

ICD-10-CM Specialty Code Set Training Cardiology

201&

Module 4



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Clinical Examples Used in this Book

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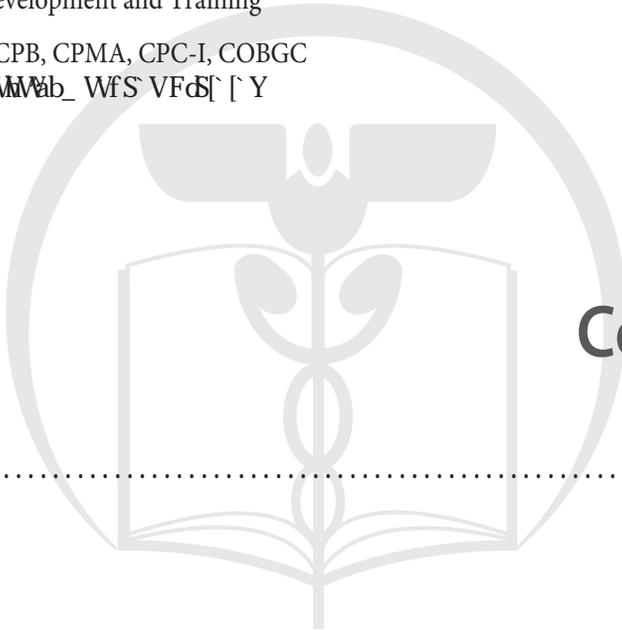
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Coding Cases

Case 1

Reason for Catheterization: ST-elevation myocardial infarction.

Procedures Undertaken

1. Left coronary system cineangiography.
2. Right coronary system cineangiography.
3. Left ventriculogram.
4. PCI to the left circumflex with a 3.5 x 12 and a 3.5 x 8 mm Vision bare-metal stents postdilated with a 3.75 mm noncompliant balloon x 2.

Procedure: After all risks and benefits were explained to the patient, informed consent was obtained. The patient was brought to the cardiac cath suite. Right groin was prepped in usual sterile fashion. Right common femoral artery was cannulated with the modified Seldinger technique. A 6-French sheath was introduced. Next, Judkins right catheter was used to engage the right coronary artery and cineangiography was recorded in multiple views. Next, an EBU 3.5 guide was used to engage the left coronary system. Cineangiography was recorded in several views and it was noted to have a 99 percent proximal left circumflex stenosis. Angiomax bolus and drip were started after checking an ACT, which was 180, and an Universal wire was advanced through the left circumflex beyond the lesion. Next, a 3.0 x 12 mm balloon was used to pre-dilate the lesion. Next a 3.5 x 12 mm Vision bare-metal stent was advanced to the area of stenosis and deployed at 12 atmospheres. There was noted to be a plaque shift proximally at the edge of the stent. Therefore, a 3.5 x 8 mm Vision bare-metal stent was advanced to cover the proximal margin of the first stent and deployed at 12 atmospheres. Next, a 3.75 x 13 mm noncompliant balloon was advanced into the margin of the stent and two inflations at 20 atmospheres were done for 20 seconds. Final images showed excellent results with initial 99 percent stenosis reduced to 0 percent. The patient continues to have residual stenosis in the mid to distal in the OM branch. At this point, wire was removed. Final images confirmed initial stent results, no evidence of dissection, perforation, or complications.

Next, an angled pigtail catheter was advanced into the left ventricular cavity. LV pressure was measured. LV gram was done in both the LAO and RAO projections and a pullback gradient across the aortic valve was done and recorded. Finally, all guides were removed. Right femoral artery access site was imaged and Angio-Seal deployed to attain excellent hemostasis. The patient tolerated the procedure very well without complications.

Diagnostic Findings

1. Left main: Left main is a large-caliber vessel bifurcating in LAD and left circumflex with no significant disease.
2. The LAD: LAD is a large-caliber vessel, wraps around the apex, gives off multiple septal perforators, three small-to-medium caliber diagonal branches without any significant disease.

3. Left circumflex: Left circumflex is a large-caliber vessel, gives off a large distal PDA branch, has a 99 percent proximal lesion, 50 percent mid vessel lesion, and a 50 percent lesion in the OM, which is a distal branch.
4. Right coronary artery: Right coronary artery is a moderate-caliber vessel, dominant, bifurcates into PDA and PLV branches, no significant stenosis noted.
5. No significant mitral regurgitation. No gradient across the aortic valve on pullback.

Assessment and Plan: ST-elevation myocardial infarction with a 99 percent stenosis of the proximal portion of the left circumflex treated with a 3.5 x 12 mm Vision bare-metal stent and a 3.5 x 8 mm Vision bare-metal stent. Excellent results, 0 percent residual stenosis. The patient continues to have some residual 50 percent stenosis in the left circumflex system, some mild disease throughout the other vessels. Therefore, we will aggressively treat this patient medically with close follow up as an outpatient.

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Case 2

Discharge Summary. Date Of Admission: May 8.

Date of Discharge: May 9.

Reason for Admission: Unstable angina.

Hospital Course: The patient is a pleasant 61-year-old gentleman, 2 pack cigarette per day smoking dependence, admitted with unstable anginal symptoms on May 8. He underwent cardiac catheterization, which revealed a high-grade stenosis of his right coronary artery. This was successfully repaired with angioplasty and stent placement. Overnight, on May 8, and then in the morning of May 9, he was feeling well, and we decided he was stable for discharge home.

Discharge Medications: Per medication reconciliation form.

Follow Up: Follow up in 1 week with Primary Care Physician.

Diet: Cardiac.

Activities: Ad lib. Smoking cessation, appropriate diet, and regular exercise discussed with patient. Total time of discharge management-24 minutes.

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Case 3

Preoperative Diagnosis: Chest pain.

Postoperative Diagnoses: 1. Severe cardiomyopathy. 2. Significant coronary artery disease involving the first obtuse marginal vessel.

Procedure: Elective percutaneous coronary revascularization of the left circumflex coronary artery.

