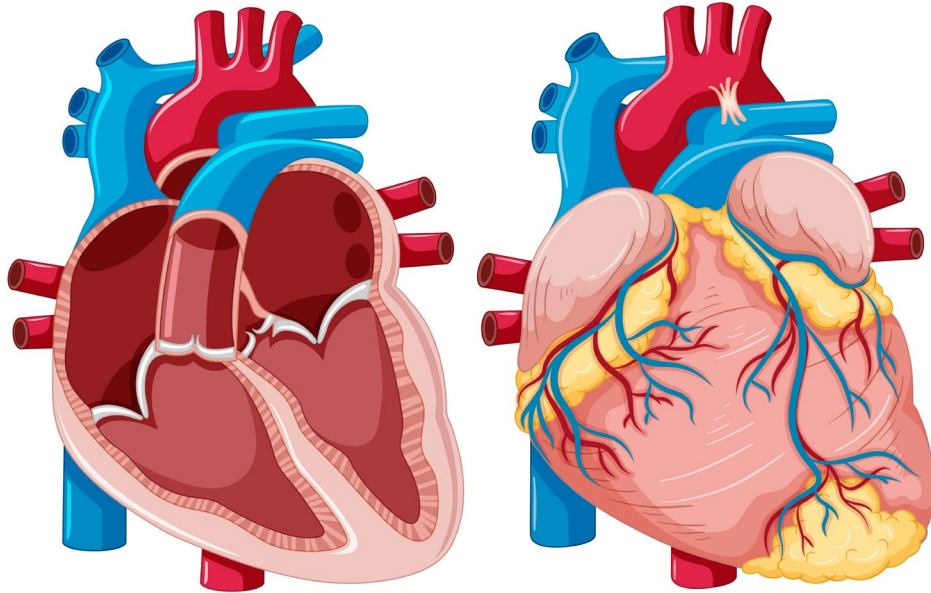


# Tip Sheet: Coronary Artery Bypass (CABG)

By: Rachel McKenty, CPC, COC, CPB, AAPC Approved Instructor



## The Heart: Coronary Arteries



Coronary arteries supply blood to the heart muscle. Like all other tissues in the body, the heart muscle needs oxygen-rich blood to function. Also, oxygen-depleted blood must be carried away. The coronary arteries wrap around the outside of the heart. Small branches dive into the heart muscle to bring it blood.

The 2 main coronary arteries are the left main and right coronary arteries.

Left main coronary artery (LMCA). The left main coronary artery supplies blood to the left side of the heart muscle (the left ventricle and left atrium).

