CASE STUDY

In a highly competitive market, a cutting-edge cancer treatment center implemented an innovative solution for non-melanoma skin cancer to strengthen their reputation while providing the highest standard of care for their patients.
Facility and Physician Profile:

Cancer Treatment Services Arizona (CTSA) is a state-of-the-art, full-service outpatient cancer treatment center in Casa Grande, Arizona, that provides excellent patient care in a community setting. Partnering with 21st Century Oncology of Arizona, CTSA increased access to their integrated cancer care approach, offering expert care teams and cutting-edge technology. Cancer Treatment Services of Arizona employs a multi-disciplinary approach to treating cancer, utilizing the latest radiation oncology technologies and therapies. The group is dedicated to providing academic-level treatment options and an exceptional patient experience.

Dr. Ajay Bhatnagar, Radiation Oncologist at CTSA, has an extensive academic background and broad experience in new technology, research and radiation oncology treatment modalities. Dr. Bhatnagar has contributed to several publications, including Radiation Oncology. He has authored journal articles focused specifically on the efficacy of modern radiation oncology treatment modalities and has served on editorial boards for multiple scientific journals including Oncology, Head & Neck. Dr. Bhatnagar holds several leadership positions in the radiation oncology community. He serves on the Health Policy Committee and Government Relations Committee for the American Society for Therapeutic Radiology and Oncology (ASTRO), as well as on the Economics Committee for the American College of Radiation Oncology (ACRO).

Case Study Objective:

This case study demonstrates how the Xoft® Electronic Brachytherapy (eBx®) System® has led Cancer Treatment Services Arizona to become a top comprehensive treatment center with elevated standards of care and innovative treatment options for non-melanoma skin cancer (NMSC) patients. Based on the success of the skin cancer treatment program, this case study also highlights how implementing the Xoft System resulted in notable increases in patient volume.

Transforming NMSC Treatment:

In the summer of 2009, Cancer Treatment Services Arizona became the first treatment center in the State to offer the Xoft System to deliver electronic brachytherapy for the treatment of non-melanoma skin cancer (NMSC). The Xoft System is cleared by the FDA for treatment of NMSC and other surface lesions including keloids. The facility also utilizes the Xoft System to treat breast, Intraoperative Radiation Therapy (IORT) and Accelerated Partial Breast Irradiation (APBI), and gynecological cancers. The center's adoption of the Xoft System for NMSC and other indications elevated public perception of CTSA as an innovative leader in Arizona's highly competitive market.

Skin electronic brachytherapy is emerging as an attractive alternative to traditional skin cancer treatment options. Skin eBx utilizes a unique, miniaturized isotope-free 50kV x-ray source to deliver targeted radiotherapy directly to the lesion. The simple outpatient treatment regimen is prescribed based on tumor size, type, depth, and other criteria. During the treatment, a small surface applicator (10, 20, 35, or 50mm in diameter) is placed on the treatment site. The x-ray source is then placed in the surface applicator to deliver radiation therapy directly to the lesion. At the completion of the treatment, the x-ray source is turned off and the applicator is removed. The patient is able to immediately return to normal daily activities. The treatment is non-invasive and painless. The low energy source offers fast dose fall-off, minimizing radiation exposure to normal healthy tissue.

“The Xoft System has helped expand our patient population. We currently treat skin cancer patients that we typically or historically were not able to treat with other modalities.”

-Dr. Bhatnagar
By offering, skin eBx with the Xo/ft System, CTSA was able to partner with local dermatologists to treat basal and squamous cell skin cancer patients who are not candidates for surgical excision. This non-surgical option is ideal for the elderly, patients with significant medical comorbidities or those with lesions in difficult anatomic locations. The Xo/ft System has demonstrated excellent results when used to treat cosmetically sensitive locations, such as the face, scalp and chest. Dr. Bhatnagar also utilizes the Xo/ft System to treat NMSC on the lower legs, ankles and other locations where surgical excision would compromise healing or mobility.