Indications for Procedure: A pleasant 51-year-old gentleman with recently diagnosed cardiomyopathy who was referred for elective percutaneous coronary revascularization of the left circumflex coronary artery based on symptoms of chest pain. Patient is a former 20 year cigarette smoker, quit 5 years ago. The risk and benefits of the procedure were explained to the patient, who understood and wished to proceed. All of his questions were answered to his satisfaction.

Percutaneous Coronary Revascularization: Access was obtained in the right femoral artery using a standard six French sheath. Systemic anticoagulation was achieved using bivalirudin. The lesion involving the mid portion of the inferior branch of a large first obtuse marginal vessel was characterized as an ACC/AHA Type B1 (SCAI Type I) lesion. Using a six French EBU 4.0 guide catheter, a 0.014 mm/l 90 cm Asahi Pro Water wire was placed in the distal portion of the inferior branch of the first obtuse marginal vessel. The lesion involving this branch was subsequently direct stented with a 3.0 mm x 13 mm Cypher stent to 16 atmospheres. The proximal portion of this stent was then post-dilated with a 3.25 mm x 8 mm PowerSail noncompliant balloon to 8 atmospheres. Final angiography demonstrated 0 percent residual stenosis with distal TIMI-III flow. The patient tolerated the procedure well without complications. He will be transferred to the regular nursing floor for overnight observation.

Impressions: 1. Severe cardiomyopathy. 2. Significant coronary artery disease involving the first obtuse marginal vessel. 3. Successful percutaneous coronary revascularization of the first obtuse marginal vessel.

Recommendations: 1. Aggressive risk factor modification. 2. Aggressive medical management. 3. Full dose aspirin therapy and Plavix therapy for at least three months. 4. Admission to the hospital for overnight observation.

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Case 4

Chief Complaint/Reason for Admission: Acute MI.

History of Present Illness: All of the history is gained from discussion with the emergency room physician and reviewed the patient's chart as she is an extremely poor historian. She was brought in by her husband, for apparently developing chest pain earlier today. The electrocardiogram on first presentation to the ED, showed a 2 mm ST segment elevations in the anterior precordial leads. DASH protocol was called. When she was brought to the cardiac catheterization lab, a totally occluded LAD was found. This was successfully repaired with angioplasty and stent placement. There was no other significant obstructive disease in the epicardial coronary arteries. She does have cardiomyopathy with EF 35 percent and as expected anterior wall motion abnormalities. The patient cannot give me any history whatsoever, but does deny any chest discomfort at this point.

Past Medical History: Per chart review.

1. Coronary artery disease, not otherwise specified.
2. Type 2 diabetes. There is no history per chart of stroke or prior myocardial infarction.

Allergies: NONE.

Medications on Admission: Glimepiride, Synthroid, aspirin, and multivitamins.

Social History: The patient is married. She does have a current cigarette smoking dependence with a 25-pack-year history of smoking and has no desire to cease. She also drinks alcohol occasionally.

Physical Examination: VITAL SIGNS: Blood pressure is 135/70, heart rate is 50, respiratory rate 12, and saturations greater than 90 percent on room air. GENERAL: Elderly female in no acute distress. EYES: Pupils equal, round, and reactive. Extraocular movements are intact. ENT: Oral mucosa normal. NECK: Supple. No jugular venous distention noted. No carotid bruits. LUNGS: Clear bilaterally. CARDIAC: PMI is in the fifth interspace, midclavicular line, is not sustained and no palpable heaves or thrills. There is regular rate and rhythm. S1, S2 normal. No S3 or S4 gallop noted, 1/6 systolic murmur in left lower sternal border. No diastolic murmur heard. No rubs noted. Carotid, radial, and femoral pulses are palpable and symmetric. ABDOMEN: Soft. Bowel sounds are present. SKIN: No rashes or lesions noted. LYMPHATICS: No cervical or inguinal adenopathy is palpated. MUSCULOSKELETAL: No joint tenderness or effusions. No clubbing, cyanosis, or edema. NEUROLOGIC: Nonfocal. DIAGNOSTIC DATA: Electrocardiogram, sinus rhythm, bradycardia, 2 mm ST segment elevations in lead V3 through V4. Chest X-ray, increased pulmonary vascular congestion. LABORATORY DATA: White count 10.9, hemoglobin 14, and platelets 268,000. BUN is 16 and creatinine 1.1.

Assessment: A 77-year-old patient admitted with acute anterior myocardial infarction.

Suggestions: 1. We will treat empirically with very low-dose beta-blockers, which will be started tomorrow as the patient is bradycardic right now, ACE inhibitor therapy, statin therapy, and dual antiplatelet therapy. 2. Sliding scale insulin. 3. Admit to telemetry monitoring with further recommendations based upon clinical progress overnight.

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Case 5

Chief Complaint: Indigestion, back pain, heart burn.

History of Present Illness: 85-year-old-male patient with chronic Afib, on Digoxin, and history of remote MI (last one in 2000s without intervention). Patient is active and mows lawn etc. For last month, patient has been having symptoms of indigestion with radiation to neck along with progressive weakness with activity and subjective weight loss. Last night, the heartburn became worse and persisted until this AM. Patient has also been having falls and CT head today negative for acute intracranial disease. Patient still does have back pain and indigestion with radiation to neck.

Review of Systems: All other systems are negative.

Allergies: Sulfadiazine - Hallucinations.

1. Chronic Afib. 2. HTN. 3. DM.

Social History: 1. History of chewing tobacco dependence, quit many years ago. 2. Married lives with wife with active lifestyle.

Physical Examination: VITAL SIGNS: Respiratory Rate 20 bpm, BP 148/74, Pulse 71, GENERAL: No acute distress. EYE: Pupils are equal, round and reactive to light. HENT: Normocephalic. NECK: Supple. RESPIRATORY: Lungs are clear to auscultation. CARDIOVASCULAR: Normal rate. GASTROINTESTINAL: Soft. LYMPHATICS: No lymphadenopathy. MUSCULOSKELETAL: No swelling. INTEGUMENTARY: Warm. NEUROLOGIC: Oriented. PSYCHIATRIC: Cooperative.

