of NMSC temporally and geographically in patients  $>65$  y/o

Table 1. Comparison of study designs (MMS vs. other treatments)

Study	Design	Total N	Population Age	Disease at time of treatment	Length of Follow-up (From completion of tx)	Treatments compared	Outcome measure(s)
Asgari et al. 2009	Prospective cohort	834	Mean age: 65.8 y/o	NMSC	1 year	MMS vs. ED&C	Skindex, Medical outcomes SF-12, Charlson index, PSQ-18
Camarero-Mulas et al. 2017	Prospective cohort	2,575	1,942 < 80 y/o 633 > 80 y/o	NMSC	1 year	MMS only (compared same tx between 2 age groups)	REGESMOHS
Regula et al. 2017	Prospective cohort	291	Inclusion criteria: >75 y/o	NMSC	Variable (1-4 years)	MMS only (compared same tx between various tumor characteristics)	KPS, PSQ-18
Viola et al. 2012	Longitudinal population-based analysis	26,931	Inclusion criteria: >65 y/o Medicare beneficiaries	NMSC	N/A	MMS vs. wide excision	ICD-9 codes for NMSC, CPT codes for MMS and wide excision
Asgari et al. 2011	Prospective cohort	339	Mean age: 65.5 y/o	NMSC	1 year	MMS only (compared same tx between various tumor characteristics)	Charlson index, Skindex, PSQ-18
Zhang et al. 2018	Prospective cohort	727	Mean age: 66.2 y/o	NMSC	6 months	MMS only (compared same tx between various tumor characteristics)	Skin Cancer Index
Drew et al. 2017	Prospective cohort	550	Mean age: 69 y/o	227 w/ BCC 451 w/ SCC	Variable (4-8 years)	MMS only (compared same tx between various tumor characteristics) 329 w/ MMS 349 w/ topical chemotherapeutic	PSQ-18

Key: NMSC = Non-melanoma skin cancer; MMS = Mohs micrographic skin surgery; ED&C = electrodesiccation and cautery; Skindex = quality of life (QoL) self-administered survey for individuals with skin diseases; Charlson index = self-administered comorbid condition survey; PSQ-18 = Patient satisfaction survey; REGESMOHS = primary database of patient information used for secondary analysis; KPS (Karnofsky Performance Status) scale = self-administered questionnaire to determine the level of assistance a patient requires for daily living; Skin Cancer Index = Self-administered QoL questionnaire for individuals with skin cancer; ICD-9 code = Diagnosis code used by healthcare providers for billing purposes; CPT code = Procedure code used by healthcare providers for billing purposes; tx = treatment

Table 2. Summary of study results

Study	QoL	Patient Satisfaction	NMSC Recurrence	Treatment Choice
Asgari et al. 2009	S	S	NS	N/A
Camarero-Mulas et al. 2017	NS	N/A	NS	S
Regula et al. 2017	S	S	NS	NS
Viola et al. 2012	N/A	S	N/A	S
Asgari et al. 2011	S	S	NS	N/A
Zhang et al. 2018	S	S	NS	N/A
Drew et al. 2017	N/A	S	NS	S

Key: S = Significant; NS = Not significant; N/A = Not applicable to study

QoL	Patient Satisfaction	NMSC Recurrence	Treatment Choice
S = Improved or decreased after treatment	S = Improved or decreased after treatment	S = Recurrence noted during f/u period	S = Associated with demographic characteristics
NS = No change after treatment	NS = No change after treatment	NS = No recurrence reported	NS = Independent of demographic characteristics

## Discussion

- The results of the included studies addressed various aspects of the PICO research question
- The major outcome variables of interest were patient satisfaction/QoL, preexisting comorbid disease burden, and study population age

<b>MMS vs. Other Therapies</b>	<ul style="list-style-type: none"> <li>• 3/7 studies compared MMS to other therapies</li> <li>• Of these, 2 indicated significantly higher patient satisfaction in the MMS treatment groups</li> </ul>
<b>Presence of Comorbidities</b>	<ul style="list-style-type: none"> <li>• 3/7 studies included comorbid conditions and included them in statistical analyses</li> <li>• All 3 studies indicated significantly improved QoL after treatment with MMS for patients with lower comorbid disease burden as compared to patients with more comorbidities</li> </ul>
<b>Age</b>	<ul style="list-style-type: none"> <li>• 7/7 studies included age stratification in pre/post-op QoL measures as well as post-op complications</li> <li>• All studies indicated that QoL was significantly improved in patients &lt;75 years of age</li> <li>• All studies found no significant difference in incidence of post-op complications based on age</li> </ul>

- Limitations
  - >Prospective cohort design
  - >Implicit bias from self-administered questionnaires
  - >No data specific to population of interest

## Conclusion

- There are a multitude of variables that need to be factored into the creation of a treatment plan for an individual
- Individual's with neurocognitive deficits pose a particular challenge when deciding how/if to treat a NMSC since they have a LLE and often behavioral symptoms which contribute to both intra- and post-operative complications.
- Future research should be aimed at assessing outcomes specifically in this population subset in order to discern whether it is an unnecessary therapy once risks and benefits are accounted for.

## References

1. Asgari MM, Bertenthal D, Sen S, Sahay A, Chren MM. Patient satisfaction after treatment of nonmelanoma skin cancer. *Dermatological Surgery*. 2009; 35(7): 1041-1049
2. Asgari MM, Warton EM, Neugebauer R, Chren MM. Predictors of patient satisfaction with Mohs surgery: Analysis of preoperative, intraoperative, and postoperative factors in a prospective cohort. *Archives of Dermatology*. 2011; 147(12): 1387-1394
3. Camarero-Mulas C, Jiménez YD, Sanmartín-Jiménez O, et al. Mohs micrographic surgery in the elderly: comparison of tumours, surgery and first-year follow-up in patients younger and older than 80 years old in REGESMOHS. *Journal of the European Academy of Dermatology and Venereology*. 2017; 32(1): 108-112
4. Dermnetnz.org. 2020. *Dermnet NZ – All About The Skin | Dermnet NZ*. [online] Available at: <<https://dermnetnz.org/>> [Accessed 12 April 2020].
5. Drew BA, Karia PS, Mora AN, Liang CA, Schmults CD. Treatment patterns, outcomes, and patient satisfaction of primary epidermally limited nonmelanoma skin cancer. *Dermatological Surgery*. 2017; 43(12): 1423-1430
6. Regula CG, Alam M, Behshad R, et al. Functionality of patients 75 years and older undergoing Mohs micrographic surgery: A multicenter study. *Dermatologic Surgery*. 2017;43(7): 904-910
7. Rogers HW, Weinstock MA, Feldman SR, Coldiron BM. Incidence Estimate of Nonmelanoma Skin Cancer (Keratinocyte Carcinomas) in the US Population, 2012. *JAMA Dermatol*. 2015;151(10):1081–1086. doi:10.1001/jamadermatol.2015.1187
8. Viola KV, Jhaveri MB, Soulos PR, et al. Mohs micrographic surgery and surgical excision for nonmelanoma skin cancer treatment in the Medicare population. *Archives of Dermatology*. 2012; 148(4): 473-477
9. Zhang J, Miller CJ, O'Malley V, Etzkorn JR, Shin T, Sobanko JF. Quality of life fluctuates before and after Mohs micrographic surgery: A longitudinal assessment of the patient experience. *Journal of the American Academy of Dermatology*. 2018; 78(6): 1060-1067

**Thank You!**