overall survival (OS) were similar for LITT versus craniotomy, respectively; %PSF-survival at 1-year = 72.2% versus 61.1%, %PSF-survival at 2-years = 60.0% versus 61.1%, p = 0.72; %50%PSF-survival at 1-year = 69.0% versus 54.9%, p = 0.05. This finding persisted on sub-analysis of smaller lesions under <3 cm in diameter. Cramiostomy resulted in higher rates of pre-operative deficit improvement than LITT (p < 0.01). On sub-group analysis, the single factor most significantly associated with OS and PSF was pathology of the lesion. About 40% of tumor lesions needed post-operative salvage with radiation after both craniotomy and LITT. LITT was as efficacious as craniostomy in achieving local control of recurrent irradiated brain metastases and facilitating steroid taper, regardless of pathology. Cramiostomy appears to be more advantageous for providing symptomatic relief in those with pre-operative symptoms.

SURG-07. CORRELATION BETWEEN VOLUMETRIC ANALYSIS AND CLINICAL OUTCOMES OF BRAIN METASTASES TREATED WITH LASER INTERSTITIAL THERMAL THERAPY (LITT)
Dhiego Basto, Jonathan Lorre, Vinodh Kumar, Komal Shah, Ganesh Rao, Jeffrey S Weinberg, and Sajit Prabhu

PURPOSE: Describe and analyze the volumetric responses of metastatic brain tumors treated with LITT and how changes correlate with local recurrence (LR). MATERIALS AND METHODS: Retrospective study with consecutive patients with progressive disease after SRS for brain metastases. Spider and scatter plots and Locally Weighed Scatterplot Smoothing (LOWESS) for tumor and edema volume were created to analyze volume change. Patients were compared using auto-regressive square tests and odds ratio (OR). RESULTS: 61 consecutive patients with 82 lesions (5 newly diagnosed, 46 recurrence and 31 radiation necrosis). Mean tumor volume was 4.8±4.3 cm³, mean edema volume was 43.8±6 cm³ and the mean ablation volume was 8.0±9.3 cm³. LOWESS showed an initial increase in the first month followed by steady decrease in the following months. Tumor edema showed a plateau or a slight increase in the first month, followed by a steady decrease in the subsequent months. Patients with LR showed an increase in the edema volume in the first 60 days, whereas tumor volume tended to remain stable, increasing in size after the third/fourth month. After 60 days, if edema volume is above baseline or increasing in size from nadir, there is an increased risk of LR (OR 4.22; 95% CI 1.3101.89; P=0.005). Tumor volume had a nadir on the first scan after day 60 had an increased risk of recurrence (OR 3.46; 95% CI 1.239.71; P=0.0016). If both edema and tumor volume are above baseline or increasing after day 60, there is also an increased risk of LR (OR 4.00; 95% CI 1.41113.36; P=0.0077), CONCLUSIONS: If either edema or tumor volume fail to fall below baseline or show an increasing trend on the first scan after day 60 post LITT, patients have an increased risk of LR. Qualitatively edema was the first feature observed in LR followed by increase in tumor volume.

SURG-08. GASTROINTESTINAL STROMAL TUMOR WITH INTRACRANIAL METASTASIS: CASE REPORT AND SYSTEMATIC REVIEW OF LITERATURE
Akash Patel

BACKGROUND: Intracranial metastasis of Gastrointestinal Stromal Tumors (GIST) is rare but presents unique treatment challenges. We present a case of intracranial metastasis of GIST with a systematic review of the literature regarding this rare clinical scenario. METHODS: A systematic review of the literature was performed to identify cases of intracranial GIST metastases. Spider and scatter plots and Locally Weighed Scatterplot Smoothing (LOWESS) for tumor and edema volume were created to analyze volume change. Patients were compared using auto-regressive square tests and odds ratio (OR). RESULTS: 61 consecutive patients with 82 lesions (5 newly diagnosed, 46 recurrence and 31 radiation necrosis). Mean tumor volume was 4.8±4.3 cm³, mean edema volume was 43.8±6 cm³ and the mean ablation volume was 8.0±9.3 cm³. LOWESS showed an initial increase in the first month followed by steady decrease in the following months. Tumor edema showed a plateau or a slight increase in the first month, followed by a steady decrease in the subsequent months. Patients with LR showed an increase in the edema volume in the first 60 days, whereas tumor volume tended to remain stable, increasing in size after the third/fourth month. After 60 days, if edema volume is above baseline or increasing in size from nadir, there is an increased risk of LR (OR 4.22; 95% CI 1.3101.89; P=0.005). Tumor volume had a nadir on the first scan after day 60 had an increased risk of recurrence (OR 3.46; 95% CI 1.239.71; P=0.0016). If both edema and tumor volume are above baseline or increasing after day 60, there is also an increased risk of LR (OR 4.00; 95% CI 1.41113.36; P=0.0077), CONCLUSIONS: If either edema or tumor volume fail to fall below baseline or show an increasing trend on the first scan after day 60 post LITT, patients have an increased risk of LR. Qualitatively edema was the first feature observed in LR followed by increase in tumor volume.