Review/Management: Results review: Lab results. WBC Count 11.2 x10³ cmm HI Hematocrit 36.0 percent LOW Platelet Count 210 x10³ cmm INR Calculation 1.08 ratio Potassium 5.1 rnmol/L HI Creatinine 0.8 mg/dl CK-NB Isoenzyme 55 ng/mL HI Cardiac Troponin T 0.40 HI

Impression: Diagnosis-Myocardial infarction. PLAN: 1. Will take to cath lab today.

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Case 6

Thank you for referring an arrhythmia consultation.

Chief Complaint: Bradycardia.

History of Present Illness: Patient is a 72-year-old gentleman whom I am asked to assess because of Bradycardia. He has been noted to have a slow pulse and in the course of a cardiovascular evaluation, a Holter monitor was obtained. It demonstrated that the average heart rate was 52 beats per minute with nocturnal slowing and rates down to 36 beats per minute. The Holter monitor also demonstrated short runs of an atrial tachycardia, the longest of which was 12 beats in duration at a rate of 146 beats per minute. He is on no medicines that would cause a bradycardia. On repeat questioning, he denies symptoms of weakness, easy fatigability, lack of energy, lightheadedness, near syncope, or syncope. He has no symptoms of chest pain or angina. He denies rest or exertional dyspnea, orthopnea, paroxysmal nocturnal dyspnea, or edema.

Medications: The patient's medicines were reviewed and verified by the patient.

Review of Systems: Completely negative except for HPI.

Physical Examination: VITAL SIGNS: Pulse 58 BPM and regular; Blood Pressure 118/70; Respirations 16; Height 5' 2"; Weight 130 lbs. HEAD AND NECK: No abnormalities. The thyroid is not palpable. The JVP is normal at 2 cm. The carotids have normal upstrokes without bruits. CARDIOVASCULAR: The cardiac apex is not displaced. The first and second heart sounds are normal. There is no third or fourth heart sound. He has a grade 2/6 systolic outflow murmur. RESPIRATORY: The chest expands normally. There is good air entry to both bases. No adventitious sounds are heard. ABDOMEN: The abdomen is soft. There are no masses or organomegaly appreciated. The aorta is not palpable. EXTREMITIES: The distal pulses are present and normal there is no edema. MUSCULOSKELETAL: Power and strength of both the upper and lower limbs are normal. The gait is normal. CENTRAL NERVOUS SYSTEM: The cranial nerves are normal. The reflexes are normal.

Laboratory Data: The electrocardiogram at rest shows sinus bradycardia at 50 beats per minute with some minor nonspecific ST-T changes. The Holter monitor is as described above showing evidence of sinus bradycardia, more so during the nocturnal hours, and short runs of asymptomatic atrial tachycardia. An echocardiogram was normal with an ejection fraction of 60 percent.

Impression: 1) Sick Sinus Syndrome—Asymptomatic. 2) Atrial Tachycardia—Asymptomatic.

Recommendations: This gentleman has early sick sinus syndrome, but I can elicit no symptoms related to it. I suspect that one day he will require a permanent pacemaker, but the timing of this event should coincide with the onset of symptoms. I reviewed with him the possible symptoms to which he should be alerted. Negative chronotropic agents should be avoided. I hope this letter is useful to you in the management of this patient. As always, it is a pleasure to assist you.

ICD-10-CM code(s): _____

Case 7

Preop Diagnosis: Sinus node arrest, asystole.

Postop Diagnosis: Sinus node arrest, asystole.

Procedure: Implant of a temporary transvenous pacemaker.

Procedure in Detail: The patient underwent cardiac catheterization earlier in the day for suspected acute MI. The catheterization was essentially negative and he had had recent syncopal symptoms, we elected originally to leave him in the hospital overnight for patient to undergo electrophysiologic study for suspected cardiogenic syncope. About 2 hours after the cardiac catheterization on 7-Tower A, he experienced a severe sinus node pause of over 10 seconds. The patient regained sinus rhythm spontaneously, but was brought to the ICU for further monitoring, we felt it was necessary because of this to implant a temporary transvenous pacemaker. The right groin was prepped and draped in usual sterile fashion. We gained access in the right common femoral vein with an 8-French sheath. Under fluoroscopic guidance, we advanced a balloon-tipped temporary transvenous pacemaker to the right ventricular apex. The initial pacing threshold was less than 1 volt and we set the backup rate to 60 beats per minute at 5 volts with normal sensing. The sheath, as well as the wire, were sewn into the right groin. The patient tolerated the procedure well. There were no complications. Postprocedure, he was resting comfortably in the ICU in normal sinus rhythm.

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Case 8

Preoperative Diagnosis: Persistent atrial Fibrillation.

Postoperative Diagnosis: Persistent atrial Fibrillation.

Procedure: 1. Implantation of a dual - chamber pacemaker. 2. Evaluation of the leads under fluoroscopy.

Indication for the Procedure: The patient is a very pleasant 70-year-old gentleman with history of CABG, atrial fibrillation with slow ventricular response rate, negative TEE for intracardiac thrombus for which he then underwent successful discontinue cardioversion to sinus rhythm. Post-procedure electrophysiology study showed prolonged sinus node recovery time. No inducible ventricular tachycardia. The patient has an LV ejection fraction of about 50–55 percent. The patient is now referred for permanent pacemaker insertion.

Sedation: Per anesthesia.

Local Anesthetic: Lidocaine.

Complications: None.

Estimated Blood Loss: 0 mL.

