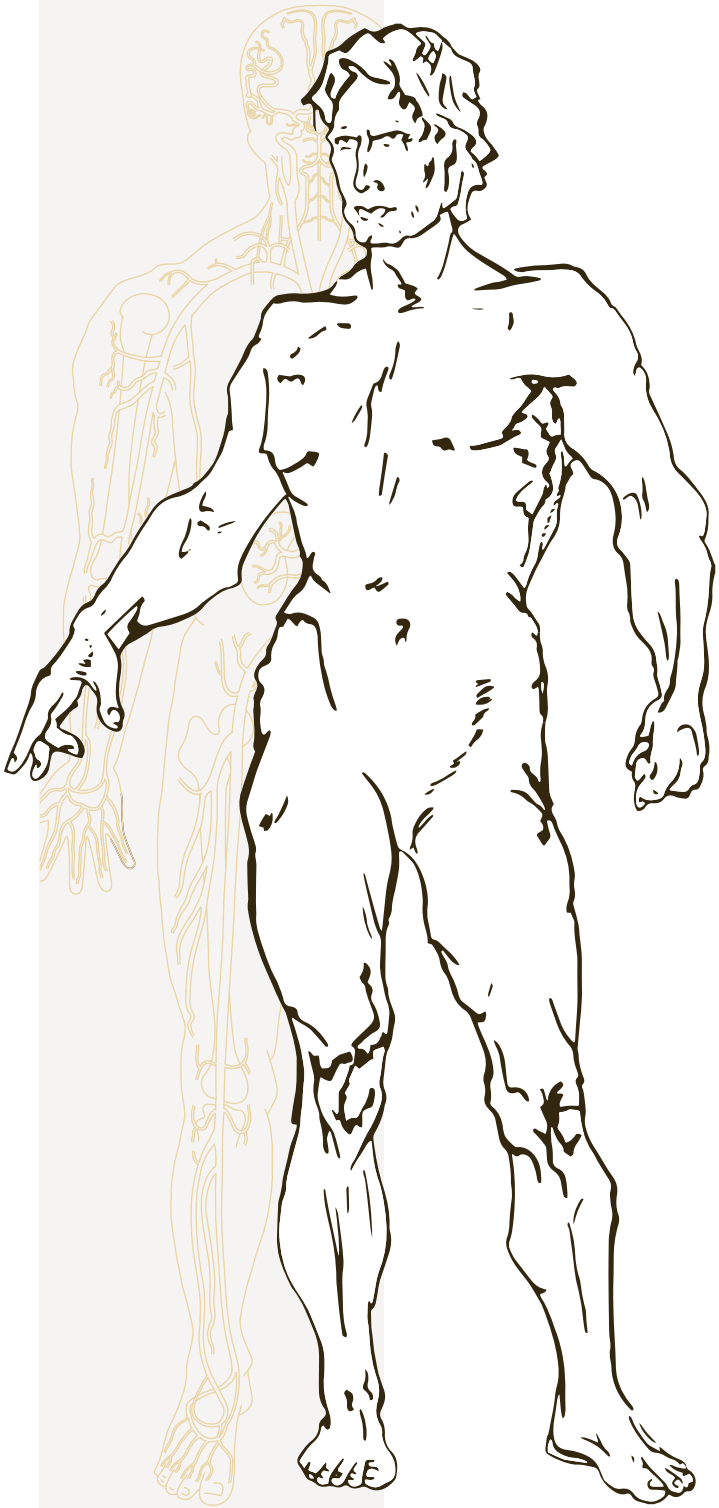
Dr. Z's Medical Coding Series

Diagnostic & Interventional Cardiovascular Coding Reference



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Patent Foramen Ovale Closure

PROCEDURE:

During embryologic development and while a fetus, the human circulatory system follows a different path, as oxygenated blood gets to the fetus from the mother via the umbilical artery. The fetal lungs are full of fluid, so the flow of oxygenated blood bypasses the lungs and goes straight from the right side of the heart (right atrium) to the left side (left atrium) via a hole in the interatrial septum. This hole is called the foramen ovale. It closes off completely in 76% of people at birth and no longer allows blood from the right side of the heart to cross to the left side. When this stays open after birth, it is called a patent foramen ovale (PFO). This occurs in 24% of the population. Most people who have a PFO have small openings and are asymptomatic; however, they still may cause serious complications under certain circumstances. The lungs serve two functions: one is to oxygenate blood and the other is to filter venous blood. The filtering helps trap small blood clots that form in veins from time to time. Large blood clots that make it to the lungs (pulmonary emboli) may cause serious problems, including death. Small blood clots occur quite often in healthy individuals and we never even know about it because "blood clot dissolvers" in our blood and the filtering/trapping function of the lungs takes care of these. Problems occur when we have a blood clot pass through a PFO from the right atrium to the left sided circulation instead of making its way to the lung. This requires the unfortunate timing of passage of a small clot at the same time as an unusual increase in right atrial pressure above left atrial pressure, as occurs during a Valsalva maneuver (bearing down, coughing, etc.). Normally higher pressure in the left atrium prevents this from happening, but if right atrial pressure exceeds left atrial pressure, the clot can pass through the right atrial opening into the left atrium, then into the left ventricle and aorta. It then can travel wherever the blood stream takes it. This clot may then occlude some or all blood flow to the target artery, resulting in stroke (if the artery is to the brain), extremity ischemia (if the artery is to the arm or leg), or end organ infarct (if the artery is to the kidney, spleen, liver, or bowel). Immediate intervention with open surgical or percutaneous thrombectomy, embolectomy, or thrombolysis is necessary to prevent permanent damage and death of tissue. Migraine headaches have also been associated with PFO, but the research shows only 42% of patients with a PFO and migraines had a 50% reduction in the frequency of migraines. In the past, treatment of a PFO required open surgical technique with placement of several stitches and possibly a patch to close the hole. A percutaneous technique utilizing a "double umbrella" device that fans out in the left atrium, gets snugged up against the hole in the atrial wall, and then the right atrial side is released. Over time, this endothelializes and is completely covered, thus closing the PFO for good. Second and third generation devices are being researched, including the use of biodegradable materials and closure devices placed inside the septal defect in the atrial wall. Percutaneous surgical closure is being explored along with other emerging new techniques. At least seven different devices are available worldwide (not all in the USA though). The coding for PFO closure is a single code, 93580, and includes a right heart catheterization, left heart catheterization, right atrial, and right ventricular angiography. ICE and TEE guidance for percutaneous structural heart intervention monitoring are separately billable with this procedure and are utilized not only to determine size and guide accurate and safe placement of the device but also to test the efficacy of the placement and document occlusion of the right to left shunt as demonstrated by a normal "bubble study". This procedure may be performed as an outpatient. If the diagnostic heart catheterization is performed on the same date of PFO closure, it is bundled.

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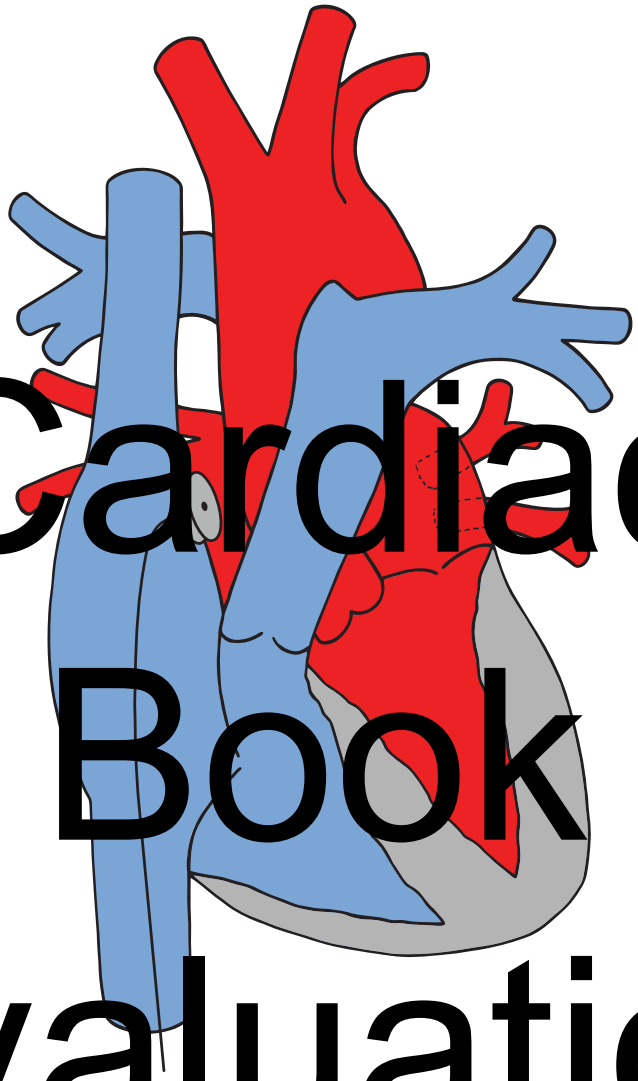

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PFO CLOSURE DEVICE PLACEMENT

