

Recurrence Rates of Mohs Micrographic Surgery vs Radiation Therapy for Basal Cell Carcinoma of the Ear

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PRACTICE POINTS

- Basal cell carcinoma (BCC) of the ear may have aggressive histologic subtypes and a greater propensity for subclinical spread than BCC in other anatomic locations, highlighting the importance of careful management and follow-up.
- Although Mohs micrographic surgery remains the gold standard for treating BCC of the ear, radiation therapy can be considered as a suitable alternative for nonsurgical candidates.

Basal cell carcinoma (BCC) of the ear may have aggressive histologic subtypes and a greater propensity for subclinical spread than BCC in other anatomic locations. In this retrospective analysis, we evaluated recurrence rates of BCC of the ear in 102 patients who underwent treatment with Mohs micrographic surgery (MMS) or radiation therapy (RT) at a single institution between January 2017 and December 2019. Data on patient demographics, tumor characteristics, treatment modality, and recurrence rates were collected from medical records. Recurrence rates were assessed over a mean follow-up time of 2.8 years. Although MMS is the gold standard for treatment of BCC of the ear, RT may be a suitable alternative for nonsurgical candidates.

Basal cell carcinoma (BCC) of the ear may have aggressive histologic subtypes and a greater propensity for subclinical spread than BCC in other

anatomic locations. Given that these aggressive histologic subtypes—defined as morpheaform, basosquamous, sclerosing, infiltrative, or micronodular in any portion of the tumor—have been reported as independent predictors of recurrence,^{1,2} BCC of the ear may be more likely to recur.

Mohs micrographic surgery (MMS) is the gold standard for the treatment of BCC of the ear. For nonsurgical candidates—those with high bleeding risk, low life expectancy, or other medical or social factors—definitive radiation therapy (RT) may be an option. Our study sought to examine recurrence rates in patients with BCC of the ear treated with MMS vs RT.

Methods

A retrospective review of patients undergoing treatment of BCC of the ear at Bighorn Mohs Surgery and Dermatology Center (San Diego, California) between January 2017 and December 2019 was conducted. A total of 507 medical records were reviewed, and 102 patients were included in the study. Inclusion criteria consisted of biopsy-confirmed BCC of the ear that was treated with MMS, RT, or both. Data on patient demographics, tumor characteristics, treatment modality, and recurrence rates were collected from medical records. This retrospective review of medical records was exempt from institutional review board approval, as it did not involve direct human research subjects, solely entailing a retrospective examination of existing data.

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The authors report no conflict of interest.

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Results

Of the 102 patients included, 82 were male and 20 were female, with an average age of 71 years. All patients were White with the exception of 1 patient whose race was unknown. Two patients were immunocompromised. The helix was identified as the most frequently involved site on the ear (Table). Most of the tumors (56/102) exhibited aggressive histologic subtypes; 36 tumors had nonaggressive histology, and 10 had no subtype listed. Two of the BCCs demonstrated perineural invasion on biopsy. Mohs micrographic surgery was used to treat 96 BCCs, definitive RT was used to treat 5 BCCs (all of which occurred in nonsurgical candidates), and MMS and adjuvant RT were used in 1 patient given multifocal perineural involvement. All 5 patients treated with definitive RT received electron beam radiation therapy; the total dose ranged from 5100 to 6000 cGy divided into 17 to 24 fractions. The final MMS defects ranged from 6 to 55 mm in size. The average follow-up time was 2.8 years. One of the BCCs on the helix that was treated with MMS recurred after 1.3 years. The overall recurrence rate was 0.98%. None of the patients treated with definitive RT experienced recurrence after the mean follow-up time of 2.8 years.

Comment

Basal cell carcinoma is the most commonly diagnosed cancer in the United States, with approximately 2 million new cases each year.¹ Treatment modalities for localized BCC include MMS, surgical excision, electrodesiccation and curettage, topical and intralesional medications, laser therapy, and RT. For high-risk BCCs, MMS is associated with the lowest recurrence rates⁴ and remains the gold standard for treatment. For patients with contraindications to surgery, definitive RT is an alternative treatment for high-risk BCC.¹

Definitive RT can be employed for patients who are poor surgical candidates or when surgery would result in substantial morbidity, impaired function, and/or poor cosmesis.³ Radiation therapy for skin cancers of the ear commonly is administered using high-energy electrons that produce double-strand breaks in the DNA of malignant cells, leading to cell death.⁴ Disadvantages of RT compared to MMS include a longer treatment course (3 to 6 weeks), possible minimal long-term sequelae (eg, color or texture mismatch), lack of pathologic confirmation of margin control, and small risk for secondary malignancy in the treatment field over 2 to 3 decades. For patients with incurable or metastatic disease, palliative RT can provide local control and/or symptomatic relief to improve quality of life.⁴ Adjuvant RT may be indicated if there is substantial perineural involvement or positive margins after MMS when margins are unable to be achieved or in patients who may not tolerate prolonged or extensive surgical procedures.³

Basal cell carcinoma of the ear is considered a high-risk anatomic location independent of other prognostic

Distribution of Anatomic Sites in Patients With Basal Cell Carcinoma of the Ear (N=102)

Site	Patients, n (%)
Helix	39 (38.2)
Posterior ear	21 (20.6)
Antihelix	9 (8.8)
Concha	8 (7.8)
Tragus	6 (5.9)
Earlobe	3 (2.9)
Scapha/scaphoid fossa	2 (2.0)
Antitragus	1 (1.0)
Unspecified	13 (12.8)

factors. Basal cell carcinomas of the ear have a higher propensity for more aggressive histologic subtypes and subclinical spread.⁵ Our study demonstrated a higher proportion of aggressive histologic subtypes (56/102 [54.9%]) compared with nonaggressive subtypes (36/102 [35.3%]). There was 1 recurrence of a nodular, sclerosing, and infiltrative BCC on the helix treated with MMS after 1.3 years.

Limitations of our study include that it was conducted at a single institution with a homogenous study population and with relatively short follow-up.

Conclusion

Our study further validates the well-known utility of MMS for the treatment of BCC of the ears. Definitive RT is a suitable alternative for patients who are not surgical candidates. Adjuvant RT may be considered for substantial perineural involvement or positive margins after MMS.³

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