

# Evaluation of Outcomes in Gamma Knife Stereotactic Radiosurgery in Treatment of Trigeminal Neuralgia— A Private Institution Update

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**Objective:** To update previously presented 2011 study examining inclusively the outcomes of 121 patients (139 cases), presenting with Trigeminal Neuralgia (TN), treated with stereotactic radiosurgical lesioning of the trigeminal nerve entry. This study provides supportive documentation for an appealing standard alternative to invasive treatment.

**Methods:** Between January 2005 and December 2016, a total of 139 cases of TN were treated with Gamma Knife stereotactic radiosurgery (GKSRS) at our facility. A single 4 mm shot of 75-85 Gy for primary treatment and 50-70 Gy for secondary treatment was delivered with the Leksell Gamma Knife 4C or Perfexion to the trigeminal nerve 4 to 7 mm from its origin from the brainstem while limiting the radiation dose to the brainstem to the 20% isodose line. Of those 139 cases, eighteen were secondary GKSRS treatments. Five patients had been lost to follow-up, leaving 116 cases available for analysis based on retrospective chart review of medical records, physical exams and patient phone interviews.

**Results:** Median follow-up was 12 months. Mean dose administered for primary treatment was 79.3 Gy (range, 75-85Gy); for secondary treatment it was 65 Gy (range, 50-70Gy). A total of 83% of patients undergoing their first GKSRS experienced pain relief following treatment at a median of 30 days post-treatment. Of this population, 30% of patients experienced a recurrence of symptoms, at an average of 10.5 months after treatment. No significant differences were found between outcomes of subgroups including patients with multiple sclerosis, atypical TN, nor those who had undergone previous surgical treatment for TN. There was no difference in outcome between the doses administered (75, 80, and 85Gy). For those patients receiving their second GKSRS for TN, there was an initial success rate of 90% with 25% of that population eventually having recurring symptoms. 21% of cases developed some level of ipsilateral facial numbness.

**Conclusion:** This study further supports our previous conclusion advocating that Gamma Knife stereotactic radiosurgery is an effective treatment of Trigeminal Neuralgia. Patient outcomes are comparable to other published reports. No significant predictor of recurrence or lack of response was found.