CODES:

PROCEDURE DESCRIPTION	PROC CODE	APC	WORK RVU
Echocardiography, transesophageal (TEE) for guidance of a transcatheter intracardiac or great vessel(s) structural interventions (eg,TAVR, transcatheter pulmonary valve replacement, mitral valve repair, paravalvular regurgitation repair, left atrial appendage occlusion/closure, ventricular septal defect closure) (peri-and intra-procedural), real-time image acquisition and documentation, guidance with quantitative measurements, probe manipulation, interpretation, and report, including diagnostic transesophageal echocardiography and, when performed, administration of ultrasound contrast, Doppler, color flow, and 3D	93355	N/A	4.66
Catheter placement in coronary artery(s) for coronary angiography, including intraprocedural injection(s) for coronary angiography, imaging supervision and interpretation;	93454	5191	4.54

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PROCEDURE DESCRIPTION	PROC CODE	APC	WORK RVU
Injection procedure during cardiac catheterization including imaging supervision, interpretation, and report; for supravalvular aortography (List separately in addition to code for primary procedure)	✰93567	N/A	0.70
Injection procedure during cardiac catheterization including imaging supervision, interpretation, and report; for pulmonary angiography (List separately in addition to code for primary procedure)	✰93568	N/A	0.88
Injection procedure during cardiac catheterization including imaging supervision, interpretation, and report; for selective pulmonary arterial angiography, unilateral (List separately in addition to code for primary procedure)	✰93569	N/A	0.78
Injection procedure during cardiac catheterization including imaging supervision, interpretation, and report; for selective pulmonary arterial angiography, bilateral (List separately in addition to code for primary procedure)	✰93573	N/A	1.30
Percutaneous transcatheter closure of congenital interatrial communication (ie, Fontan fenestration, atrial septal defect) with implant	93580	5194	17.97
Intracardiac echocardiography during therapeutic/diagnostic intervention, including imaging supervision and interpretation (List separately in addition to code for primary procedure)	✰93662	N/A	0.00
3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality with image post-processing under concurrent supervision; not requiring image postprocessing on an independent workstation	76376	N/A	0.20
3D rendering with interpretation and reporting of computed tomography, magnetic resonance imaging, ultrasound, or other tomographic modality with image post-processing under concurrent supervision; requiring image postprocessing on an independent workstation	76377	N/A	0.79

✰Add-on Code

CODING INSTRUCTIONS:

1. Report PFO closure with the single comprehensive code 93580.

2. Do not report a code for a heart catheterization with code 93580. PFO closure includes a diagnostic right and/or left heart catheterization. An isolated PFO is not considered congenital heart disease per the *CPT Codebook*.

3. Report code 93662 for ICE use during PFO closure.

4. Per the *CPT Codebook*, report code 93355 for TEE real-time guidance during percutaneous structural heart intervention, including PFO closure. 3D TEE (bundled with code 93355) allows excellent demonstration of the anatomic detail necessary to evaluate and guide PFO device placement. Do not report 3D reconstruction code 76376 or 76377, as these are bundled with code 93355.

5. Code 93355 bundles Doppler, color flow, 3D reconstruction, and all echo imaging related to the evaluation, performance, and completion of a percutaneous structural heart intervention. This

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TEE procedure must be performed by a physician not performing the structural heart intervention.

6. Do not report code 93462 for access to the left atrium via the PFO. This is part of the procedure.

7. Report code 93580 for Fontan fenestration closure procedure utilizing the PFO device.

8. Do not report a code for balloon sizing of a PFO.

9. Report code 93580 for atrial septal defect (ASD) closure. An ASD is a congenital opening of the atrial septum and is considered a congenital heart defect. ASDs can be primum or secundum depending on location of the defect in the septum.

10. Report code 93454 if diagnostic coronary angiography is performed usually on an older patient, at the time of PFO closure for separate medical necessity, such as acute coronary syndrome).

11. Pulmonary angiography codes 93568, 93569, and 93573 are allowed with code 93580, as the parentheticals in the *CPT Codebook* now include 93580, so add-on code edits will allow billing both.

12. A PFO may be present for years without any symptoms, then present with embolic symptoms (e.g., stroke, renal infarct, ischemic leg) due to paradoxical embolus.

13. Atrial and ventricular angiograms are bundled with code 93580.

14. PFO closure devices that are currently available (in the USA, as part of an Investigational Device Exemption Study) include the Cardio SEAL Septal Occluder, the Amplatzer PFO Septal Occluder, and the NobleStitch EL (class 2 implant).

