

Perioperative arrhythmia after COVID-19: A case series

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INTRODUCTION:

COVID-19 is associated with increased risk of perioperative pulmonary complications, venous thromboembolism (VTE), and mortality that persists for weeks after infection¹. COVID-19 is associated with substantially increased risk for cardiac complications including arrhythmia, ischemic cardiomyopathy, myocarditis, and VTE for 12 months after infection². We hypothesize COVID-19 increases perioperative cardiac risk, but data evaluating these outcomes are relatively lacking from the literature. We present six cases of new onset cardiac arrhythmia in the peri- and postoperative period in patients undergoing elective surgery after COVID-19.

BACKGROUND:

In 2020, the Perioperative Medicine Clinic at OHSU implemented a pre-operative protocol to evaluate patients undergoing elective procedures with history of prior COVID infection. The clinic undertook a prospective observational study of these patients to better understand perioperative risks associated with prior COVID infection. These cases are examples of patients within this cohort that experienced arrhythmia related complications in the peri- and postoperative period.

DISCUSSION:

We hypothesize that prior COVID infection increases risk of perioperative cardiac complications, including arrhythmias. This case series highlights a potential association between perioperative cardiac morbidity and recent COVID infection. Risk for cardiac arrhythmias should be considered during preoperative evaluation of patients undergoing elective surgery after COVID infection. Further systematic studies should be undertaken to further characterize this risk and inform preoperative risk stratification and optimization as well as perioperative management.