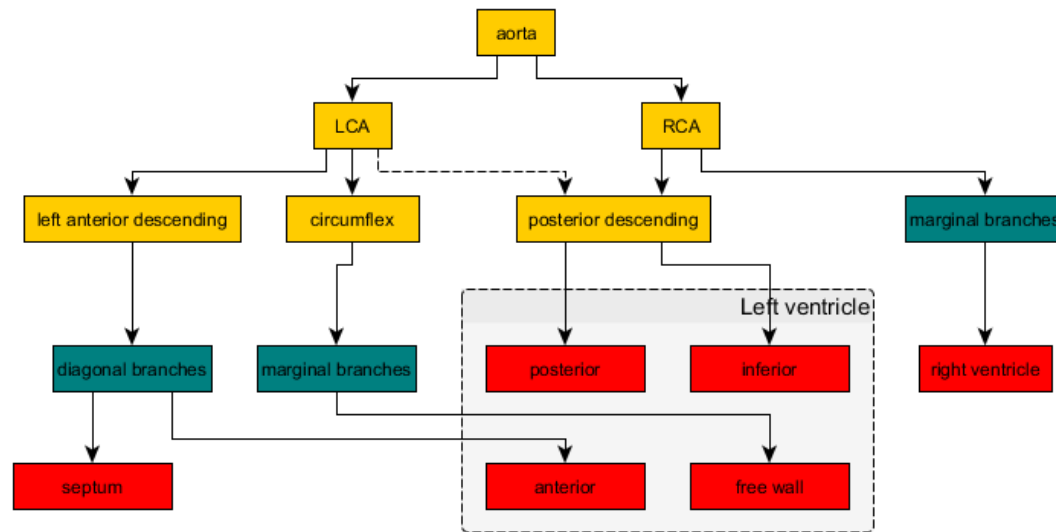
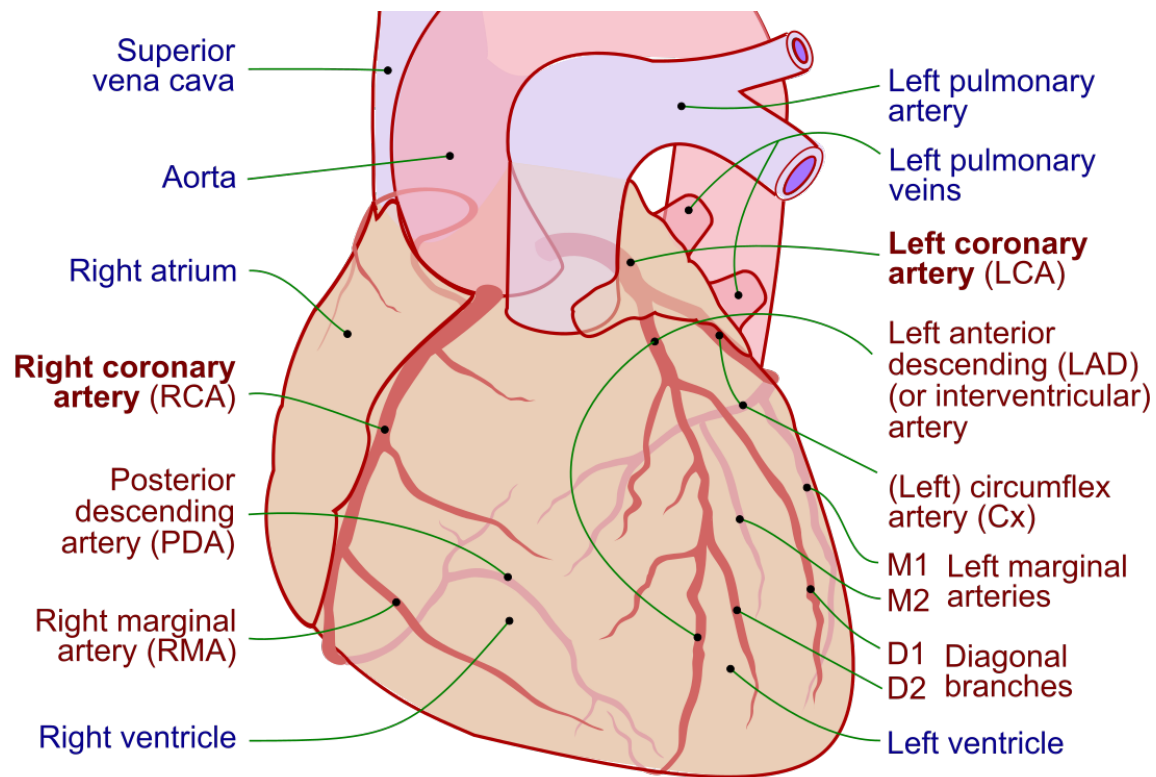
Right coronary artery (RCA). The right coronary artery supplies blood to the right ventricle, the right atrium, and the SA (sinoatrial) and AV (atrioventricular) nodes, which regulate the heart rhythm. The right coronary artery divides into smaller branches, including the right posterior descending artery and the acute marginal artery. Together with the left anterior descending artery, the right coronary artery helps supply blood to the middle or septum of the heart.

Smaller branches of the coronary arteries include obtuse marginal (OM), septal perforator (SP), and diagonals.



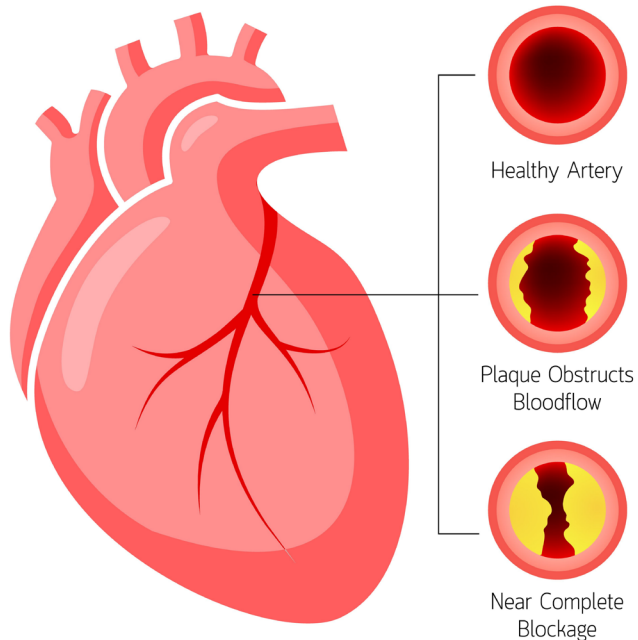
# Coronary Arteries: Names, Modifiers, and Flow

They are called the coronary arteries because they encircle the heart in the manner of a crown. The word "coronary" comes from the Latin "corona" and Greek "koron" meaning crown.



# Coronary Arteries Disease (CAD)

## CORONARY ARTERY DISEASE



Coronary artery disease (CAD) is the most common type of heart disease in the United States. It is sometimes called coronary heart disease or ischemic heart disease.