Procedure Details: The patient was brought to the electrophysiology lab in a fasting, nonsedated state after having given informed consent. The patient's bilateral upper chest were prepped and draped in the usual sterilized fashion, and then local anesthetic in the form of 1 percent Lidocaine was applied to skin and fascia overlying the left pectoralis muscle. Then, using Seldinger technique, IV access was obtained in the left subclavian vein x 2 and 2 wires were placed in the vein. Then, using sharp and blunt dissection, a pocket was created in the anterior fascia of the left pectoralis muscle. Once the pocket was opened, two 7-French sheaths were advanced over each wire into left subclavian vein, after which the dilators and the guidewires were removed. Next, St. Jude Medical, RV lead 2088TC-58 cm was advanced through the sheath into the right ventricle. Next, the peel-away sheath was removed. Then, using curved and straight stylets, the lead was first advanced into RV outflow tract, was then pulled back into RV apex. The lead was then fixed in position and tested. Testing showed R-wave sensing at 11.8 millivolts, impedance of 920 ohms with a threshold of 0.9 volts. The lead was then secured to the floor of the pocket using 0 Ethibond suture and the lead secured. Next, the same process was repeated for the atrial lead using the second sheath. At this time, a St. Jude Medical atrial lead 2088TC—52 cm was advanced through the sheath into the right atrium. The peel-away sheath was then removed. Atrial lead was then positioned in right atrium, fixed and then tested. Testing showed P - wave sensing at 4.5 milli volts, impedance of 440 ohms with threshold of 0.5 volts at 0.5 milliseconds. The lead was then secured to the floor of the pocket using 0 Ethibond suture and the lead secured. Next, the pocket and lead system were irrigated with antibiotic solutions; the leads were then connected to St. Jude Medical pacemaker generator, which is 2210 RF pacemaker, serial #21425O5. The generator and lead system were then positioned in the pocket and the pocket was then closed with a 2-0 Vicryl in interrupted stitches to the fascial layer, followed with closure of skin with a 3-0 Vicryl in a running subcuticular fashion. A layer of Dermabond was also applied. Next, the device was programmed as in the following pacing mode is DDDR, low rate of 55, upper rate of 105 beats per minute. AV delays are programmed to minimize RV pacing. Mode switch is also on.

Conclusion: 1. Implantation of a dual-chamber pacemaker. 2. Evaluation of the leads under fluoroscopy.

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Case 9

Carotid Duplex Study: A 66-year-old man with carotid bruit underwent a carotid duplex study.

Interpretation Summary: Velocities in the right common carotid artery are 85/16 cm/sec. These velocities are located within the mid portion of the vessel. Velocities in the right internal carotid are 180/40 cm/sec. These velocities are located within the proximal portion of the vessel. Velocities in the right external carotid are 117 cm/sec. These velocities are located within the proximal portion of the vessel. Flow in the right vertebral artery is antegrade. Velocities in the left common carotid artery are 75/12 cm/sec. These velocities are located within the mid portion of the vessel. Velocities in the left internal carotid are 122/22 cm/sec. These velocities are located within the proximal portion of the vessel. Velocities in the left external carotid are 138 cm/sec. These velocities are located within the proximal portion of the vessel. Flow in the left vertebral artery is antegrade.

Conclusions: 50–79 percent right internal carotid artery stenosis by velocity criteria. 25–49 percent left internal carotid stenosis by velocity criteria.

ICD-10-CM code(s): _____

Case 10

Preoperative Diagnosis: Second-degree atrioventricular block, symptomatic bradycardia.

Postoperative Diagnosis: Second-degree atrioventricular block, symptomatic bradycardia.

Procedure: Pacemaker Implant

Surgeon:

Anesthesia: Local.

Description of Procedure: The patient underwent dual-chamber pacemaker implant without complications.

Prior to the procedure, consent was obtained and the patient was brought to the pacer lab and prepped and draped in the usual sterile fashion. Using the Seldinger technique, two 0.035 guidewires were advanced from the left subclavian vein into the superior vena cava. A pocket was then dissected anterior to the left pectoralis major muscle. A 7-French tear-away sheath was advanced over one of the wires and its distal tip positioned in the superior vena cava. The wire was removed and exchanged for a Medtronic model #5076 lead, 50–70 cm in length, serial #PJN2133095. This was advanced to the right ventricular apex and screwed into place. The lead was tested. R waves were measured at 13.1 millivolts with pacmg threshold 0.7 volts and impedance of 1213 ohms. The lead was affixed to the pocket over suture sleeve using 2-0 silk suture. A second 7-French tear-away sheath was advanced over the other wire and its distal tip was positioned in the superior vena cava. The wire was removed and exchanged for a Medtronic model #5076 lead, 45 cm in length, serial #PJN2140120. This was advanced to the right atrial appendage and screwed into place. The sheath was removed. The lead was tested. P waves were sensed at 1.3 millivolts with impedance 589 ohms and pacing threshold 0.6 volts. The lead was affixed to the pocket over suture sleeve using 2-0 silk suture. The pulse generator was then mobilized to the field. This was a Medfronic model #ADDR01 dual-chamber pulse generator, Medtronic, serial #NWB488586H. The atrial and ventricular leads were affixed to the device. Device was placed in the pocket and affixed

to the pocket using 2-0 silk suture. Pocket was then closed in 3 layers. The 2 inner layers were closed using 2-0 Vicryl in a running fashion. The skin was then reapplied using 4-0 Vicryl in a running subcuticular stitch. The wound was cleaned. Steri-Strips were applied. The patient tolerated the procedure well. There were no complications. Post procedure, she was transferred to the floor in stable condition.

ICD-10-CM code(s): _____

Case 11

Preoperative Diagnoses: 1 Peripheral vascular disease status post right lower extremity revascularization with angioplasty of common femoral, tibioperoneal, anterior tibial, and posterior artery. 2 High-grade stenosis distal left SFA. 3 Chronic total occlusion of proximal peroneal with one-vessel runoff to the foot.

Postoperative Diagnoses: SAME

Procedures: 1 Access, right groin. 2 Angiogram, left lower extremity with catheter position in third order branch. 3 Angioplasty, distal SFA lesion with 5 x 40 mm balloon. 4 Stent placement, distal SFA with 7 x 39 mm nitinol stent. 5. Attempted angioplasty of proximal chronic total occlusion of peroneal lesion.

Anesthesia: General anesthesia

Estimated Blood Loss: Minimal.

Indications: The patient is a very pleasant 75-year-old male who was referred to me for peripheral vascular disease bilaterally. His right was worse than his left with severely reduced ABI of 0.5 on the left and 0.71 on the right. He had undergone preliminary aortogram and they revealed multiple levels of blockages on his right side, which were appropriately angioplastied and since then the patient has had a dramatic improvement in his symptoms. He was brought as an AM admit for revascularization to his left lower extremity. Risks and benefits were explained in detail and the patient as well as his family fully apprised of the risk and are willing to comply with my recommendation.