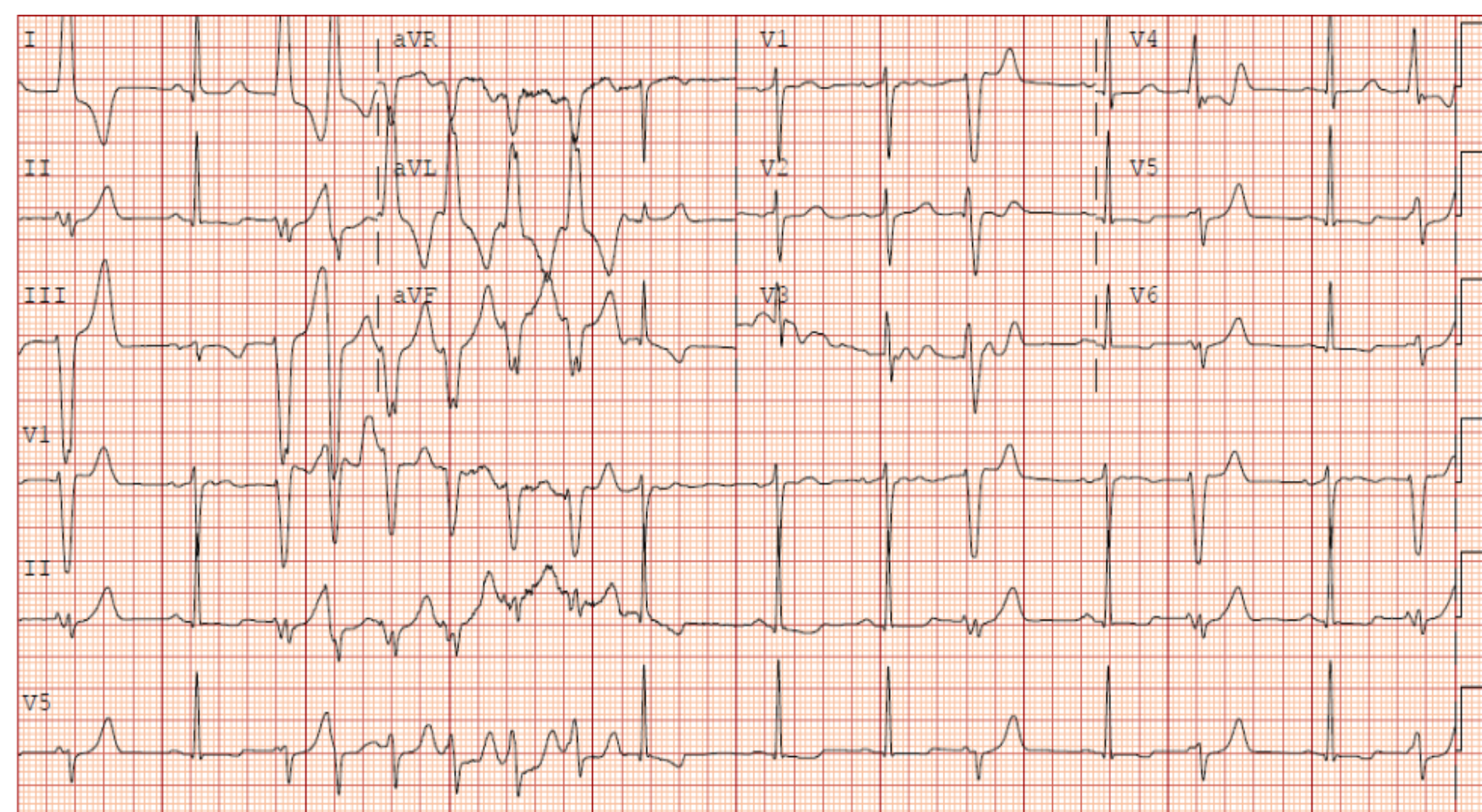


Figure 1. Case 1: NSVT captured on 12-lead EKG

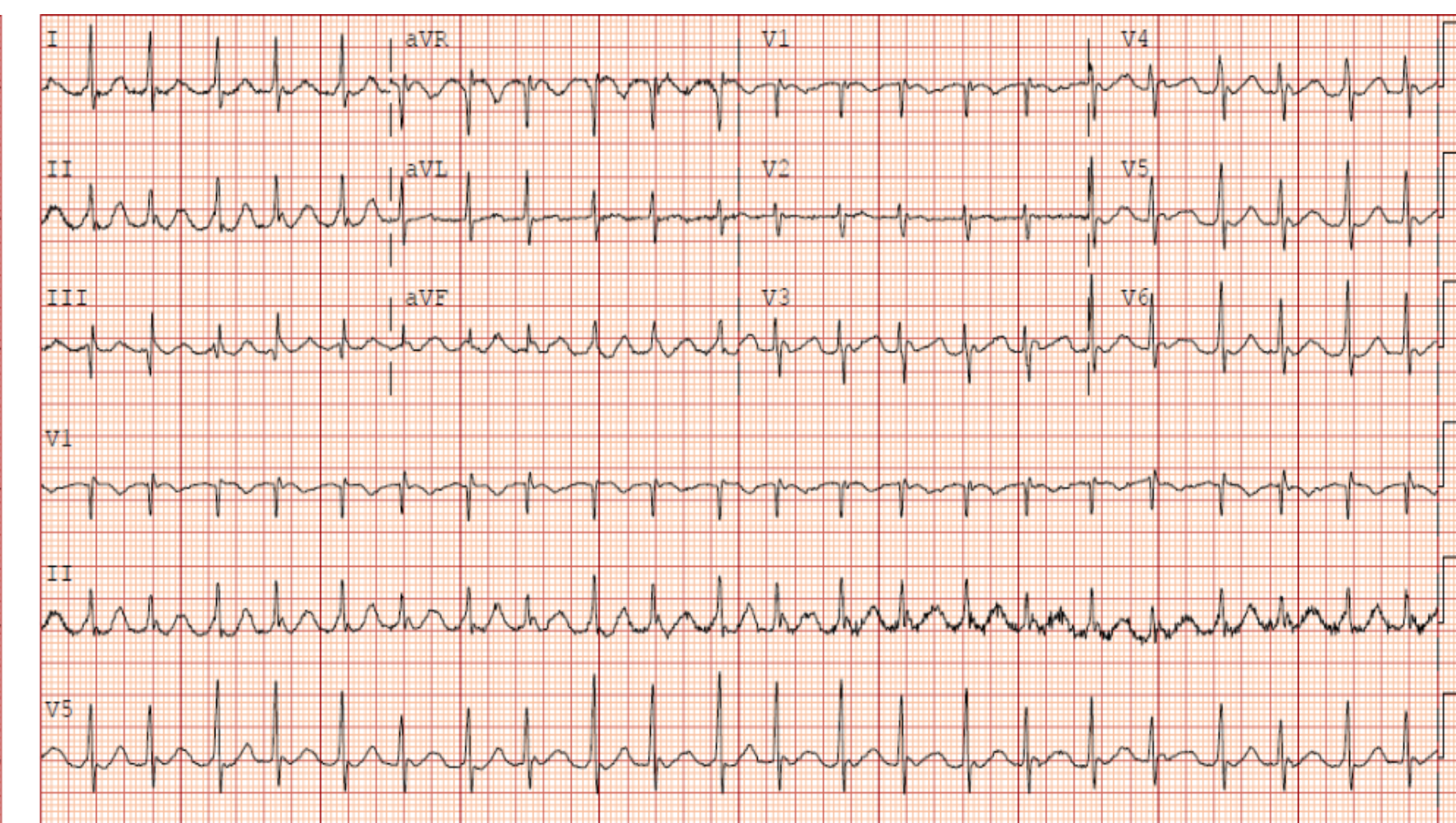


Figure 2. Case 2: Atrial flutter with 2:1 conduction captured on 12-lead EKG

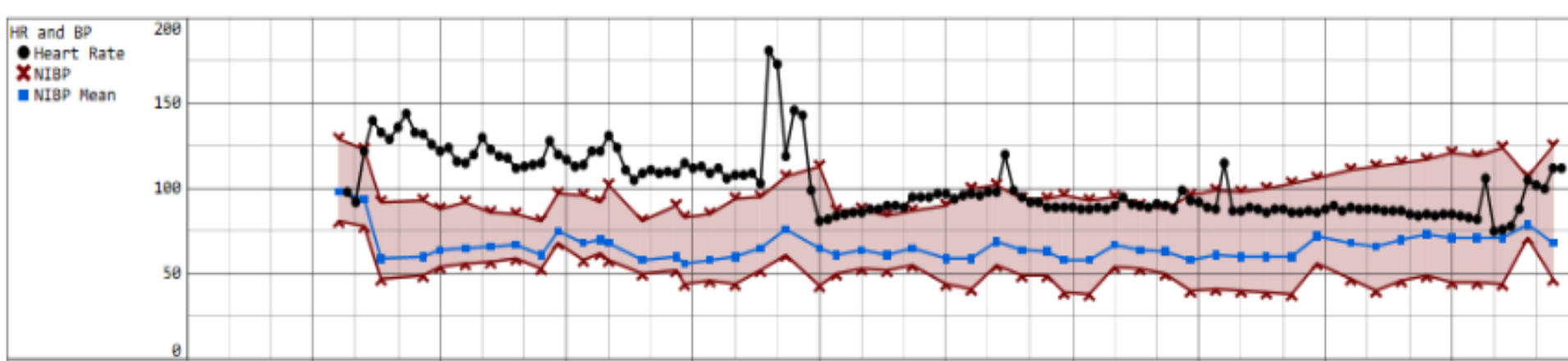


Figure 3. Case 3: Procedure log showing episodes of SVT

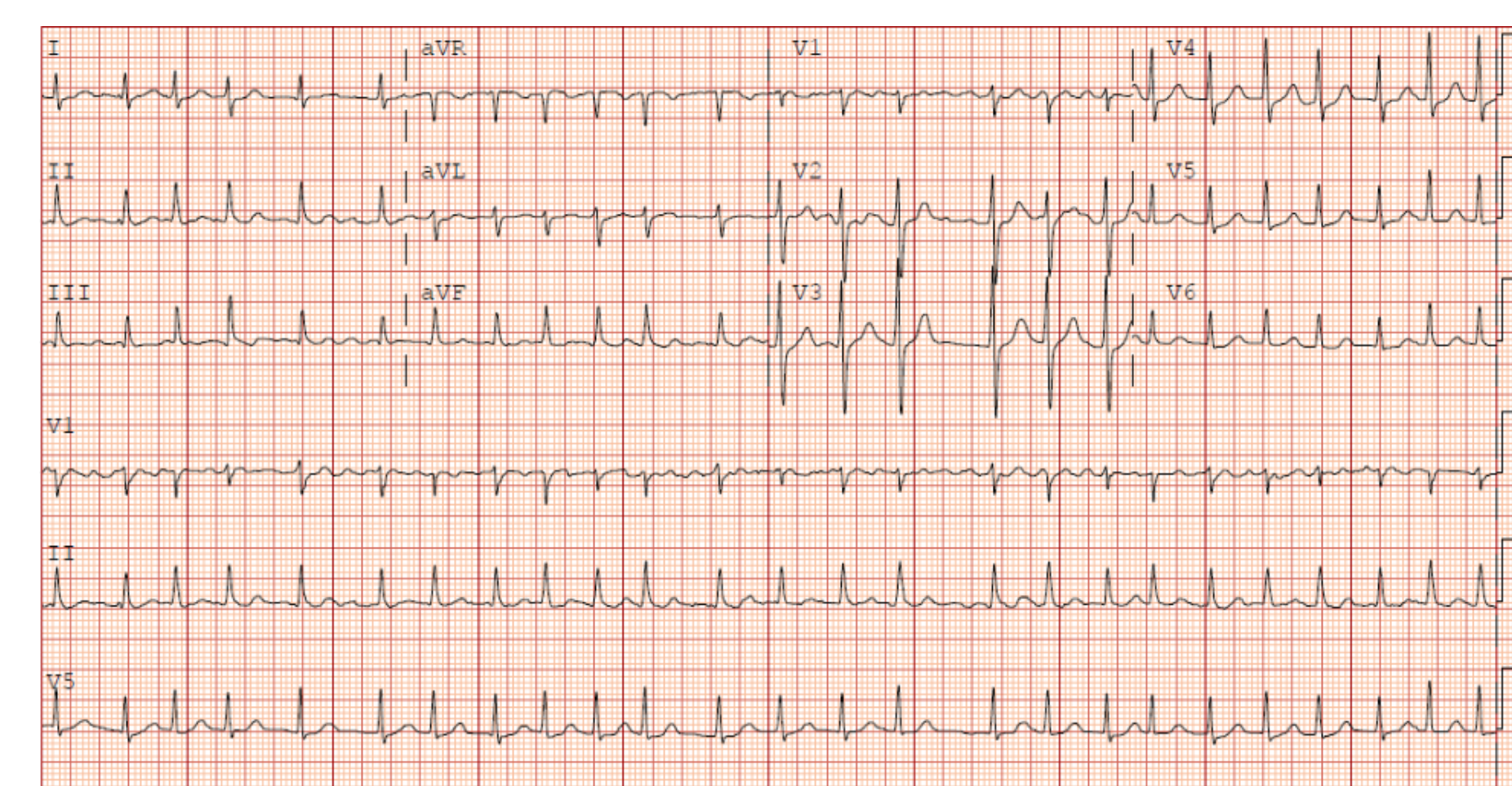


Figure 4. Case 4: Atrial fibrillation with RVR captured on 12-lead EKG

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Case 1

Patient	66 yo F with HTN and untreated OSA with urinary incontinence
Procedure	Transvaginal tape sling procedure
Timing	<u>36 days</u> after asymptomatic COVID-19 infection
Event	On <u>post-op day 0</u> , she was found to have a 3-minute episode of frequent 5-12 beat runs of <u>asymptomatic non-sustained ventricular tachycardia (Figure 1)</u> and <u>PVCs</u> while recovering in the PACU. She was referred to the ED where she was evaluated by Cardiology, started on a beta-blocker, and discharged home.

Case 2

Patient	67 yo M with treated OSA, hypothyroidism on desiccated thyroid hormone
Procedure	Laparoscopic ventral hernia repair
Timing	<u>37 days</u> after mildly symptomatic COVID-19 infection
