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Conclusions: Age, maximal tumor dimension and red cell distribution width are independent predictors of intrahepatic recurrence after microwave ablation of HCC < 3 cm. Proximity to diaphragm, capsule or large vessel did not significantly affect local recurrence at the ablation margins.

Abstract No. 586

COVID-19 era changes in procedural volume in interventional radiology versus other surgical specialties at a tertiary care hospital

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Purpose: The coronavirus 2019 (COVID-19) pandemic resulted in major reorganization and limitations of clinical activities, changing the landscape for procedure-based specialties. We evaluated the change in case volume for interventional radiology (IR), gastroenterology (GI), and surgery (OR) during the lockdown period (LDP) for COVID-19 at a tertiary care hospital in New York State.

Materials and Methods: Retrospective analysis of the surgical procedures performed at a New York State tertiary care center during the LDP was performed. Comparison was made between LDP time period from March 15, 2020, to May 17, 2020 (LDP COVID), the 9-weeks immediately prior to LDP January 12, 2020, to March 15, 2020 (2020 pre-COVID), and the same time period in 2019 (2019 non-COVID), was performed. A univariable analysis was conducted for all IR procedures with specific attention paid to a subset of emergent procedures with overlap between the 3 specialties (percutaneous abscess drainage, gastrostomy, nephrostomy and cholecystectomy tube placement vs. percutaneous endoscopic gastrostomy (PEG), appendectomy, cholecystectomy, and cystoscopy stent placements). *P* values were calculated with a two-sample t-test. Statistical significance threshold was set at 5%. Statistical analysis was performed using Microsoft Excel.

Results: A total of 2105 IR procedures (LDP COVID: 551; 2020 pre-COVID: 721; 2019 non-COVID: 833) were included. During LDP COVID, case volume decreased by 23.6% ($P < 0.023$) and 33.9% ($P < 0.117$) when compared with 2020 pre-COVID and 2019 non-COVID, respectively, these were not statistically significant. Specifically examining the subgroup of emergent IR procedures, there was a 41.7% (188 vs. 322, $P < 0.064$) and 38.0% (188 vs. 303 $P < 0.045$) decrease from the LDP compared to 2020 pre-COVID and 2019 non-COVID time intervals, respectively.

For other procedural specialties, there was a 62.1% (113 vs. 298, $P < 0.066$) and 65.3% (113 vs. 326 $P < 0.041$) decrease in cases performed when compared to 2020 pre-COVID and 2019 non-COVID.

Conclusions: The census of our hospital during the height of the pandemic was over 40% COVID positive patients. This led to drastic changes to the schedule and workflow of patients. Volume in procedural specialties decreased as a result of the COVID pandemic. Non-IR specialties experienced a more prominent decrease in procedural volume during the LDP when compared to similar times before the pandemic. This is in stark contrast to IR, which did not see a statistically significant drop in the total amount of procedures performed due to the large volume of minimally invasive procedures performed in critically ill in-patients.

Abstract No. 587

Magnetic resonance imaging-guided cryoablation of de novo solitary pathologically proven T1a renal tumors

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Purpose: To evaluate the long-term oncologic efficacy and survival rates of MRI-guided cryoablation ablation (PCA) for pathologically proven T1a Renal cell carcinoma (RCC).

Materials and Methods: we retrospectively reviewed our renal ablation data base between January 2007 and December 2019, we included only patients with solitary de novo histologically diagnosed T1a RCC (≤ 4 cm) who underwent MRI-guided Cryoablation. Patient with recurrent or bilateral RCC, genetic syndromes, patient not pathologically proven to be RCC (benign lesions or nondiagnostic) and patients who underwent CT-guided cryoablation or Radio-frequency ablation were excluded. For each patient, we recorded: Demographics, tumor size and histology, complications, recurrence at ablation site, development of metastases, history of another malignancy, survival/death and cause of death. survival outcome were estimated using Kaplan and Meier product-limit estimator.

Results: Twenty-three MRI-guided procedures were performed for 23 lesions in 23 patients (13 males and 10 females, average age 70 years (50–92 years). Average tumor size was 2.1cm (range, 1–3.4 cm). The average follow-up for all subjects was 3.6 years (range: 0.18–9.73 years). Only 1 patient (4.3%) developed grade III complication according to the Clavien-Dindo classification. The most common pathology was clear cell RCC ($n = 17$) and 6 lesions were papillary RCC. Fuhman grading was obtained in 21 lesion (grade I = 5 and grade II = 16) None of the patients developed local recurrence at the ablation site, elsewhere in the kidneys or metastasis from RCC. Fifteen patients had another primary malignancy other than RCC. The local recurrence free-, Disease free-, Metastasis free- and cancer specific survival (CSS) were 100 %.

Conclusions: MRI-guided cryoablation is a safe and highly efficacious modality for treatment of small renal tumors. Long-term follow-up data reveals long standing oncologic control with low complication rate.

Abstract No. 588

Effect of relative increase in nurse and technologist staff: utilizing lower COVID-19 case volume as a model for examining increased staffing ratio on room turnover efficiency

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Purpose: Efficient interventional radiology (IR) procedure room utilization relies on various healthcare professionals performing clinical and nonclinical tasks to minimize room downtime. The coronavirus-19 (COVID) pandemic offers insight into the importance of staff ratios in improving room utilization, by evaluating the effect of a relative increase in support staffing in the setting of reduced physician staffing and reduced overall case volume.