Description of Procedure: After successful induction of general anesthesia, the entire area of the abdomen, groin, and bilateral lower extremities were prepped and draped in usual sterile fashion. Using modified Seldinger technique, the right common femoral artery was accessed using an 18-gauge needle and a starter wire was passed up into the distal abdominal aorta. We then used a crossover catheter to engage to the left common iliac artery. We were able to obtain adequate purchase with the Glidewire, but unfortunately the crossover catheter would not advance secondary to the tortuosity encountered in the common iliac as well as in the external iliac artery. At this point, we then decided to get purchase all the way down and then we were able to exchange it with Glidewire. Once having had the Glidewire in place, we then used stiff wire. Unfortunately, the Amplex wire also resulted in severe buckling of the Glidewire and hence we had to pull the stiffer wire and then we had to use a semi-stiff wire such as the starter wire. With the help of a j-wire, we were able to get adequate purchase and then we were able to cross it over with 7-French destination sheath. The hub of the destination sheath was parked over the origin of the left common iliac artery. Angiogram of the left lower extremity was performed. The common iliac artery on the left side was unremarkable. It gave rise to the internal and external iliac artery. They were tortuous,

but did not have any gross disease. The external iliac artery was tortuous as mentioned before. The common femoral artery divided into the profunda of the superficial femoral artery. The common femoral artery was unremarkable. The profunda of the superficial femoral had mild disease at its origin. The SFA was very mildly diseased in its proximal portion, but, however, in the junction of the distal with the popliteal origin, there was high-grade stenosis close to about 75 percent to 80 percent. This lesion was identified and we decided to treat this lesion. The proximal of the distal aspect of the popliteal artery was unremarkable. There was heavy disease in the trifurcation. The anterior tibial artery and the posterior tibial artery were 100 percent occluded. The peroneal artery had a short-segment high-grade stenosis proximally and that was the only vessel runoff all the way up to the foot. At the level of the foot, the peroneal artery seemed to give collaterals to the posterior tibial as well as to the dorsalis pedis vessel. We then decided to intervene and treat the superficial femoral artery lesion. We were able to advance the J-wire across the lesion gently. This was supported with a Glidecath. Once having crossed the lesion, we used 5 x 40 mm balloon and angioplasty was performed. Following angioplasty, there was localized dissection noted and at this point, we decided to place a stent. With the wire in place, we then loaded nitinol stent and this was placed directly over the lesion and a balloon expandable stent was deployed and the stent measured 7 x 39 mm. After deployment of the stent, angiogram was obtained and this showed stent to be in good position with no evidence of any leak or dissection. We then decided to carry on and treat the lesion in the peroneal artery. We exchanged the J-wire over Glidecath for 0.14 wire. The Glidecath and 0.14 wire was gently advanced all the way into the trifurcation. Angiogram was performed. As mentioned before, the anterior tibial and the posterior tibial artery was 100 percent occluded and there was a short segment peroneal artery, which was occluded. We parked the Glidecath just at the level of the trifurcation and with 0.14 Grand slam wire. We tried to advance it over the peroneal. We made multiple attempts and we were not able to do it. At this point, we used Glidewire to cross the lesion and we were unsuccessful as well. We kept trying for a while and at this point we then decided to abandon angioplasty of the apparent lesion. Our game plan will be to reassess the patient after improving the inflow with the SFA lesion. If he has improvement in his symptoms, we will continue conservative treatment. On the contrary, if he has recurring symptoms despite improving the inflow, we might have to contemplate revascularization from the popliteal to his peroneal artery with the vein graft. The patient was extubated in the operating room and was transported to the recovery room in stable condition.

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Case 12

Intraoperative Cardioverter Defibrillator Electrophysiology Testing

Indication of Procedure Performed: Patient is a 65-year-old gentleman who has evidence of a dilated nonischemic cardiomyopathy, ejection fraction 30 percent, NYHD class II. He was undergoing fitting and adjustment of cardioverter defibrillator at the time of initial implantation, which was the indication for this procedure. The procedure performed was testing of the cardioverter defibrillator leads and pulse generator at time of initial implantation.

Procedure: The patient arrived in the electrophysiology laboratory in a fasting state after the common risks of the procedure, including, but not limited to, bleeding, hematoma, infection, pneumothorax, cardiac perforation, lead dislodgment, vascular damage, venous thrombosis, cerebrovascular accident, and rarely death, were previously explained to the patient and after

informed consent was obtained from the patient. Universal Time-Out Protocol was performed. Implanted hardware included an atrial lead (Medtronic model# serial cardioverter defibrillator lead (Medtronic model serial and a dual-chamber cardioverter defibrillator (Medtronic model Secure DR). Acute threshold testing of the cardioverter defibrillator lead was performed at 0.5 msec. pulse width with the following measurements obtained: Voltage 0.6 volts, current 0.6 milliamperes, impedance 974 ohms, and R wave 13.9 millivolts. Acute threshold testing of the atrial lead was performed at 0.5 msec. pulse width with the following measurements obtained: Voltage 1.2 volts, current 1.7 milliamperes, impedance 790 ohms, and P wave 2.2 millivolts. Testing of the implanted leads was then performed after they were connected to the cardioverter defibrillator pulse generator. The atrial lead was evaluated at 0.4 msec. of pulse width with the following measurements obtained: Voltage 0.8 volts, pacing impedance 589 ohms, and P wave 1.9 millivolts. The cardioverter defibrillator lead was evaluated at 0.5 msec. pulse width with the following measurements obtained: Voltage 0.8 volts, pacing impedance 779 ohms, high-voltage impedance 70 ohms, and R wave 13.3 millivolts. Defibrillation threshold testing was then performed through the cardioverter defibrillator pulse generator using R on T shock to induce ventricular fibrillation. Ventricular fibrillation was induced, and a 20-joule shock was delivered to the device, which was successfully. External cardioversion was employed to restore sinus rhythm. Impedance measured 60 ohms. A 5-minute rest was allowed before the second induction of ventricular fibrillation was performed. On this occasion, a 25 joule shock successfully restored sinus rhythm with a measured impedance of 61 ohms. The cardioverter defibrillator pulse generator was programmed to the AM mode with monitored ventricular pacing. The lower pacing rate was 60, upper tracking rate of 130 beats per minute. The device was activated with tachycardia detection set at 180 beats per minute (320 msec.) with an initial attempt at anti-tachycardia pacing followed by high-energy cardioversion. The patient tolerated the procedure well with no complications.