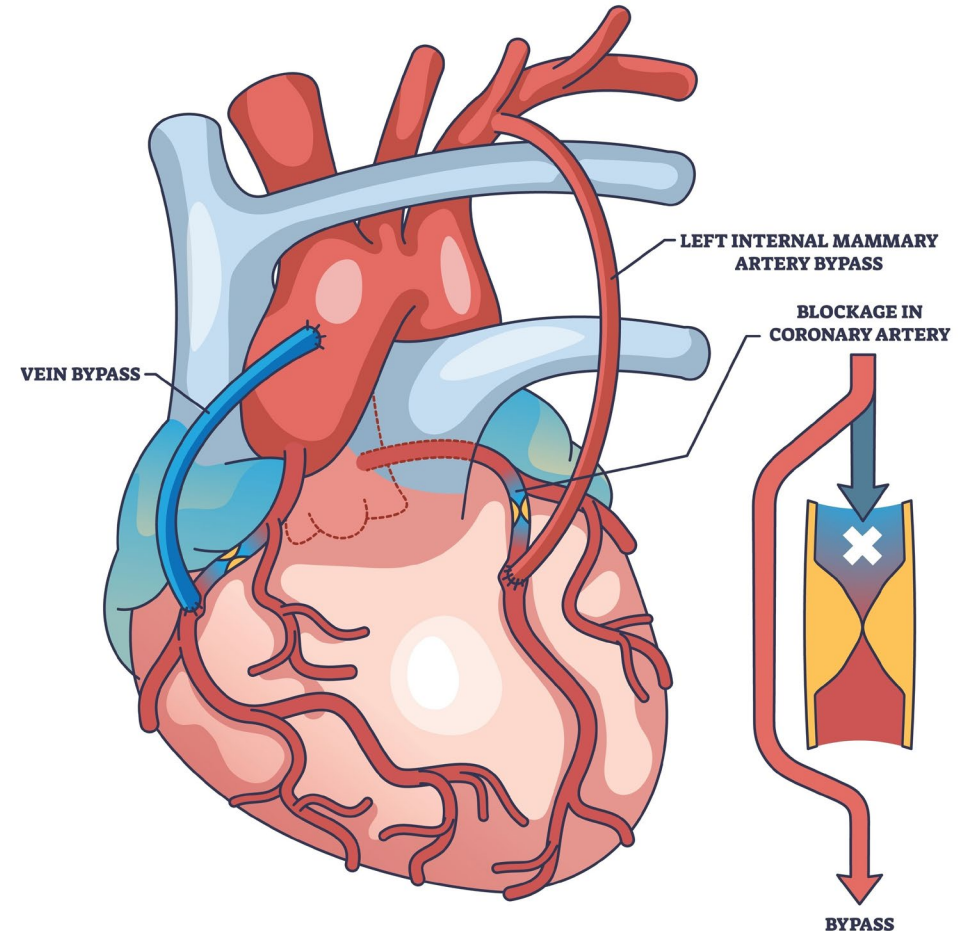
CAD is caused by plaque buildup in the walls of the arteries that supply blood to the heart (called coronary arteries) and other parts of the body.

Plaque is made up of deposits of cholesterol and other substances in the artery. Plaque buildup causes the inside of the arteries to narrow over time, which can partially or totally block the blood flow. This process is called atherosclerosis.

# Coronary Artery Bypass Grafts

Coronary Artery Bypass Graft (CABG) uses healthy blood vessels from another part of the body and connects them to blood vessels above and below the blocked artery. This creates a new route for blood to flow that bypasses the narrowed or blocked coronary arteries. The blood vessels are usually arteries from the arm or chest, or veins from the legs.

## CORONARY ARTERY BYPASS SURGERY



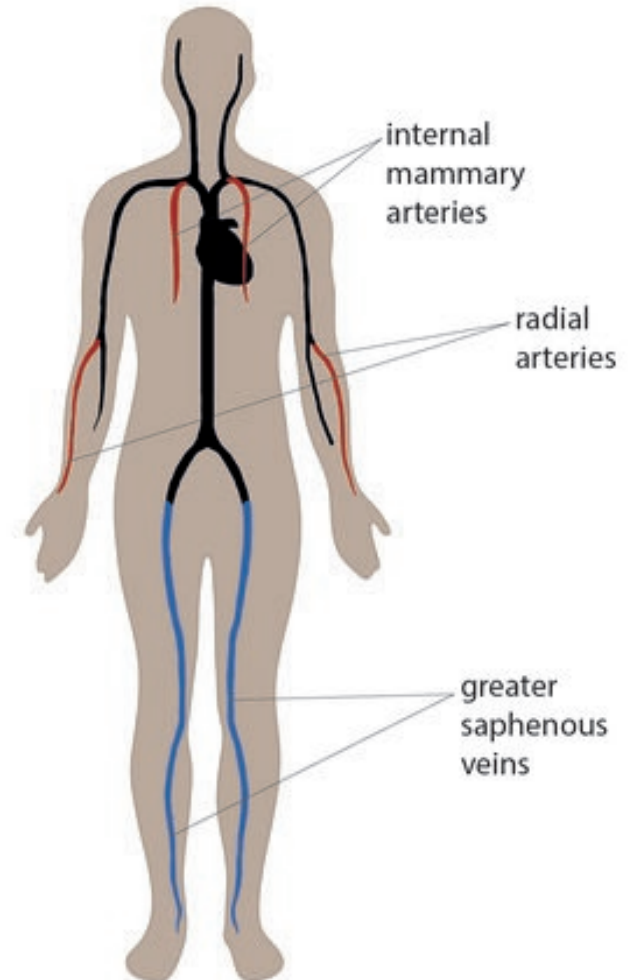
# Types of Grafts: Arterial vs Venous

## TYPES OF GRAFTS

- Arterial Grafts (LIMA, ITA, Radial)
- Venous Grafts (Saphenous vein, or upper extremity vein)

