

FlexiBol™ Case Study

Ascension
St Thomas Midtown

Patient Case Study: Full Head Bolus Photon Treatment

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Overview

.decimal's FlexiBol™, is a high-performance, patient-specific bolus solution. FlexiBol™ is an alternative to conventional bolus materials such as superflab, brass mesh, and thermoplastic sheets. This custom bolus provides the flexibility to adapt to changes in patient anatomy, thus minimizing air gaps. Additionally, it is made of a comfortable material that conforms to common changes in patient shape, making it a good fit for adaptive radiation therapy.

FlexiBol™ uses 3D printing technology to engineer the minute and intricate details of varying patient topography to ensure each bolus reflects the details of the intended patient case. The following case study exhibits FlexiBol™'s ability to conform to patient anatomy over the course of treatment.



Patient History

Anatomical site: Scalp, Neck, and Face
Diagnosis: B-Cell Lymphoma

- Adequate dose to skin needed
- Difficult to use sheet bolus/wet towel to cover the entire head and face without air gaps and inconsistencies

Bolus Design

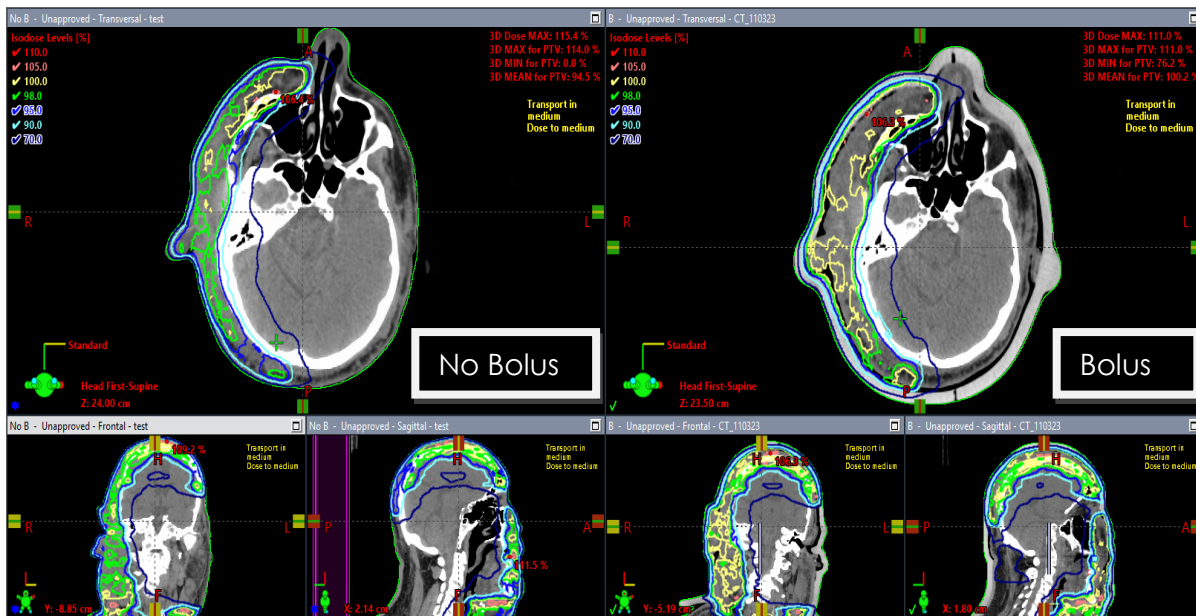
- Create Body and design 1 cm bolus
- Due to extent of bolus design, .decimal was consulted
- Resolution was to create full head bolus, printed into two halves

- Bolus was ordered, and the patient was re simulated with the bolus on
- Bolus tape provided was used to merge the two halves together
- Plan was calculated on new CT

Treatment

- Prescription was for 8Gy in 4 fractions
- Custom bolus from .decimal used for every fraction

CT Scan & Dose Planning



Results

Patient fit in the bolus mask very well and tolerated treatment. Air gaps were minimal, even where the two halves of the mask were joined together. Patient had an excellent response to therapy. Swelling in the Right Ear and Right Eye completely resolved. No severe reactions.



Summary

- FlexiBol™ chosen due to complex shape needed.
- Design and manufacturing was quickly done.
- Fit the patient well with minimal air gaps.
- Patient was comfortable in the mask and tolerated treatment well.