Impression: 1. Normal-functioning dual—chamber cardioverter defibrillator. 2. Defibrillation threshold 25 joules. 3. Dilated nonischemic cardiomyopathy, ejection fraction 30 percent, New York heart disease class II. 4. Paroxysmal atrial fibrillation.

ICD-10-CM code(s): _____

Case 13

Procedure: Cardioverter-Defibrillatory Electrophysiology Testing.

Indication: Patient is a 71-year-old gentleman who has evidence of ventricular tachycardia, which is the indication for this procedure. The procedure performed was testing of the cardioverter-defibrillator leads and pulse generator at the time of initial implantation.

Procedure Details: The patient arrived in the electrophysiology laboratory in a fasting state, after the risks of the procedure (including but not limited to bleeding, hematoma, infection, pneumothorax, cardiac perforation, lead dislodgement, vascular damage, venous thrombosis, cerebrovascular accident and, rarely, death) were previously explained to the patient, and after informed consent was obtained from the patient. The universal primer protocol was performed. Implant hardware included: an atrial lead, cardioverter-defibrillator lead and a dual-chamber cardioverter-defibrillator. Chronic threshold testing of the atrial lead was performed at a 0.4-msec pulse width the following measurements obtained: Voltage was not obtainable because of atrial fibrillation; atrial fibrillation wave 2.1 mV; impedance 554 Ohms. Chronic threshold testing of the RV lead was performed at a 0.4-msec pulse width with the following measurements obtained:

Voltage 0.9 V, current 2.1 mA, impedance 424 Ohms, and R-wave 24.3 mV. Testing of the implanted leads was then performed after they were connected to the cardioverter-defibrillator pulse generator, and good pacing and sensing were obtained of the ICD lead. Defibrillation threshold testing was then performed to the cardioverter-defibrillator pulse generator. Using the R on T shock induced ventricular fibrillation. Ventricular fibrillation was induced and a 21 joule shock was delivered through the device which successfully restored sinus rhythm. Impedance measured 39 Ohms. The cardioverter-defibrillator pulse generator was programmed to the DDD mode, with a lower pacing rate of 60 and upper tracking rate of 120 beats/min. The device was activated with tachycardia detection set at 185 beats/min (set at 325 msec) with an initial attempt at anti-tachycardial pacing followed by high-energy cardioversion. The patient tolerated the procedure well, with no complications.

Impression: 1. Normal-functioning dual-chamber cardioverter-defibrillator. 2. Defibrillation threshold equal to or less than 21 joules. 3. Ventricular tachycardia. 4. Atrial fibrillation, chronic.

ICD-10-CM code(s): _____

Case 14

Chief Reason For Consultation: Evaluate exercise-induced chest pain, palpitations, dizzy spells, shortness of breath, and abnormal EKG.

History of Present Illness: This 72-year-old female had a spell of palpitations that lasted for about five to ten minutes. During this time, patient felt extremely short of breath and dizzy. Palpitations lasted for about five to ten minutes without any recurrence. Patient also gives history of having tightness in the chest after she walks briskly up to a block. Chest tightness starts in the retrosternal area with radiation across the chest. Chest tightness does not radiate to the root of the neck or to the shoulder, lasts anywhere from five to ten minutes, and is relieved with rest. Patient gives history of having hypertension for the last two months. Patient denies having diabetes mellitus, history suggestive of previous myocardial infarction, or cerebrovascular accident.

Past History: The patient underwent right foot surgery and C-section.

Family History: The patient is married, has six children who are doing fine. Father died many years ago. Mother had arthritis.

Social History: The patient does not smoke or drink.

Allergies: THE PATIENT IS NOT ALLERGIC TO ANY MEDICATIONS.

Review of Systems: Otherwise negative.

Physical Examination:

GENERAL: Well-built, well-nourished white female in no acute distress.

VITAL SIGNS: Blood pressure is 160/80. Respirations 18 per minute. Heart rate 70 beats per minute. Patient is overweight with a BMI of 27.

HEENT: Head normocephalic. Eyes, no evidence of anemia or jaundice. Oral hygiene is good.

NECK: Supple. No cervical lymphadenopathy. Carotid upstroke is good. No bruit heard over the carotid or subclavian arteries. Trachea in midline. Thyroid not enlarged. JVP flat at 45°.

CHEST: Chest is symmetrical on both sides, moves well with respirations. Vesicular breath sounds

heard over the lung fields. No wheezing, crepitation, or pleural friction rub heard.

CARDIOVASCULAR SYSTEM: PMI felt in fifth left intercostal space within midclavicular line.

First and second heart sounds are normal in character. There is a II/VI systolic murmur best heard at the apex. There is no diastolic murmur or gallop heard.

ABDOMEN: Soft. There is no hepatosplenomegaly or ascites. No bruit heard over the aorta or renal vessels.

EXTREMITIES: No pedal edema. Femoral arterial pulsations are 3+, popliteal 2+. Dorsalis pedis and posterior tibialis are 1+ on both sides.

NEURO: Normal.

EKG from Dr. Jone's office shows normal sinus rhythm, ST and T wave changes. Lipid profile, random blood sugar, BUN, creatinine, CBC, and LFTs are normal.

Impression:

1. Exercise-induced chest pain.
2. Palpitations with dizziness.
3. Abnormal EKG.
4. Hypertension.
5. Heart murmur.
6. Overweight.

Plan:

1. Adenosine Myoview SPECT, 24-hour Holter monitor, echocardiogram.
2. Carotid ultrasound.
3. Micro-T wave alternans test.
4. Diovan 80 mg has been given to the patient from our sample closet for the control of hypertension.