## VESSELS –Arteries/Veins

- Internal Thoracic artery (ITA, or LIMA)
  - o procurement is included in the coronary artery bypass procedure codes
- Radial Artery (from the arm)
  - o there is an add on code for procurement
- Great Saphenous Vein (from the leg)
  - o procurement is included in coronary artery bypass procedure codes



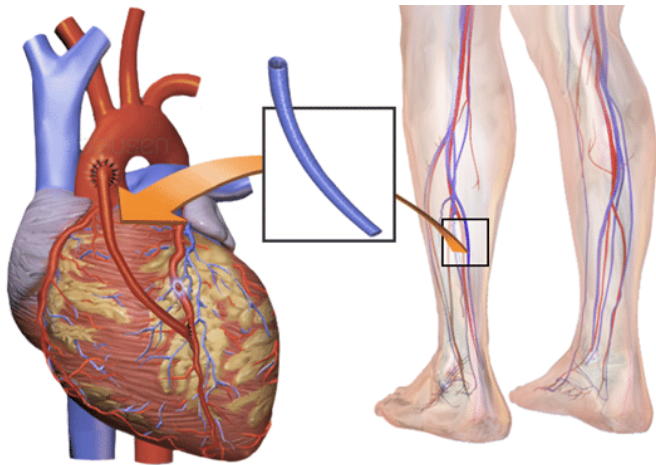




# Venous Grafting for Coronary Bypass

The following codes are used to report coronary artery bypass procedures using **venous** grafts only. These codes should **NOT** be used to report the performance of coronary artery bypass procedures using **arterial** grafts and **venous** grafts during the same procedure. See 33517-33523 and 33533-33536 for reporting combined **arterial-venous** grafts.

Procurement of the **saphenous vein graft** is **included** in the description of the work for 33510-33516 and should **not** be reported as a separate service or co-surgery. To report harvesting of an **upper extremity vein**, use 35500 **in addition** to the bypass procedure. To report harvesting of a **femoropopliteal vein** segment, report 35572 **in addition** to the bypass procedure.



- 33510 Coronary artery bypass, vein only; single coronary venous graft  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Jul 99:11, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Aug 14:14
- 33511 2 coronary venous grafts  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Jul 99:11, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1
- 33512 3 coronary venous grafts  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1
- 33513 4 coronary venous grafts  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1
- 33514 5 coronary venous grafts  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1
- 33516 6 or more coronary venous grafts  
➔ *CPT Assistant* Fall 91:5, Winter 92:12, Jul 99:11, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Aug 14:14



# Arterial Grafting for Coronary Artery Bypass

The following codes are used to report coronary artery bypass procedures using either **arterial** grafts only or a combination of **arterial-venous** grafts. The codes include the use of the **internal mammary artery, gastroepiploic artery, epigastric artery, radial artery, and arterial conduits** procured from other sites.

Procurement of the **artery** for grafting is **included** in the description of the work for 33533-33536 and should **not** be reported as a separate service or co-surgery, except when an **upper extremity artery** (eg, radial artery) is procured. To report harvesting of an **upper extremity artery**, use 33509 or 35600. To report harvesting of an **upper extremity vein**, use 35500 **in addition** to the bypass procedure. To report harvesting of a **femoropopliteal vein** segment, report 35572 **in addition** to the bypass procedure.

- 33533 Coronary artery bypass, using arterial graft(s); single arterial graft
  - ➔ *CPT Changes: An Insider's View* 2000
  - ➔ *CPT Assistant* Winter 92:12, Nov 99:18, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18
- 33534 2 coronary arterial grafts
  - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
- 33535 3 coronary arterial grafts
  - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
- 33536 4 or more coronary arterial grafts
  - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18
- 33542 Myocardial resection (eg, ventricular aneurysmectomy)
  - ➔ *CPT Assistant* Winter 92:12, Mar 07:1
- 33545 Repair of postinfarction ventricular septal defect, with or without myocardial resection
  - ➔ *CPT Assistant* Winter 92:12, Mar 07:1



