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postoperative outcomes of vascular procedures in pre-COVID and during the COVID outbreak periods in the United States.

Methods: Four vascular procedures: endovascular aneurysm repair (EVAR), open abdominal aortic aneurysm repair (oAAA), peripheral vascular intervention (PVI), and infrainguinal bypass in the Vascular Quality Initiative (VQI) database were investigated after stratification into: COVID period (February 2020 to October 2020) compared with the same months in the preceding year, as the pre-COVID period (February 2019 to October 2019). An exploratory data analysis following univariate analysis was performed using the χ^2 test. The trend lines of the procedures were also plotted to visualize the difference in the overall surgical volume in the two subgroup periods.

Results: An overall drop in the surgical volume was observed among all the vascular procedures ($P < .001$). Breakdown of surgical volumes during COVID (vs pre-COVID) was as follows: EVAR, 3761 (vs 5677); oAAA, 669 (vs 928); PVI, 22,735 (vs 29,719), and infrainguinal bypass, 4095 (vs 5448) were performed (Fig). There was no difference between the age and gender distribution of the patients in the two periods (Table). Percentage of white patients getting these operations was lower during the COVID period (73.5%) as compared to the pre-COVID time (76.3%), and the percentage of black patients getting these operations increased during the COVID era (18% vs 16.2%). For PVI, there was a decrease in outpatient procedures during the COVID period (43.39% vs 47.79%; $P < .001$) with an increase in inpatient (47.54% vs 44.64%) procedures. Also, an increase in urgent PVI (16.64% vs 13.31%; $P < .001$) and infrainguinal bypass (19.16% vs 16.15%) was seen during the COVID period. There was an overall increase in the 30-day all-cause mortality in all the procedures.

Conclusions: The COVID-19 outbreak has affected overall vascular surgery practices with decreased case loads and increased the burden on the health system with shifts seen in the source of primary insurance. An overall increased 30-day mortality rate was also seen during the COVID period, which mandates to identify the various risk factors that impacted this outcome.

Author Disclosures: F. Aziz: Nothing to disclose; J. D'Addario: Nothing to disclose; M. Smeds: Nothing to disclose; A. Zil E Ali: Nothing to disclose.

PC128.



Impact of COVID-19 on Patients Undergoing Scheduled Operations for Venous Disease

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Objectives: In efforts to ensure adequate health care resource utilization, many elective or nonemergent surgical cases have been cancelled since the Coronavirus Disease 2019 (COVID-19) began. The objective of this study is to analyze the impact of the COVID-19 pandemic on surgical delays and adverse outcomes for patients with venous disease scheduled to undergo elective operations.

Methods: The Vascular Surgery COVID-19 Collaborative (VASCC) was founded in March of 2020. An interim data analysis of United States sites was performed. Modules were developed by vascular surgeon working groups and extensively beta-tested before implementation. Each participating site agreed to share a collection of patient data whose vascular surgeries were postponed due to the COVID-19 pandemic. The REDCap database was determined to be exempt from institutional review board review. A total of 170 patients with venous disease whose surgeries were postponed during the COVID-19 pandemic surge in the United States were included in the interim data analysis.

Results: Among the 170 patients, the mean age was 54.6 years (range, 15-89), and 114 patients (67.1%) were female. Race included 55.9% white, 20.6% Hispanic, 11.8% Black, 2.4% Asian, and 9.4% were

unknown. Included venous diagnoses for surgery were 75.3% varicose veins with or without complications, 9.4% venous ulceration, 3.5% venous thoracic outlet syndrome, 3.5% lipodermatosclerosis, 1.8% acute deep vein thrombosis, 0.6% non-thrombotic iliac vein compression, and 5.9% other or missing (Table). Of these, 114 (67.1%) had procedures postponed and successfully completed surgery at the time of data entry. The average length of the delay was 86.8 days (± 59.3), with a median of 70 days (interquartile range [IQR], 7-317). Fifty-five patients (32.4%) were still waiting for surgery at the time of completion of the case report form. No patients required an emergency surgery due to their venous disease.

Conclusions: Interim results of the VASCC COVID-19 study support the American College of Surgeon's Recommendation for Management of elective vascular surgical procedures. Interventions may be safely delayed for patients with venous disease requiring elective surgical intervention during the COVID-19 pandemic. Postponement of venous interventions will allow better allocation of limited resources during the pandemic.

Table. Condition

Indication for planned procedure	Overall (N = 170), No. (%)
Varicose veins without complications	16 (9.4)
Varicose veins with phlebitis, bleeding or complications	23 (13.5)
Varicose veins with swelling or complications	89 (52.4)
Venous eczema or lipodermatosclerosis	6 (3.5)
Venous ulceration	16 (9.4)
Acute deep vein thrombosis	3 (1.8)
Non-thrombotic iliac vein compression	1 (0.6)
Pelvic congestion syndrome	0 (0)
Renal vein nutcracker syndrome	0 (0)
Venous thoracic outlet syndrome	6 (3.5)
Other	9 (5.3)
Missing	1 (0.6)

Author Disclosures: K. Colborn: Nothing to disclose; R. Cuff: Nothing to disclose; J. Dorosh: Nothing to disclose; R. Gillette: Nothing to disclose; M. Kabeil: Nothing to disclose; J. C. Lin: Nothing to disclose; G. Lopez-Pena: Nothing to disclose; R. D. Malgor: Nothing to disclose; L. O'Banion: Medtronic; Speaker's Bureau; M. V. Wohlauer: Nothing to disclose.

PC130.



Open Surgical and Endovascular Management of Hepatic Artery Aneurysms: A First Case Series Evaluation Following Updated Societal Guidelines

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Objectives: We reviewed true hepatic artery aneurysm (HAA) management and outcomes from a single academic center over a 20-year period. This is the first case series following the recent release of guidelines from the Society for Vascular Surgery (SVS).

Methods: Seventy-two patients were identified from the radiology database between November 24, 1999 and November 24, 2019. Retrospective review determined 48 patients had true HAAs, with 43 cases containing medical records available for inclusion in our analysis.

Results: Patients with HAA were a mean age of 63 years (range, 22-89 years) and were 65% male vs 35% female. Most patients (76%) were asymptomatic, whereas 16% presented with rupture and 12% were