ICD-10-CM code(s): _____

Case 15

Complaint: Syncope.

History of Present Illness: The patient is a pleasant 74-year-old gentleman who presented to the Emergency Room today after experiencing a syncopal episode in church today. He actually had a similar syncopal episode about one week ago while climbing a ladder. He was placed under the DASH protocol by the Emergency Room physician and came in emergently to the cardiac catheterization lab. There is no evidence of significant obstructive disease in his epicardial coronary arteries and his ejection fraction was found to be normal. His presentation is suspicious for possible cardiac arrhythmias. Going to be kept overnight for monitoring now and will likely undergo electrophysiologic study by May 10th. He has no recent chest pain, left arm or jaw discomfort or any chest pain today, also denies any recent orthopnea, PND or edema. In addition, he has had no presyncope or palpitations.

Past Medical History: 1. Diabetes. 2. Hypertension. There is no history of stroke, myocardial infarction, congestive heart failure.

Social History: Negative for cigarette smoking or alcohol.

Allergies: No known drug allergies.

Medications: Glipizide, Starlix, and Lisinopril.

Review of Systems: Negative, except as in HPI.

Physical Examination: VITAL SIGNS: Blood pressure is 132/70, heart rate is 60, respiratory rate 14, afebrile. GENERAL: Elderly male in no acute distress. EYES: Pupils equal, round, and reactive. Extraocular movements intact. ENT: Oral mucosa normal. NECK: Supple, no jugular venous distention, no carotid bruits. LUNGS: Clear. CARDIAC: Regular rate and rhythm, S1, S2. No S3 or S4 gallop. 1/VI systolic murmur left lower sternal border and diastolic murmurs heard. No rubs noted. Carotid, radial and femoral pulses palpable and symmetric. ABDOMEN: Soft. Bowel sounds present. SKIN: No rashes or lesion. LYMPHATICS: No cervical or inguinal adenopathy. MUSCULOSKELETAL: No joint tenderness or effusion. No clubbing, cyanosis or edema. NEUROLOGICAL: Nonfocal. DIAGNOSTIC DATA: Electrocardiogram, sinus rhythm, normal PR, QRS and QT intervals. No acute ischemic changes. LABORATORY DATA: White count 5.6, hemoglobin 10.9, platelets are 186,000. BUN is 27, creatinine 1.3.

Assessment: A 74-year-old gentleman with recurrent syncope, actually brought in under the DASH protocol, but with no acute myocardial infarction.

Suggestions: 1. Restart medications including Lisinopril and diabetes medication. 2. Presentation is suspicious for cardiac arrhythmia. There is no evidence of arrhythmia at this point, I am going to schedule the patient for an electrophysiologic study tomorrow by with further recommendations to follow. Chest X-ray is pending.

ICD-10-CM code(s): _____

Case 16

Extremity Duplex Scan Venous Exam

Clinical Indication: Lower extremity edema, acute respiratory failure.

Findings: RIGHT: Venous duplex examination reveals no evidence of deep or superficial venous thrombosis. Venous Doppler signals are spontaneous and phasic with normal vein wall compressibility and normal flow augmentation. There is no evidence of deep or superficial venous valvular insufficiency. LEFT: Venous duplex examination of the left lower extremity reveals evidence of deep venous thrombosis involving infrapopliteal gastrocnemius veins at the left mid-calf. The left common femoral, femoral, profunda femoris, popliteal, posterior tibial, and peroneal veins demonstrate spontaneous and phasic venous Doppler waveforms and normal vein wall compressibility.

Impression: 1. Infrapopliteal deep venous thrombosis of the left lower extremity involving a gastrocnemius vein. 2. No evidence of more proximal deep venous thrombosis of either lower extremity.

ICD-10-CM code(s): _____

Case 17

Cardiology Consult; Chief Complaint: Tia.

History of Present Illness: The patient is an 85-year-old Greek male, very well-known to me, who presents with a TIA, which manifested itself in difficulty speaking. He had an episode on the day preceding admission when he went down to read the paper and then had great difficulty in reading. The rest of his history is quite well outlined on PowerChart, and I will not duplicate that.

Medications: Presently at home he takes: 1. Calcium. 2. Amiodarone. 3. Aspirin. 4. Coreg. 5. Plavix. 6. Digoxin. 7. Allegra. 8. Lasix. 9. Proscar. 10. Potassium. 11. Prilosec. 12. Zocor.

Social History: He is a retired engineer. He was born in Istanbul.

Examinations: VITAL SIGNS: Vital signs are stable. He is afebrile, blood pressure 130/80, pulse in the 70s. LUNGS: Respirations nonlabored. NECK: Supple. CHEST: Clear. HEART: Regular rate and rhythm. ABDOMEN: Exam benign.

Assessment: 1. Electrical heart disease. A. Chronic atrial fibrillation. B. Ventricular tachycardia. Initial ICD implanted in 04/2005. Last device is a Boston Scientific Cognis. Atrial lead: St. Jude 1388. Right ventricular outflow lead: St. Jude 1246. Defibrillation lead: Medtronic 6949. 2. Transient ischemic attack.

Recommendations: 1. The issue of anticoagulation with Coumadin had already been addressed with this patient. He is such a high risk that we had really wanted to put him on Coumadin in the past. On the other hand, he has had recurrent falls, and I had addressed this issue, both with the patient and his family, and we had decided just to stick to aspirin and Plavix, which I would continue at this point. 2. The device was interrogated in the office and is working appropriately.

ICD-10-CM code(s): _____

Case 18

Chief Complaint: CAD, MI.

History of Present Illness: An 85-year-old male new patient who has a history of coronary artery disease with previous myocardial infarction and inducible monomorphic ventricular tachycardia. He has a dual chamber cardio defibrillator model and a dual chamber cardioverter with an atrial lead. He presents for evaluation. He was walking in his house when suddenly without warning his device fired. He had no symptoms of palpitations or heart racing prior to the event. He felt the same before and after the event other than the anxiety related to shock. His device was interrogated and demonstrated the shock occurred for atrial fibrillation with a rapid ventricular response. This resulted in slowing of his ventricular response but did not convert him from his chronic atrial fibrillation. As a result of this shock his Inderal has been increased from 80 mg once daily to 120 mg daily. He does not notice any difference in the increased dose of Inderal. He has no symptoms of chest pain or angina. He has mild symptoms of exertional dyspnea and NYHD Class II symptoms, but no symptoms of rest dyspnea, orthopnea, paroxysmal nocturnal dyspnea, or edema. He has no chest pain or angina.