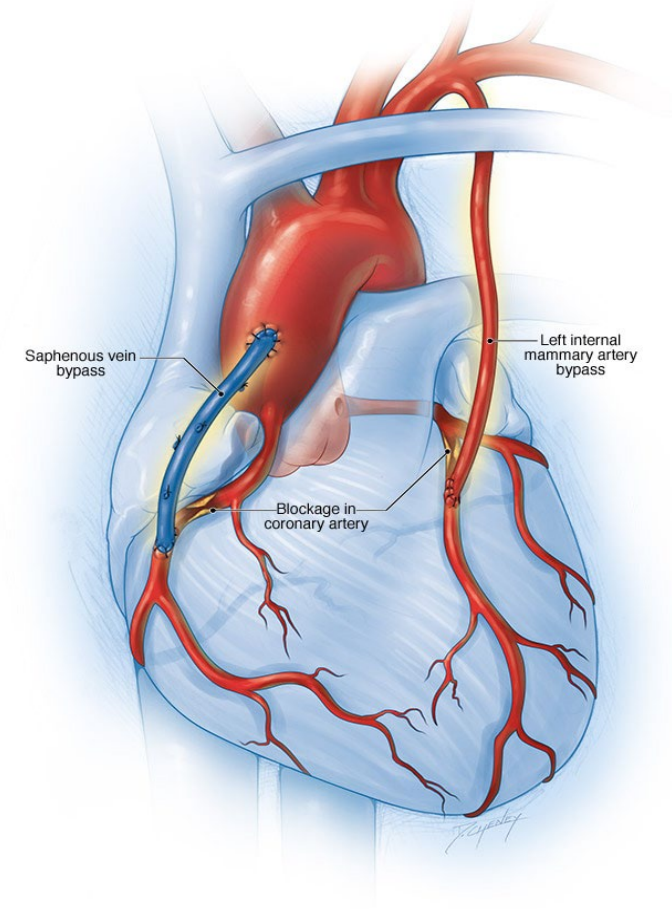


## Combined Arterial-Venous Grafting for Coronary Bypass

The following codes are used to report coronary artery bypass procedures using **venous** grafts and **arterial** grafts during the same procedure. **These codes may NOT be used alone.**

To report combined **arterial-venous** grafts it is necessary to report two codes: (1) the appropriate combined **arterial-venous** graft code (33517-33523); and (2) the appropriate **arterial** graft code (33533-33536).

Procurement of the **saphenous vein** graft is **included** in the description of the work for 33517-33523 and should **not** be reported as a separate service or co-surgery. Procurement of the **artery** for grafting is **included** in the description of the work for 33533-33536 and should **not** be reported as a separate service or co-surgery, **except** when an **upper extremity artery** (eg, radial artery) is procured. To report harvesting of an **upper extremity artery**, use 33509 or 35600. To report harvesting of an **upper extremity vein**, use 35500 in addition to the bypass procedure. To report harvesting of a **femoropopliteal vein** segment, **report** 35572 in addition to the bypass procedure.





## Combined Arterial-Venous Grafting for Coronary Bypass

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- + 33517** Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2000, 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18

(Use 33517 in conjunction with 33533-33536)
- + 33518** 2 venous grafts (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

(Use 33518 in conjunction with 33533-33536)
- + 33519** 3 venous grafts (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

(Use 33519 in conjunction with 33533-33536)
- + 33521** 4 venous grafts (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

(Use 33521 in conjunction with 33533-33536)
- + 33522** 5 venous grafts (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

(Use 33522 in conjunction with 33533-33536)
- + 33523** 6 or more venous grafts (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2008
  - ➔ *CPT Assistant* Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

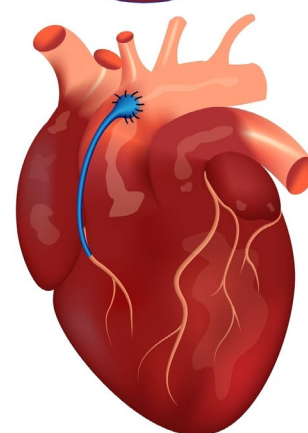
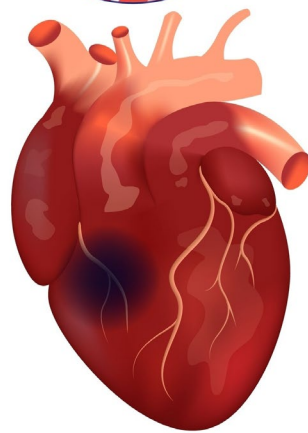
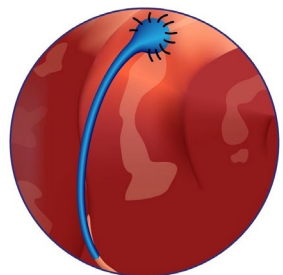
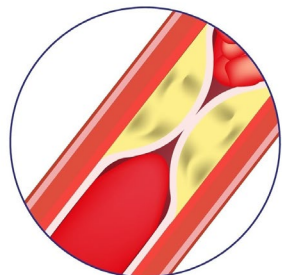
(Use 33523 in conjunction with 33533-33536)
- + 33530** Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation (List separately in addition to code for primary procedure)

  - ➔ *CPT Assistant* Winter 90:6, Fall 91:5, Winter 92:13, Apr 01:7, Jul 01:11, Feb 05:13-14, Jan 07:7, Feb 11:8

