overall survival (OS) were similar for LITT versus craniotomy, respectively; %PS-survival at 1-year = 72.2% versus 61.1%, %PS-survival at 2-years = 60.0% versus 61.1%, p = 0.72; %SO-survival at 1-year = 69.0% versus 61.1%, p = 0.80. This finding persisted on sub-analysis of smaller lesions under < 3 cm in diameter. Craniotomy 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 PFS 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 craniotomy in achieving local control of recurrent irradiated brain metastases and facilitating steroid taper, regardless of pathology. Craniotomy appears to be more advantageous for providing symptom 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 Bastos, Jonathan Lorré, Vinodh Kumar, Komal Shah, Ganesh Rao, Jeffrey S Wemberg, 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 metastasis. Spider and scatter plots and Locally Weighted Scatterplot Smoothing (LOWESS) for tumor and edema volume were created to analyze volume changes. Patients were compared using Chi-square tests and odds ratios (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±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 a steady decrease in the following months. Tumor edema shows 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 after 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 1.3011.89, P=0.005). Tumor volume is stable after a certain ablation volume or increasing from 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 1.4113.6, P=0.0077). CONCLUSIONS: If either edema or tumor volume fails 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 intradural GIST metastases to the brain. Additionally, a patient case of GIST is discussed. RESULTS: Out of the 18 articles included for analysis in this review and our present case, fifteen of nineteen patients were male, and mean age was 58 years old (range 15–80 years, median 60 years). The primary site of the GIST along with site of intracranial metastasis was variable. There was a large predilection for brain metastasis to the cerebrum with only one to infratentorial elements. The tumors in seven of the cases involved the dura, and there was one case with metastasis to the pituitary. Eight patients died following treatment of their dural or intracranial GIST. CONCLUSIONS: Surgery remains the mainstay of intracranial metastatic GIST, however there are many reports of good responses to radiation or chemotherapy alone. More investigation is required to determine the best course of treatment for patients with this unusual sequela of GIST.

SURG-09. SURGICAL AND PERI-OPERATIVE CONSIDERATIONS FOR BRAIN METASTASES: A NATIONWIDE ANALYSIS
Salsham Gupta, Alexandra Giana, Larsen, Hassan Davood, Luis Fandino, Erik Knelson, Timothy Smith, Eudoca 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 metastasis 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: 3300 cases were included, of which 17% were considered frail and 24% had comorbidities. 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 more delayed 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 at increased risk for cerebrospinal fluid diversion (OR 5.1, p<0.02) and reoperation for cerebrospinal fluid diversion (OR 7.1, p<0.001). Overall 30-day mortality was 4%, with nearly three-quarters occurring after discharge. Pre-frailty and frailty were associated with increased odds for post-discharge mortality (OR 1.7 and 2.7, p<0.05), but not pre-discharge mortality. We developed a model to predictors of death, which identified frailty, thrombocytopenia, and high American Society of Anesthesiologists score of 3 or 4 as independent predictors of 30-day mortality (AUROC 0.75). CONCLUSION: Optimization of metrics contributing to patient frailty and heightened surveillance in patients with infratentorial metastases may be considered in the peri-operative period.

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. The melanoma reach back decades to when there remains a paucity of information in Ireland regarding the factors associated with melanoma brain metastasis (MBM). METHODS: Patients diagnosed with MBM in Ireland were retrospectively identified in Beaumont Hospital database and were categorized into 2009–2018. Patient demographics, year of detection of MBM, age at diagnosis of primary melanoma, age at detection of MBM, anatomical location of primary melanoma, BRAF mutation analysis and the number of metastases were investigated. Follow up data was also derived, including overall survival (OS). RESULTS: The incidence of malignant melanoma has increased by 158% over the past 20 years with 1,092 and 422 cases diagnosed in 2018 and 1999, respectively.128 patients with melanoma brain metastases were identified during this period. The median OS after detection of MBM was 5 months (95% CI 0.64–1.35 months). There was a male predominance with a male to female ratio of 39:1 (n=77;128;6 years). Although females had a significantly longer time between diagnosis of primary melanoma and detection of MBM compared to males, 4 and 2 years respectively (p=0.0242), there were no significant differences in death between males and females (p=0.4129). BRAF mutation analysis 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, leptomeningeal disease and 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
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INTRODUCTION: Laser interstitial thermal therapy (LITT) is a novel, minimally-invasive adjuvant therapy that is well-suited for intracranial tumor ablation due to its ability to deliver ablative energy to the tumor while sparing its surrounding healthy tissue. 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 or multiple brain metastases from January 2018 to the Unpposed August 2019 in this study were 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