Event	On <u>post-op day 6</u> , he presented to surgery clinic for routine follow-up with new shortness of breath, diaphoresis, and anxiety, otherwise meeting post-op milestones. He was transferred to the emergency department where he was found to have <u>atrial flutter with 2:1 conduction with a ventricular rate of 133 bpm on EKG (Figure 2)</u> . Shortly after, he spontaneously converted to sinus rhythm without intervention and was discharged home.

Case 3

Patient	19 yo M with severe ileal Crohn's disease
Procedure	Open ileostomy closure
Timing	<u>95 days</u> after mildly symptomatic COVID-19 infection
Event	<u>Intra-operatively</u> , had periods of <u>supraventricular tachycardia</u> to rates of 150-175 bpm (Figure 3) managed with beta blockade. He was admitted and monitored on telemetry without recurrence of SVT and discharged home.

Case 4

Patient	57 yo M with paroxysmal atrial fibrillation
Procedure	Open take-down of enterocutaneous fistula and ventral hernia repair
Timing	<u>4 months</u> after mildly symptomatic COVID-19 infection
Event	<u>Intra-operatively</u> , had frequent <u>Afib with RVR</u> managed with beta blockers. He was started on oral metoprolol post-operatively and had multiple recurrent episodes of Afib with RVR (Figure 4) complicated by chest pain and hypotension. He was started on IV amiodarone and transitioned to oral amiodarone prior to discharge home.

Case 5

Patient	58 yo F with treated OSA and pelvic mass
Procedure	Exploratory laparotomy, TAH-BSO, and debulking of pelvic mass
Timing	<u>26 days</u> after mildly symptomatic COVID-19 infection
Event	On <u>post-operative day 2</u> , she was noted to have <u>asymptomatic bradycardia with frequent premature atrial complexes in bigeminal pattern</u> . She was evaluated by Cardiology and an echocardiogram was normal. She was later discharged home without further work-up or intervention.

Case 6

Patient	72 yo F with history of LAFB and PACs with well-differentiated neuroendocrine tumor
Procedure	Exploratory laparotomy, liver tumor debulking, ileocolic resection
Timing	<u>10 months</u> after mildly symptomatic COVID-19 infection
Event	On <u>post-operative day 0</u> , she had episodes of <u>asymptomatic bradycardia with ventricular premature contractions in bigeminal pattern</u> . Her course was further complicated by post-op hypotension thought secondary to carcinoid crisis responsive to fluid resuscitation. She was later discharged home without further cardiac intervention.