Materials and Methods: In March 2020, as a result of a department-wide COVID disaster management plan, a 4-angiosuite IR department in a 900-bed tertiary care center experienced reduced case volume by approximately 1/3, matched by decreased physician staffing (3 to 2 attendings). IR technologist and nurse staffing remained unchanged. Normal staffing resumed June 2020. A prospective database of event times related to room workflow was reviewed for case volume, room turnaround time, and first case delay time before and after volume and staff changes. Turnaround times greater than 2 hours were excluded to correct for gaps in schedule and the prolonged turnaround associated with COVID-positive patient cases. Wilcoxon rank-sum two-sample tests were used to evaluate the differences between time periods. All *P* values reported are two-sided. Analysis was done in RStudio 1.2.5033 (RStudio Team, Boston, MA).

Results: Under standard operation, the median values for room turnaround time, case start delay, weekly case volume, and total case hours were 43.0 minutes, 30.0 minutes, 64 cases, and 44.4 hours, respectively. Under the COVID disaster management plan, a 32.6% ($P < 0.001$, 95% C.I. 23.3%, 41.9%) estimated increase was observed for room turnaround times, and a 53% ($P < 0.001$, 95% C.I. 36.7%, 70.0%) estimated increase was observed in case start delay; despite a 29.7% ($P < 0.001$, 95% C.I. 20.3%, 42.2%) decrease in case number and 29.5% ($P = 0.009$, 95% C.I. 13.1%, 43.2%) estimated decrease in total case hours.

Conclusions: Paradoxically, a relative increase in staffing did not improve measured metrics for room utilization, despite a stable attending physician-to-case ratio. Rather, findings may be allegorical to Parkinson's law suggesting that work expands so as to fill the time available for its completion.

Abstract No. 589

Assessing the role of interventional radiology during the initial phase of COVID-19: a large health system experience

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Purpose: COVID-19 remains a global health crisis and continues to greatly impact health care systems. Our study highlights the role of interventional radiology (IR) during the initial phases of COVID-19 in a large health care system based in the Midwest.

Materials and Methods: IR procedural volumes were compiled and stratified by service location from January 1, 2020 to April 30, 2020 for a large health care system in the Midwest. Seven-day rolling aggregate values were calculated and comparisons were made to diagnostic radiology (DR) imaging volumes during the same time frame. Percentage change in volume was calculated in relation to a state-mandated order to halt all nonessential medical care on March 17, 2020. IR procedures were stratified by category with interventional oncology (IO), dialysis interventions, and aspiration/drainage interventions comprising a majority of procedures. A Z-test for proportions was performed to assess for change in each following the state-mandated shutdown.

Results: IR demonstrated a 34.9% decrease in total procedural volume following the shutdown of nonessential medical care, compared to a 45.4% decrease in DR volume. There was a 25.4%

decrease in inpatient IR volume and a 41.0% decrease in outpatient volume, DR volume showed 22.2% and 57.3% decrease, respectively. Weekly outpatient volume analysis revealed the largest decrease in week 2 for IR at 49.3% and week 4 for DR at 67.0%. IO, dialysis and aspiration/drainage procedures comprised 29.1%, 13.8% and 20.4% of procedures prior to the state mandated shutdown and 31.7%, 16.2% and 26.3% afterwards. The proportion of IO and dialysis procedures were not statistically significant ($P = 0.16$ and 0.08 respectively) while aspiration/drainage procedures comprised a significantly higher proportion ($P < 0.05$) after the shutdown.

Conclusions: IR volumes during the initial phase of COVID-19 were relatively less affected than total DR volumes. Specific attention to outpatient IR volumes demonstrates the valuable care provided following the state-mandated shutdown of nonessential procedures. There was no significant change in oncology or dialysis interventions provided with a significant increase aspiration/drainage procedures.

Abstract No. 590

Contralateral lobe hypertrophy after selective Y90 radioembolization/Y90 segmentectomy

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Purpose: To retrospectively analyze the extent of left liver lobe hypertrophy after selective Y90 radioembolization of a single right lobe hepatocellular carcinoma (HCC)

Materials and Methods: A retrospective review was performed of all patients that underwent selective Y90 radioembolization/Y90 segmentectomy for right lobe HCC from November 2017- June 2020 at our institution. Pre- and post-treatment contralateral liver lobe volumes were calculated using manual volumetry utilizing the MIM software (Cleveland, OH). Percent hypertrophy of the contralateral lobe was obtained by calculating the ratios of post- to pre-treatment lobe volumes.

Results: 29 patients underwent Y90 segmentectomy for solitary right liver lobe HCC over the study period. Mean age of patients was 69.2 (53–86) years with 21 males and 8 females. All 30 patients had underlying cirrhosis. Mean imaging follow up was 14 [4–36] weeks.

Left liver lobe hypertrophy was noted in 26 of 29 patients that underwent Y90 segmentectomy. The mean left liver lobe hypertrophy range was 17% (-13% to 55%).

Conclusions: Y90 radiation segmentectomy appears to lead to substantial hypertrophy of the contralateral liver lobe. Future larger scale studies may be useful in examining the role of segmental Y90 radioembolization without Y90 radiation lobectomy in causing contralateral lobe hypertrophy.

Abstract No. 591

Purse-string technique for venous closure after large-bore mechanical thromboembolism

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Purpose: Mechanical removal of clots in patients with pulmonary embolism and deep venous thrombosis is an attractive alternative to pharmacological treatment or catheter-directed lytic infusion. The most effective mechanical thrombectomy devices have large