

2016 CAMRT Research Grant Program Final Report

Study: Frame-based versus Frame-less Immobilization for Gamma Knife Stereotactic Radiosurgery: Patient Perspective

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Study Background:

Brain metastases occur in ~30% of all patients with cancer. Treatment goals are shifting to minimize treatment-related complications while maximizing functional preservation and quality of life. Due to concerns of neurocognitive toxicity following whole brain radiotherapy, there is growing use of stereotactic radiosurgery (SRS).

Traditionally, precision radiation delivery on the Gamma Knife was facilitated through the Leksell Coordinate Frame (LCF), fixated to the patient's skull through 4 pins. After the installation and implementation of Gamma Knife Icon™ at our institution, patients were triaged for Gamma Knife SRS in either the LCF or a frame-less system.

As the Brain Metastases Clinic at Princess Margaret reviews both new referrals and follow-up patients, currently one third of patients seen are re-treated on the Gamma Knife for newly found brain metastases. As a subset of patients would experience Gamma Knife SRS in *both* the framed and frame-less immobilization devices, the primary objective of this study was to assess patient satisfaction and perspective on the use of frame-based versus frameless immobilization systems for Gamma Knife stereotactic radiosurgery through a one-on-one semi-structured interview.

Progress Report

Due to Health Canada Approval and installation delays of the Gamma Knife Icon at our institution, this study began patient recruitment in May 2018. As the interviews were performed at the 3 month follow-up appointment, the first patient interview was conducted in August 2018.

A total of 20 patients were approached for consent; 15 patients were successfully recruited (3 declined and 2 failed screening). 12 patients were subsequently interviewed for their experience between the 2 immobilization systems (2 patients had deteriorating health and 1 passed away). The final patient interview was conducted May 2019.

All interviews have been transcribed and initial thematic analysis is complete. The co-investigator is currently reviewing transcripts for themes, which will be subsequently cross checked by the principal investigator to minimize interpretation bias.

Summary of Expenditures

Category	Item	Amount	Notes
Personnel	Clinical Research Coordinators	\$4000	Required for patient screening, accrual and obtaining consent (n=20 patients)
	Transcriptionist	\$600	Approximate amount based on invoice from first 8 transcribed interviews
	Subtotal	\$4,600	
Conference & Travel	Research Presentation	\$400	Conference registration fee and associated expenses
	Subtotal	\$400	
Total Cost		\$5,000	

Research Dissemination Activities

Conference Presentation:

- An abstract of this work will be submitted to both the RTI3 2020 (Toronto, ON) and ISRR 2020 (Dublin, Ireland) conferences

Continuing Education Initiative:

- This work will be presented at the Princess Margaret Accelerated Education Program Gamma Knife Course in Spring 2020

Manuscript Preparation:

- Once data analysis is finalized, a manuscript will be drafted for submission to the Journal of Medical Imaging and Radiation Sciences (Spring 2020)