(Use 33530 in conjunction with 33390, 33391, 33404-33496, 33510-33523, 33533, 33534, 33535, 33536, 33863)



# Types of Grafts: Code Selection



Coronary artery bypass, **vein only**

33510	single
33511	2
33512	3
33513	4
33514	5
33516	6 or more

Coronary artery bypass, using **venous graft(s) and arterial graft(s)** – vein graft

+33517	single
+33518	2
+33519	3
+33521	4
+33522	5
+33523	6 or more

Coronary artery bypass, using arterial graft(s)

33533	single
33534	2
33535	3
33536	4 or more

- ✓ INCLUDES procurement of saphenous vein
  - Harvest of upper extremity vein, use 35500
  - Harvest of femoropopliteal vein segment, use 35572
  - Percutaneous ventricular assist device, see 33990–33993

- ✓ INCLUDES procurement of saphenous vein
- ✓ INCLUDES procurement of artery (except upper extremity artery)
  - Harvest of upper extremity artery, use 35600
  - Harvest of upper extremity vein, use 35500
  - Harvest of femoropopliteal vein segment, use 35572
  - Percutaneous ventricular assist device, see 33990–33993

- ✓ INCLUDES procurement of artery (except upper extremity artery)
  - Harvest of upper extremity artery, use 35600
  - Percutaneous ventricular assist device, see 33990–33993

# Endoscopic Harvesting

Endoscopic vein harvest is a technique to remove a vein from your leg to use in heart bypass surgery.

To report endoscopic harvesting of a **vein** for coronary artery bypass procedure, use 33508 in addition to the code for the associated bypass procedure. To report endoscopic harvesting of an **upper extremity artery** for a bypass procedure, use 33509.

Surgical vascular endoscopy always includes diagnostic endoscopy.

**+ 33508** Endoscopy, surgical, including video-assisted harvest of vein(s) for coronary artery bypass procedure (List separately in addition to code for primary procedure)

➔ *CPT Changes: An Insider's View 2003*

➔ *CPT Assistant Dec 21:18*

(Use 33508 in conjunction with 33510-33523)

(For open harvest of upper extremity vein procedure, use 35500)

**○ 33509** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, endoscopic

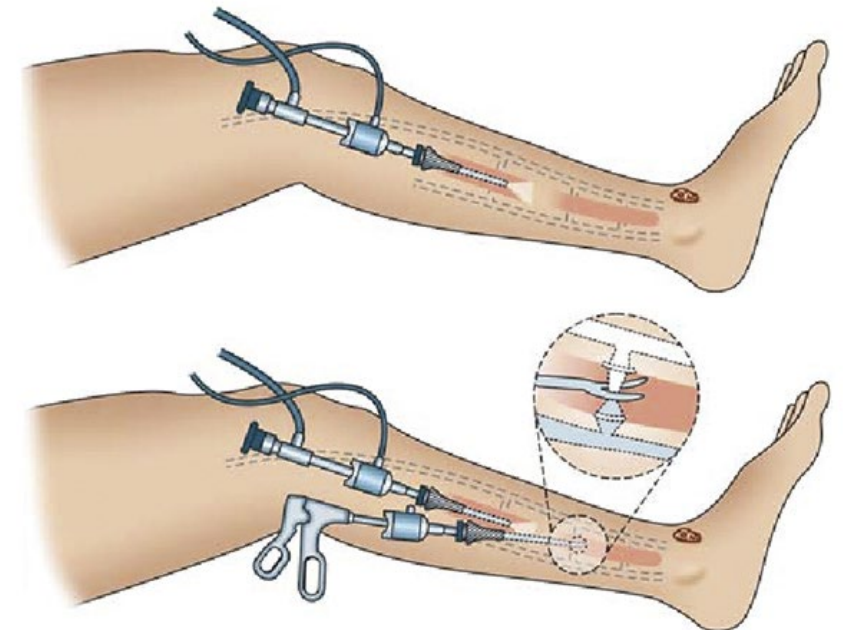
➔ *CPT Changes: An Insider's View 2022*

➔ *CPT Assistant Dec 21:17*

(For open harvest of upper extremity artery, use 35600)

(For bilateral procedure, report 33509 with modifier 50)

## ENDOSCOPIC VEIN SURGERY







## Open Harvesting

Procurement of the **saphenous vein** graft is **included** in the description of the work for 35501-35587 and should **not** be reported as a separate service or co-surgery. To report harvesting of an **upper extremity vein**, **use** 35500 in addition to the bypass procedure. To report harvesting of a **femoropopliteal vein segment**, **use** 35572 in addition to the bypass procedure. To report harvesting and construction of an autogenous composite graft of two segments from two distant locations, report 35682 in addition to the bypass procedure, for autogenous composite of three or more segments from distant sites, report 35683.