Unlike traditional radiation therapy options, the Xo/ft System typically requires a total of eight fractions (5 Gy per fraction) administered twice weekly for approximately six minutes per lesion. The Xo/ft System's isotope-free radiation technology provides the facility with maximum treatment room flexibility due to its minimal shielding requirements. CTSA is able to provide the treatments in a standard office exam room eliminating costly room design and construction investment. “Flexibility is one of the key advantages that drew me to the Xo/ft System. The low energy source allows me to treat patients outside of my vault, in a more comfortable environment,” commented Dr. Bhatnagar. CTSA has noticed increased patient throughput and efficiency as a result of being able to deliver radiation treatment inside and outside of the vault simultaneously. The Xo/ft System is highly mobile which allows it to be easily transported between multiple treatment rooms or facilities which can help mitigate logistical issues associated with elderly or disabled patients. The Xo/ft System’s minimal shielding requirement, enables the physician or radiation technician to be in the room with the patient during treatment, which can be especially comforting to elderly patients.

Implementing new, innovative technology has positioned CTSA as a leader in the community, resulting in increased patient referrals.

Clinical Results:

Since July 2009, Dr. Bhatnagar has been conducting a clinical study on NMSC patients treated with the Xo/ft System: “Electronic Brachytherapy for the Treatment of Nonmelanoma Skin Cancer: Results at 3 Years.” The objective of this study was to assess adverse effects, cosmesis and recurrence rates up to three years following high dose rate (HDR) electronic brachytherapy for the treatment of non-melanoma skin cancer (NMSC).

Results: Mean Follow up 10 months (range 1-38 months)

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>Number of subjects</th>
<th>Number of lesions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of subjects</td>
<td>187 subjects</td>
<td>275 lesions</td>
</tr>
<tr>
<td>Mean Age (Range)</td>
<td>73 Years (49-98)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>63% Male</td>
<td>37% Female</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>97% Caucasian non-Hispanic</td>
<td></td>
</tr>
</tbody>
</table>

- Excellent (93%) cosmesis up to three years post-treatment
- Low toxicity
- No Recurrences

“Treatment of non-melanoma skin cancer with HDR electronic brachytherapy using surface applicators was effective” and “a convenient non-surgical treatment option for non-melanoma skin cancer patients.”

NMSC lesions were treated with Electronic High Dose Rate Brachytherapy using surface applicator to a dose of 40 Gy in eight fractions, delivered twice weekly with minimum of 48 hour interval. A 10-50mm surface applicator was selected to allow for complete coverage of target lesion with acceptable margin.
Patient Benefits:

Offering skin eBx expanded CTSA’s comprehensive radiation treatment program and enabled the facility to attract new patients. Through direct to patient marketing such as newspaper and magazine ads and patient education brochures, CTSA created awareness in the community about the benefits associated with this new skin cancer treatment option.

“Brachytherapy is an ideal modality for patients with NMSC (especially the elderly) given the excellent results, non-invasive and painless procedure, and convenient treatment schedule,” states Dr. Bhatnagar.

The treatment regimen typically used by Dr. Bhatnagar consists of a total of 8 treatments, delivered twice weekly for six minutes per lesion which allows the practice to offer its patients a more convenient treatment schedule than with other traditional radiation treatment options. Skin eBx is particularly beneficial to patients who may find it difficult to comply with the challenging logistics, time commitment and inconvenience of daily visits for three to four weeks associated with other radiation treatment options.

“Offering skin eBx with the Xoft System expanded CTSA’s comprehensive cancer treatment program by enabling the facility to attract new patients. We treat patients from all over the state of Arizona. This non-surgical painless treatment option with fewer treatments is a very attractive option for patients,” Dr Bhatnagar adds.

Conclusion:

Cancer Treatment Services Arizona adopted the innovative Xoft System to elevate its position as a leading cancer care center in the community. The addition of the Xoft System enables CTSA to increase referrals and attract new patients while providing excellent patient care utilizing state-of-the-art technology. The successful skin cancer treatment program has expanded and will continue to enhance CTSA’s comprehensive cancer care program.