15. PFO closure with RF ablation technique (without implant) is reported with unlisted code 93799.

16. Other devices which are in various stages of investigation include the PFO Star Device, Helex Septal Occluder, Proximare PFO Occluder, Occlutech Figulla N, Coherex FlatStent PFO Closure System, Biostar, Solysafe Septal Occluder, Intrasept, SeptRx, BioTREK, CoAptus, and Premere PFO closure devices. Intrashunt occluders, biodegradable devices, ablation procedures, and percutaneous suture mediated closure devices (including Edwards, Cor-Knit and Suture Heart Stitch) are currently undergoing research, development and clinical trials.

17. Do not report code 0358 for closure of the large (7 French) atrial septal opening created during the transseptal access (iatrogenic) during mitral valve implantation or MitraClip placement for transcatheter edge-to-edge repair (TEER). The closure of this defect is included with transseptal mitral valve implantation code 0483T and is <u>not</u> reported separately.

EXAMPLE(S):

1) 32-year-old non-smoking female with history of migraines presents to the ER with symptoms of stroke. Unilateral carotid/cerebral angiography (36224, in addition to thrombolysis) shows a small MCA embolus, which is successfully treated with percutaneous catheter-directed thrombolysis and stent retriever techniques (add

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61645, delete 36224). No stenotic disease is seen. Further work-up with TEE shows a PFO (this portion of the work-up and intervention is separately coded based on those complete reports). Fully informed consent is obtained. Via a transfemoral venous approach, a catheter is placed in the right atrium, right ventricle, and left atrium, where pressures and angiography are performed (bundled with 93580). Pulmonary artery pressure is normal. ICE confirming a PFO with aneurysm is utilized for sizing and location of the PFO (93662). A sheath is then advanced across the PFO, and the closure device is partially deployed in the left atrium, then pulled back snug to the atrial septum. The right atrial side of the device is deployed (93580). Bubble study with ICE is performed (no additional code), showing complete occlusion of the PFO. Sheath is removed. Patient is discharged later in the day.

2) A three-year-old with congenital heart disease and prior Fontan procedure with fenestration to the native right atrium presents for possible closure. Via right femoral vein approach, a catheter is advanced into the SVC, pulmonary artery, and right side of the heart with pressures obtained (93594) for diagnostic right heart catheterization. Unilateral selective left pulmonary angiography is performed (93565) showing recurrent stenosis in a left upper lobe and the lower lobe pulmonary arterial branch. Each of these is separately dilated with a 4 mm and then subsequently a 5 mm balloon (92997, 92998). The lower lesion shows 90% residual stenosis requiring a balloon expandable stent placement (33902; delete 92998, as you can only bill for the successful intervention here). Excellent results are obtained. Now the Fontan fenestration is crossed with ICE guidance (93662). Measurements of the fenestration are made and an appropriately sized Amplatzer PFO Septal Occluder is chosen and placed, successfully occluding the fenestration (93580). This is confirmed with follow-up bubble study.

REFERENCES:

American College of Cardiology Foundation, CPT Reference Guide for Cardiovascular Coding 2015, pages 258-259

Cleveland Clinic Heart and Vascular Institute, Patent Foramen Ovale, February 2007

CPT Assistant, May 07:23, Jan 07:31, Aug 11:3, Feb 17:1, Aug 18:11, Dec 2:12, Sep 12:17, May 23:1

CPT Changes: An Insider's View 2003, 2006, 2011, 2013, 2014, 2015, 2016, 2017, 2018, 2021, 2023

Shah, DO Sandy; Calderon DO, Dawn M, Patent Foramen Ovale 06/23/05

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Septal Ablation

PROCEDURE:

