Monte Carlo Simulation of a Conformal Superficial Brachytherapy Device for the Treatment of Skin Cancer

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Overview

- Current Treatment Method Limitations
- Conformal Superficial Brachytherapy Device
- Monte Carlo Simulation Using Beta-Emitter, Y-90
- Summary
Current Treatment Method Limitations

- Incapable of providing a conformal dose distribution
- Especially for lesions in folds of skin
Hexagonally distributed beta-emitting sources
Capable of being independently extended
Provides coverage to irregularly shaped lesions
  E.g. nose, ears, lips, eyelids, etc.
Monte Carlo Simulation Performance with Y-90 Sources

Possible source distributions
3D Simulations
3D Simulations
Summary

- Skin cancers are very often not circular.

- Current superficial brachytherapy devices provide poor conformity to irregularly shaped lesions.

- The conformal superficial brachytherapy device will provide patient specific conformal doses to raised lesions.

- Curative results with improved cosmetic outcomes.
THANK YOU

Image References