- + 35500** Harvest of upper extremity vein, 1 segment, for lower extremity or coronary artery bypass procedure (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2000
  - ➔ *CPT Assistant* Nov 98:13, Mar 99:6, Nov 99:19, Jan 07:7, Apr 12:4

(Use 35500 in conjunction with 33510-33536, 35556, 35566, 35570, 35571, 35583-35587)

(For harvest of more than one vein segment, see 35682, 35683)

(For endoscopic procedure, use 33508)
  
- + 35572** Harvest of femoropopliteal vein, 1 segment, for vascular reconstruction procedure (eg, aortic, vena caval, coronary, peripheral artery) (List separately in addition to code for primary procedure)

  - ➔ *CPT Changes: An Insider's View* 2003
  - ➔ *CPT Assistant* Jan 07:28

(Use 35572 in conjunction with 33510-33516, 33517-33523, 33533-33536, 34502, 34520, 35001, 35002, 35011-35022, 35102, 35103, 35121-35152, 35231-35256, 35501-35571, 35583, 35585, 35587, 35879-35907)

(For bilateral procedure, report 35572 twice. Do not report modifier 50 in conjunction with 35572)
  
- ⊖ 35600** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, open

  - ➔ *CPT Changes: An Insider's View* 2001, 2008, 2022
  - ➔ *CPT Assistant* Apr 07:12

(For endoscopic approach, see 33508, 33509, 37500)

(For bilateral procedure, report 35600 with modifier 50)



## Questions to Keep In Mind

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When reading the documentation keep these questions in mind.

1. How many grafts were performed?
2. How many were **arterial**? Which **artery** (ies)?
3. How many were **venous**? Which **vein**(s)?
4. How were the grafts harvested? Open or endoscopic?
5. Did the patient have a previous CABG?





## Practice Question 1

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A physician performs a four-vessel autogenous (one venous, three arterial) coronary bypass graft on a patient who had a previous CABG two years ago. The saphenous vein, radial artery (harvested in an open procedure), and the left and right internal mammary arteries were utilized. What CPT® coding is reported for this procedure?

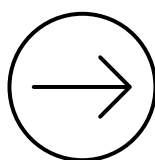
1. How many grafts were performed? 4
2. How many were arterial? Which artery (ies)? 3
3. How many were venous? Which vein(s)? 1
4. How were the grafts harvested? Open or endoscopic? Open
5. Did the patient have a previous CABG? Yes



# Rationale

The patient had a coronary bypass graft on **one vein** and **three arteries** making it a **combination graft**.

Look in the CPT® Index for Coronary Artery/Bypass Graft (CABG)/**Arterial-Venous** Bypass which refers you to 33517-33519, 33521-33523. Look at the first set of codes, 33517-33519. These codes fall within the subcategory for **Combined arterial-venous** grafting for coronary bypass.



## Coronary Artery Bypass Graft (CABG)

- Anomalous Artery 33503, 33504
- Arterial Bypass 33533–33536
- Arterial Bypass Graft
  - Harvest
    - Endoscopic 33509
    - Open 35600
- Arterial-Venous Bypass 33517–33519, 33521–33523
  - Harvest 35500
- Beta Blocker Administered 4115F
- Harvest
  - Upper Extremity Artery
    - Endoscopic 33509
    - Open 35600
  - Upper Extremity Vein 35500
- Internal Mammary Artery Graft 4110F
- Reoperation 33530
- Revascularization 92937, 92938, 92941, 92943, 92944
- Venous Bypass 33510–33516
  - Harvest 35500
- Ventricular Restoration 33548

- + 33517 Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)
  - CPT Changes: An Insider's View 2000, 2008
  - CPT Assistant Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18
  - (Use 33517 in conjunction with 33533-33536)
- + 33518 2 venous grafts (List separately in addition to code for primary procedure)
  - CPT Changes: An Insider's View 2008
  - CPT Assistant Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
  - (Use 33518 in conjunction with 33533-33536)
- + 33519 3 venous grafts (List separately in addition to code for primary procedure)
  - CPT Changes: An Insider's View 2008
  - CPT Assistant Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
  - (Use 33519 in conjunction with 33533-33536)



# Rationale Continued

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## Combined Arterial-Venous Grafting for Coronary Bypass

The following codes are used to report coronary artery bypass procedures using venous grafts and arterial grafts during the same procedure. These codes may NOT be used alone.

To report combined arterial-venous grafts it is necessary to report two codes: (1) the appropriate combined arterial-venous graft code (33517-33523); and (2) the appropriate arterial graft code (33533-33536).

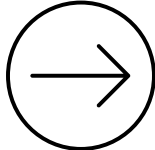
- + 33517 Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)
  - CPT Changes: An Insider's View 2000, 2008
  - CPT Assistant Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18
  - (Use 33517 in conjunction with 33533-33536)

The instructions say to report two codes: 1) a code from 33517-33523 for the combined arterial-venous graft code (33517-33523) and 2) the appropriate arterial graft code (33533-33536). 33517-33523 are add-on codes to report the venous portion of the graft. In this case, one vein was grafted making +33517 correct. Below 33517, there is a **parenthetical instruction** to report +33517 **in conjunction** with 33533-33536.



