

## Surface Mould Brachytherapy in Recurrent Basal Cell Carcinoma of Ala of Nose: A Case Report

Taher Manaquibwala<sup>1</sup>, Saurabh Karnawat<sup>2</sup>, Ashar Iqbal Lodi<sup>3</sup>,  
Amresh Kumar<sup>4</sup>, Virendra Bhandari<sup>5</sup>

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### Abstract

Basal cell carcinoma accounts for at least 32% of all cancers globally. Of skin cancers other than melanoma, about 80% are basal cell carcinomas. Basal cell carcinoma commonly presents as ulcerative lesions on the exposed parts of the face. Modalities for the treatment of basal cell carcinoma include surgical excision, cryotherapy, and radiotherapy. This article presents case report of a middle aged female with recurrent basal cell carcinoma of the ala of nose treated with surface mould brachytherapy.

**Keywords:** Basal cell carcinoma; Recurrent; Brachytherapy; Surface mould.

### Introduction

Basal cell carcinomas (BCC) are abnormal, uncontrolled growths or lesions that arise in the skin's basal cells, which line the deepest layer of the epidermis (the outermost layer of the skin). BCCs often look like open sores, red patches, pink growths, shiny bumps, or scars and are usually caused by a combination of cumulative and intense sun exposure. Patients presenting with BCCs often report a slowly enlarging lesion that does not heal and bleeds when traumatized.<sup>1</sup> These ulcerative lesions generally present on the exposed areas of

the body such as the skin of face. Several types of treatment can be used to remove or destroy basal cell skin cancers.<sup>1,2</sup> The options depend on factors such as the tumor size and location, and a person's age, general health, and preferences. These cancers very rarely spread to other parts of the body, although they can grow into nearby tissues if not treated.<sup>2,3,4</sup> The modalities used for the treatment include surgical excision, cryotherapy and radiotherapy.<sup>2,4</sup>

### Modalities used in the treatment of Basal Cell Carcinoma

- **Standard Surgical excision<sup>2,3</sup>:** Wide local excision of the tumour is considered to be the first line modality of treatment for basal cell carcinoma. However this technique was reported to be associated with high rates of recurrences of the tumor.<sup>3</sup>
- **Mohs Surgery<sup>4,5,6</sup>:** It is an outpatient procedure developed by Frederic E Mohs<sup>4</sup> in which excision of the recurrent basal cell tumour is done and then the base and the

**Author Affiliation:** <sup>1,4</sup>Registrar, <sup>2,3</sup>Assistant Professor, <sup>5</sup>Professor & Head, Department of Radiation Oncology, Sri Aurobindo Medical College & PG Institute, Indore 453555, Madhya Pradesh, India.

**Corresponding Author:** Virendra Bhandari, Professor & HOD, Department of Radiation Oncology, Sri Aurobindo Medical College & PG Institute, Indore 453555, Madhya Pradesh, India.

**E-mail:** virencancer@yahoo.co.in

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edges of the excised lesion are immediately examined under the microscope before the repair is done. If the microscopic examination reveals insufficient margin then more of the tissue is excised.<sup>5,6</sup>

- **Cryosurgery<sup>7,8</sup>:** It is an old modality of treatment. It entitles the use of a temperature probe and cryotherapy instruments for the excision of the lesion. It has been used as a treatment modality for basal cell carcinoma.<sup>8</sup> However it has been associated with several disadvantages of lack of tumor control, tissue necrosis, long recovery time and higher incidence of recurrences.<sup>2,9</sup>
- **Radiotherapy<sup>10,11,12</sup>:** Radiation can be delivered in as external beam radiotherapy or brachytherapy. Radiotherapy remains the therapeutic modality of choice for old age patients, patients which are unfit for surgical excision or in cases where surgical excision will be associated with cosmetic disfigurement and difficult reconstruction such as malignant ulcerative lesions over the face, tip and ala of nose.<sup>2,3</sup> It is also indicated in circumstances where the surgical excision is inadequate with positive margins.<sup>4,10</sup> Of the two types of modalities mentioned above brachytherapy remains the therapeutic choice as it delivers high doses of ionizing radiations precisely to the tumor site without any radiation being delivered to the normal structures in the vicinity.<sup>11</sup> This increases the probability for local tumor control at the benefit of reduced to nil local toxicities.<sup>11,13</sup> One of the types of brachytherapy used in treatment of malignant skin ulcers is surface mould high dose rate brachytherapy.<sup>11,12,13</sup> In this modality by a means of a surface applicator fixed to the site of interest; a remotely controlled after loaded source (most commonly Ir131 or Co60) is inserted which delivers ionizing radiations to the localized site of the tumor.<sup>12,13</sup>