Hypertrophic cardiomyopathy (HCM) is an autosomal dominant genetic heart disorder that affects 1 in 500 people. When the hypertrophy is localized in the interventricular septum (the muscle between the right and left ventricles) and causes enough enlargement to obstruct the left ventricular outflow of blood, the patient has hypertrophic obstructive cardiomyopathy (HOCM). This eventually occurs in about 20-30% of patients. This can then lead to arrhythmias and sudden cardiac death. Mitral valve dysfunction with regurgitation may also be present. Treatment had consisted of surgical removal of some of the heart muscle in the obstructing area (Septal Myomectomy / Morrow Procedure). This has long-term success but has a 1-3% mortality. A novel approach to treating symptomatic HOCM patients is septal ablation with alcohol. Physicians may call this alcohol septal ablation (ASA), transcoronary ablation of septal hypertrophy (TASH), percutaneous transluminal septal myocardial ablation (PTSMA), or non-surgical septal reduction therapy (NSRT). Whatever it's called, the technique consists of placing a microcatheter into a septal artery off the LAD, inflating a tiny occlusion balloon (to prevent reflux of alcohol) and injection of a small amount (2-4 cc) of absolute alcohol to induce septal myocardial infarct with necrosis, resulting in tissue loss and a smaller muscle at this site, thus relieving symptoms. Unfortunately, this may induce arrhythmias or conduction abnormalities so a temporary pacemaker is always used (and is included in the procedure code). About 18% of patients undergoing this therapy will require a permanent pacemaker. Some investigators have used specialized microcoils instead of alcohol to induce septal infarcts percutaneously. ICE is often used to help identify the most significant areas of septal hypertrophy and to guide catheter placements so the most abnormally thickened area of septum can be treated. Coronary angiography is bundled in this procedure. With septal reduction, dysfunctional mitral valve regurgitation often resolves as well. Payer coverage often requires severe heart failure symptoms (NYHA Class III or IV) and left ventricular outflow tract gradient greater than or equal to 50 mmHg at rest or after exercise.

CLINICAL INDICATIONS:

Chest pain during exertion and dyspnea, syncope, pre-syncope, heart failure symptoms (NYHA Class III or IV), left ventricular hypertrophy (LVH) on echo with thickness of left ventricular wall greater than 15 mm. Left ventricular outflow gradient as measured with continuous wave Doppler echocardiography of at least 30 mmHg (at rest) or 60 mmHg after exercise or during drug provocation.

CODES:

PROCEDURE DESCRIPTION	PROC CODE	APC	WORK RVU
Percutaneous transcatheter septal reduction therapy (eg, alcohol septal ablation) including temporary pacemaker insertion when performed	♦93583	N/A	13.75

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PROCEDURE DESCRIPTION	PROC CODE	APC	WORK RVU
Intracardiac echocardiography during therapeutic/diagnostic intervention, including imaging supervision and interpretation (List separately in addition to code for primary procedure)	✰93662	N/A	0.00

✰Add-on Code
♦ Inpatient-Only Procedure

CODING INSTRUCTIONS:

1. Code 93583 describes percutaneous transcatheter septal ablation.
2. Temporary pacemaker is bundled in the procedure code.
3. Coronary angiography of the LAD is bundled in the procedure code.
4. ICE guidance may be separately billed with code 93662 if documented.
5. Septal ablation code (93583) should be reported for any technique employed to infarct the septum, including placement of microcoils, alcohol, or glue.
6. Permanent pacemaker placement may be needed in up to [illegible]% of patients with this therapy. Permanent pacemaker placement may be coded separately.
7. Guidlines are available for medical necessity (greater than or equal to 50 mmHg LVOT gradient and NYHA Class III or IV heart failure symptoms).

EXAMPLE(S):

1) A 2[illegible]-year-old basketball player has syncopal episode and cardiac arrest on the court and is successfully resuscitated. Work-up with echo shows the left ventricular myocardium to measure 22 mm in thickness. Doppler echo shows 64 mmHg systolic trans-aortic gradient at rest. Patient is brought to the cath lab. Temporary pacer is placed (bundled). Coronary angiography is performed (bundled), showing the location of the LAD and septal perforators. ICE catheter is placed and is advanced to the right ventricle where septal measurements are made (93662). Using ICE and angiography, a micro occlusion balloon catheter is advanced into a septal artery supplying the thickest area of left ventricular outflow tract septum. This vessel is occluded proximally with the balloon, and 1.5 cc absolute alcohol is injected. After two minutes the alcohol is removed, and the balloon catheter is removed (93583). Follow-up angiography shows vessel occlusion (bundled). The temporary pacer is left in place (bundled).

REFERENCES:

American College of Cardiology Foundation, CPT Reference Guide for Cardiovascular Coding 2015, pages 258-259, 262-263

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CPT Changes: An Insider's View 2002, 2014, 2017, 2021

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33225	34820	37233	92925	93563	93613
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33370	36227	37247	92973	93568	93657
33419	36228	[illegible]	[illegible]	[illegible]	93662
33746	[illegible]	[illegible]	[illegible]	[illegible]	99153
33884	36474	37253	92978	93572	99157
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34714	36908	75774	93321	93585	C9601
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Dr. Z's Medical Coding Series

Diagnostic & Interventional Cardiovascular Coding Reference

David R. Zielske, MD

Code more accurately
Avoid coding compliance problems
Ensure proper reimbursement

An illustrated, easy-to-use, and practical reference for
medical coders, billers, and clinicians
involved with diagnostic and interventional cardiovascular procedures

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