Medications: The patient's medicines were reviewed and include Inderal LA 120 mg daily, Cozaar 25 mg daily, aspirin 325 mg daily, a multivitamin one daily, and Valium as needed.

Examination: VSS. **CARDIOVASCULAR:** The cardiac apex is not displaced. The first and second heart sounds are normal. There is a grade systolic murmur of mitral insufficiency. The JVP is normal at 3 cm. The carotids have normal upstrokes without bruits. **RESPIRATORY:** The chest expands normally. There is good air entry to both bases. No adventitious sounds are heard.

Laboratory Data: Device was evaluated and his battery voltage is currently 2.64 volts with a replacement indicator at 2.62 volts. His atrial fibrillation is noted with a ventricular response about 80 bpm. An echocardiogram from August 21, 2011, showed a dilated left atrium at 4.9 cm. His left ventricular function was normal with an ejection fraction of 60 percent.

Impression: 1) ICD Shock Secondary to Atrial Fibrillation with Rapid Ventricular Response. 2) Normal Functioning Cardioverter Defibrillator - Nearing End of Life. 3) Ventricular Tachycardia. 4) Coronary Artery Disease. 5) Ischemic Cardiomyopathy - EF 60 percent, NYHD Class II. 6) Hypertension.

Recommendations: This gentleman received an implantable cardiac defibrillator shock because of a rapid response from his underlying atrial fibrillation. He recently had his beta blocker dose increased but his ventricular response is still somewhat rapid and I have recommended he increase his Inderal to Inderal LA 80 mg twice daily. If hypotension ensues then lowering his dose of Cozaar would be appropriate. His CHADS2 score is only one so I would continue with Aspirin for his anticoagulation. It is interesting to note that the defibrillator shock did not convert his atrial fibrillation to sinus indicating this is chronic atrial fibrillation. He should have his defibrillator changed when he reaches elective replacement indicator of 2.6 to volts. I will be pleased to change out his device at the appropriate time. I hope this letter is useful to you in the management of this patient.

ICD-10-CM code(s): _____

Case 19

Reason for Consult: DVT.

A 42-year-old male former semi-professional soccer player was seen on May 16th in the emergency department, with the chief complaint of right leg pain. The patient had been playing soccer 10 days prior to this visit, and recalled a traumatic "tackle" injury to the posterior area of his right lower extremity. He denied experiencing any sensation of tearing or popping in the right knee during the index trauma, and was able to complete the game with only minor discomfort. On day 3 post-injury the patient noted severe pain in his knee and calf with ambulation. The patient visited his primary doctor on post-injury day 8 and was diagnosed with a right lower extremity soft tissue injury. A right lower extremity echo-doppler ultrasound (US), and a semi-quantitative D-dimer automated latex procedure were ordered to rule out a vascular disorder. The US investigation demonstrated a DVT in the distal femoral, and the popliteal veins, with a heterogenous mass (5 cm x 3 cm x 4 cm, resembling a hematoma) without a doppler signal in the right popliteal fossa. The D-dimer result was also positive for a suspected thrombosis (1.0–2.0 ug/ml; range = <0.25 ug/ml). The patient was instructed by his physician to proceed immediately to the emergency department for further evaluation and treatment.

The past medical and family history of the patient is non-contributory for a history of thrombophilia or other thrombotic major risk factors.

Exam: Patient with an exquisitely tender right calf with a 3 cm difference in mid-calf girth (10 cm. distal from each inferior patellar pole); a 1+ right knee supra patellar effusion; and a palpable popliteal mass with visible ecchymosis. Laboratory tests (CBC, Lytes, PT, PTT, ESR, CPK, Anti-thrombin, Factor V Leiden, Lupus Screen, ANA, Anti-Cardiolipin, Protein C, and Protein S) were negative for metabolic, hematological or familial abnormalities. A repeat US investigation confirms the results of the previous outpatient results. A multiview plain film X-ray examination of the right lower extremity demonstrated no fracture, dislocation, or bony mass.

Impression: Acute DVT right femoral and popliteal veins. The patient to be anticoagulated simultaneously with unfractionated heparin and Warfarin sulfate.

ICD-10-CM code(s): _____

Case 20

Hospital Course: A 61-year-old lady was admitted with syncope preceded by light-headedness and feeling hot. The event, which was witnessed by her husband, occurred after eating in a restaurant. She regained consciousness spontaneously and later described palpitations associated with chest discomfort for a few minutes afterwards. She described similar episodes for the last 6 months. She had a past medical history of vitamin B12 deficiency and osteoarthritis. She was taking cod liver oil, glucosamine/chondatin sulphate and vitamin B12 and had no known allergies. There was no family history of sudden cardiac death. She was a life long non-smoker and drank 12 units of alcohol per week.

On initial examination she was alert, and hemodynamically stable. The only positive finding was an apical pan-systolic murmur. Her biochemical and hematological tests were normal. 12-lead ECG confirmed sinus rhythm with a ventricular rate of 72 bpm, normal PR interval and corrected QTc, normal cardiac axis, no ST/T-wave changes

She was commenced on a long acting β -blocker. Left and right heart catheterization demonstrated normal epicardial coronary arteries with normal right sided hemodynamic measurements. Transoesophageal echocardiography confirmed moderate mitral regurgitation along the length of the coaptation line due to excess mitral valve tissue causing prolapse of both the posterior leaflet (P1 and P2) as well as the anterior leaflet (A1 and A2). There was no flow reversal in the pulmonary veins. Left ventricular size and function was normal as were the other valves. Electrophysiology study and programmed VT stimulation was performed.

She was discharged home and will follow up on my office in one week.

ICD-10-CM code(s): _____