### Case Report

A 55 year old female a known case of basal cell carcinoma of the ala of nose presented to the Department of Radiation Oncology SAIMS with complaints of lesion over the right ala of the nose. The patient had developed the lesion 2 years back for which she had received cryotherapy (Fig. 1) and was on regular follow up.



Fig. 1: Primary lesion on Ala of Nose.

Clinical examination revealed a 1 X 1 cm localized ulceroproliferative growth with everted margins, blackish discoloration and discharging sinuses over the right nasal ala with no extensions into the adjacent tissue, lesion was tender on palpation. (Fig. 2)



Fig. 2: Recurrent Lesion after Cryotherapy.

A wide excision of the tumor from ala of the nose was done. The histopathological examination of the sample was suggestive of recurrent Basal Cell Carcinoma of the nasal ala. Post operatively she was planned for Surface mould brachytherapy as the resection margins were close and the tumor was recurrent.

Under all aseptic conditions an orbit immobilization cast mould was made for the ala of nose and then 3 tubes were fixed 1 cm apart to the surface mould in such a way that it covers the entire volume of the area to be treated and to achieve desired dose distribution (Fig. 3).



Fig. 3: Surface Mould Applicator.

The patient was then taken for planning CT placing dummy sources in the tubes. The CTV, PTV and Organs at risk were contoured and treatment plans were generated; It was seen that the whole target area receives 100% of the dose and rest of the area receives minimal dose.

Then applicator tubes were inserted into the tubes fixed to the mould and a dose of 300cGy was given at a dose rate of 1.1Gy/min with twice daily fractions at each visit to a total dose of 48Gy/16# with a Biological Equivalent Dose of 62.4Gy.(Fig. 4)



Fig. 4: Patient on treatment with the Surface Mould.

The patient tolerated the treatment well and had dry desquamation in the treated area.

## Discussion

Basal cell carcinoma (BCC), also known as basal-cell cancer, is the most common type of skin cancer. It often appears as a painless raised area of skin, which may be shiny with small blood vessels running over it. It may also present as a raised area with ulceration.<sup>1</sup> Basal cell cancer grows slowly and can damage the tissue around it, but it is unlikely to spread to distant areas or result in death. Individuals with a basal cell carcinoma typically present with a shiny, pearly skin nodule. They are currently considered to have origin from the folliculo sebaceous apocrine germ, also known as trichoblast.<sup>1</sup>

DE Rowe and RJ Carroll in their study stated that less than one third of all recurrences appear in the first year following treatment; only 50% appear within the first 2 years following treatment; and only 66%, or nearly two thirds, appear within the first 3 years following treatment. In our case the recurrence developed after 2 years following cryosurgery.<sup>6</sup>

It was also stated by them that Mohs micrographic surgery followed by surgical reconstruction remains the treatment of choice for recurrent basal cell carcinoma. But in our case the patient being a 55 year old female and site of recurrence being ala of nose; Mohs surgery was not feasible.<sup>3,4,6</sup>

Clark CM, Furniss M and Bath Hextall FJ, Perkins in their studies on management of basal cell carcinoma stated that for patients who are unfit for surgery, radiotherapy remains the modality of choice for management. In our case also the patient being unfit for surgery due to facial morbidity post surgery, radiotherapy with surface mould brachytherapy was planned for the patient.<sup>4,11</sup>

Delishaj D, Rembielak in their study mentioned that brachytherapy was well tolerated with acceptable toxicity and high local control rates (median: 97%) for basal cell carcinomas. So therefore in our patient also who being a candidate for brachytherapy surface mould brachytherapy was decided as the treatment modality of choice.<sup>11,12,13</sup>

## Conclusion

From the above discussion it can be concluded that Surface mould brachytherapy remains an excellent modality for the treatment of recurrent basal cell carcinoma for patients who are unfit for surgical excision and reconstruction at the same time offering a benefit of high rates of local control and reduced toxicities.

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