SURG-09. SURGICAL AND PERI-OPTIMIZATION CONSIDERATIONS FOR BRAIN METASTASES: A NATIONALWIDE ANALYSIS
Saksham Gupta, Alexandra Guian Larsen, Hassan Dawood, Luis Fandino, Erik Knelson, Timothy Smith, Eudocia Lee, Ayal Aizer, and Wenya Bi

BACKGROUND: Brain metastases are the most frequent brain tumors in adults, whose management remains nuanced. We aim to improve risk stratification for brain metastases patients who might be candidates for surgical resection. METHODS: We conducted a nationwide, retrospective cohort analysis of adult patients who received craniotomy for resectable brain metastases using the 2012–2015 American College of Surgeons National Surgical Quality Improvement Project databases. Our primary outcomes of interest were post-operative medical complications, reoperation, readmission, and mortality. RESULTS: 3350 cases were included, of which 17% were considered frail and 24% vulnerable. The most common 30-day medical complications were pneumonia (4%), venous thromboembolism (VTE;3%), and urinary tract infections (2%). Cardiac events and cerebrovascular accidents tended to occur in the early post-operative period, while VTEs and infections occurred in a multi-layered fashion. Reoperation and unplanned readmission occurred in 9% and 12% of patients, respectively. Infratentorial approach and frailty were associated with reoperation before discharge (OR 2.0 for both; p=0.01 and p=0.03 respectively), but not after discharge. Frail patients were slightly at risk for reoperation and unplanned readmission (OR 1.8; p=0.03) compared to non-frail patients. CONCLUSION: Older age and high American Society of Anesthesiologists score were the strongest predictors of peri-operative complications. Frailty remained an independent predictor of reoperation and unplanned readmission.

SURG-10. MELANOMA CEREBRAL METASTASES IN IRELAND: GETTING UNDER THE SKIN
Philip O’Halloran, Anna Cleary, Jane Cryan, and John Caird

BACKGROUND: Ireland has the highest rate of melanoma related deaths in Europe. In Ireland, melanoma reachs a high incidence with a prevalence of 14.5 cases per million people and the majority of melanoma cases are cutaneous. This study looks at melanoma cerebral metastases in Ireland, and may be useful in clinical planning, educational programs and future treatments.

PURPOSE: To investigate the incidence of melanoma cerebral metastases in Ireland, and identify significant factors associated with survival in this population.

METHODS: Melanoma cerebral metastases were retrospectively identified in Beaumont Hospital (co-authorship), and all cases were included in this study. Cox proportional hazards analysis was performed to quantify TTR and OS, compare outcomes by primary site of metastasis, number of cerebral metastases, and other characteristics.

RESULTS: Median TTR and OS were 19 and 32 months respectively. Male patients were at increased risk of death compared to females (hazard ratio 1.34, 95% CI 1.02–1.76, p=0.034). Number of metastases was found to be an important consideration in this group. CONCLUSIONS: Male predominance was an independent prognostic factor with an improved overall survival compared to those without the mutation, of 8 months and 3.5 months respectively (p=0.0012). Although non significant, the primary location of melanoma, BRAF mutation analysis and the number of cerebral metastases were all important considerations in this group. CONCLUSIONS: Male predominance and BRAF mutation represent important factors in this population group. The results of this study add to our knowledge concerning outcomes in melanoma brain metastases in Ireland, and may be useful in clinical planning, educational programs and future treatments.

SURG-11. THE ROLE OF MAGNETIC RESONANCE-GUIDED LASER ABLATION FOR INTRACRANIAL METASTATIC TUMORS
Alexa Semonech, Daniel Eichberg, Christian Theodotou, Ashish Shah, Christopher Banerjee, Michael Berger, Amanda Wallo, Ricardo Komotor, and Michael Ivan

INTRODUCTION: Laser interstitial thermal therapy (LITT) is a novel, minimally-invasive adjuvant therapy that is well-suited for intracranial tumor resection or critical areas failing standard resection or post-open surgical candidates. To better characterize safety and clinical outcomes, we present the largest single-institutional experience with LITT for recurrent brain metastases. METHODS: All patients undergoing LITT for single resection of brain metastases from March2018 to the Unite dStates included in this study. Primary outcomes included extent of ablation (EOA), time-to-recurrence (TTR), and overall survival (OS). Secondary endpoints include neurologic status and complication rate. Kaplan-Meier survival analysis was performed to quantify TTR and OS, compare outcomes by primary tumor of origin, and identify potential predictors of TTR and OS. RESULTS: Thirty-six patients underwent 44 LITT procedures; all had undergone prior