Micrographically Oriented Histographic Surgery Versus Superficial Radiation Therapy in the Treatment of Basal Cell and Squamous Cell Carcinoma

Jillian Wilder, PA-S

Background & Purpose

Basal cell carcinoma (BCC) and squamous cell carcinoma (SCC) are the leading types of cancer in the United States, with incidence increasing. Micrographically Oriented Histographic Surgery (MOHS) is currently the first-line indication for treatment, but recurrence rates should be compared to alternative treatments including Superficial Radiation (SRT).

The purpose of this project is to compare the recurrence rate of non-melanoma skin cancers when treated with MOHS versus SRT treatments. This will help provide patients with education on their treatment options backed by evidence-based medicine, considering individual's access, needs, and desires.

PICOT

In adult patients with non-melanoma skin cancer, such as BCC and SCC, how does MOHS compare to SRT in terms of recurrence rates over a follow up period of at least a year?

Design & Methods

Keywords: MOHS, SRT, non-melanoma skin cancer, recurrence rates, squamous cell carcinoma, basal cell carcinoma.

Inclusion: Studies within the last 5 years, meta-analysis, retrospective cohort studies, cross-sectional studies, adult participants, and non-melanoma skin cancer.

Exclusion: Those with diagnoses other than BCC or SCC, no evidence of regional lymph node metastasis.

Summary of Evidence Search:

Database	Yielded	Reviewed	Included in Analysis
Google Scholar	7,400	15	4
Summon Database	6,730	14	1
Total:	13,930	29	5

Synthesis of Evidence

Five studies were selected. Four retrospective cohort studies and 1 prospective cohort study were included. Authors measured recurrence to be between 2mm-1cm of the original lesion via histology.

Results:

The recurrence rate over at least a year ranged from 1.9-7.3% using MOHS and 0.9-1.9% using SRT treatment.

Author	Number of Participants	Treatment Modality	Recurrence Rates
Tomas-Velazquez et al	4,7733	MOHS	BCC: 3.5% SCC: 11% Average: 7.25%
Van Lee et al	672	MOHS	SCC: 3%
Salimi et al	154	MOHS	BCC: 1.9%
Madorsky et al	131	SRT	BCC: 1.6% SCC: 2.1% Average: 1.9%
McClure et al	2,880	SRT	BCC: 1.1% SCC: 0.8% Average: 0.9%

References:

1. American Cancer Society. Cancer Facts & Figures 2022. Atlanta: American Cancer Society; 2022.
2.. Guilherme Canho Bittner, Felipe Bochnia Cerci, Elisa Mayumi Kubo, Stanislav N. Tolkachjov, Mohsmicrographic surgery: a review of indications, technique, outcomes, and considerations, Anais Brasileiros de Dermatologia, Volume 96, Issue 3, 2021, Pages 263-277, ISSN 0365-0596, https://doi.org/10.1016/j.abd.2020.10.004. (https://www.sciencedirect.com/science/article/pii/S0365059621000763)
3. Salimi E, Kanjourpour A. Recurrence of Basal Cell Carcinoma After Mohs Micrographic Surgery: A 4 year-Retrospective Analysis. Int J Cancer Manag. 2020; 13(10): e105799. https://doi.org/10.5812/ijcm.105799
4. Nestor MS, Berman B, Goldberg D, Cognetta AB Jr, Gold M, Roth W, Cockerell CJ, Glick B. Consensus Guidelines on the Use of Superficial Radiation Therapy for Treating Nonmelanoma Skin Cancers and Keloids. J Clin Aesthet Dermatol. 2019 Feb;12(2):12-18. Epub 2019 Feb 1. Erratum in: JClin Aesthet Dermatol. 2019 Jun;12(6):fourteen. PMID: 30881578; PMCID: PMC6415702.
5. Tomás-Velázquez A, Risk Factors and Rate of Recurrence after Mohs Surgery in Basal Cell and Squamous Cell Carcinomas: A Nationwide Prospective Cohort (REGESMOHS, Spanish Registry of Mohs Surgery). Acta Derm Venereol. 2021 Nov 24;101(11): adv00602. doi: 10.2340/actadv. v101.544. PMID: 34694418; PMCID: PMC9455311.
6. van Lee, C.B., Roorda, B.M., Wakkee, M., Voorham, Q., Mooyaart, A.L., de Vijlder, H.C., Nijsten, T. and van den Bos, R.R. (2019), Recurrence rates of cutaneous squamous cell carcinoma of the head and neck after Mohs micrographic surgery vs. standard excision: a retrospective cohort study. Br J Dermatol, 181: 338-343.https://doi.org/10.1111/bjd.17188
7. Madorsky SJ, Meltzer OA, Miller A. Superficial Radiotherapy: Long Term Follow-Up of Highly Selected Basal and Squamous Cell Carcinomas in Skin Cancer Patients. J Dermatol & Skin Sci. 2022;4(4):1-5 Journal of Dermatology and Skin Science
9. McClure E., Sedor G, Yuxuan Jin, Kattan M, Image-guided superficial radiation therapy has superior 2-year recurrence probability to Mohs micrographic surgery, Clinical and Translational Radiation Oncology, Volume 43, 2023, 100678, ISSN 2405-6308, https://doi.org/10.1016/j.ctro.2023.100678.

Best Practice

Discussion:

MOHS and SRT are successful treatments for BCC and SCC. MOHS is typically preferred primarily due to its surgical nature, though it carries risks such as infection, bleeding, scarring and extensive excisions. SRT is suitable for those who cannot undergo an operation with anesthesia, but can cause unwanted cosmetic results, wrinkling, and radiation exposure.

Limitations/Further study:

The limitations include tumor depth and size, sample size and amount of radiation used. Future research is needed to measure BCC or SCC recurrence in 10+ years, different populations, age groups and measuring recurrence with tumors of equal size and depth with each treatment.

Conclusion

Both MOHS and SRT treatment for BCC and SCC are successful. Tailoring patient care involves understanding the indications as well as weighing risks and benefits for either treatment. This research confirms both options' clinical efficacy.

VALPARAISO UNIVERSITY