## Rationale Continued

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- 
- 33533 Coronary artery bypass, using arterial graft(s); **single** arterial graft
    - ➔ *CPT Changes: An Insider's View 2000*
    - ➔ *CPT Assistant* Winter 92:12, Nov 99:18, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18
  - 33534 **2** coronary arterial grafts
    - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
  - 33535 **3** coronary arterial grafts
    - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
  - 33536 **4** or more coronary arterial grafts
    - ➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18

Code selection is based on the number of **arterial** grafts. In this case, three **arteries** were grafted making 33535 the correct code.



## Rationale Continued

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Procurement of the artery for grafting is included in the description of the work for 33533-33536 and should not be reported as a separate service or co-surgery, except when an upper extremity artery (eg, radial artery) is procured. **To report harvesting of an upper extremity artery, use 33509 or 35600.** To report harvesting of an upper extremity vein, use 35500 in addition to the bypass procedure. To report harvesting of a femoropopliteal vein segment, report 35572 in addition to the bypass procedure. When surgical assistant performs arterial and/or venous graft procurement, add modifier 80 to 33517-33523, 33533-33536, as appropriate. For percutaneous ventricular assist device insertion, removal, repositioning, see 33990, 33991, 33992, 33993, 33995, 33997.

The instructions for arterial grafting for coronary artery bypass indicate that the procurement (harvesting) of the **arterial** grafts is **included** in this set of codes **EXCEPT** when an **upper extremity artery** is harvested. In this case, the **radial artery** was used, which is an **upper extremity artery**. To report this, 33509 or 35600 is reported depending on if the procedure is **open or endoscopic**. The radial artery was harvested in an **open** procedure making 35600 the correct code. One last code needs to be reported. This is a reoperation. Look in the CPT® Index for Coronary Artery Bypass Graft (CABG)/Reoperation and you are referred to 33530. This is an add-on code reported to indicate this is a reoperation more than one month after the original procedure. CPT® codes 33530 and 33517 are add-on codes, so modifier 51 is not appended. CPT® code 35600 is modifier 51 exempt.

- ⦿ **35600** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, **open**
  - ➔ *CPT Changes: An Insider's View* 2001, 2008, 2022
  - ➔ *CPT Assistant* Apr 07:12
  - (For endoscopic approach, see 33508, 33509, 37500)
  - (For bilateral procedure, report 35600 with modifier 50)



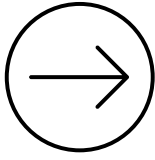
# Rationale Continued

One last code needs to be reported. **This is a reoperation.** Look in the CPT® Index for Coronary Artery Bypass Graft (CABG)/Reoperation and you are referred to 33530. This is an add-on code reported to indicate this is a **reoperation more than one month after the original procedure.** CPT® codes 33530 and 33517 are add-on codes, so modifier 51 is not appended. CPT® code 35600 is modifier 51 exempt.

### Coronary Artery Bypass Graft (CABG)

- Anomalous Artery 33503, 33504
- Arterial Bypass 33533–33536
- Arterial Bypass Graft
  - Harvest
    - Endoscopic 33509
    - Open 35600
- Arterial-Venous Bypass 33517–33519, 33521–33523
  - Harvest 35500
- Beta Blocker Administered 4115F
  - Harvest
    - Upper Extremity Artery
      - Endoscopic 33509
      - Open 35600
    - Upper Extremity Vein 35500
- Internal Mammary Artery Graft 4110F
  - Reoperation 33530
- Revascularization 92937, 92938, 92941, 92943, 92944
- Venous Bypass 33510–33516
  - Harvest 35500
- Ventricular Restoration 33548

**+ 33530** Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation (List separately in addition to code for primary procedure)  
 ➔ *CPT Assistant* Winter 90:6, Fall 91:5, Winter 92:13, Apr 01:7, Jul 01:11, Feb 05:13-14, Jan 07:7, Feb 11:8  
 (Use 33530 in conjunction with 33390, 33391, 33404-33496, 33510-33523, 33533, 33534, 33535, 33536, 33863)







## Practice Question Answer

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A physician performs a four-vessel autogenous (one venous, three arterial) coronary bypass graft on a patient who had a previous CABG two years ago. The saphenous vein, radial artery (harvested in an open procedure), and the left and right internal mammary arteries were utilized.

What CPT® coding is reported for this procedure?

CPT: 33535, 33530, 35600, 33517

- 33535** 3 coronary arterial grafts  
➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18
- + 33530** Reoperation, coronary artery bypass procedure or valve procedure, more than 1 month after original operation (List separately in addition to code for primary procedure)  
➔ *CPT Assistant* Winter 90:6, Fall 91:5, Winter 92:13, Apr 01:7, Jul 01:11, Feb 05:13-14, Jan 07:7, Feb 11:8  
(Use 33530 in conjunction with 33390, 33391, 33404-33496, 33510-33523, 33533, 33534, 33535, 33536, 33863)
- ⊖ 35600** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, open  
➔ *CPT Changes: An Insider's View* 2001, 2008, 2022  
➔ *CPT Assistant* Apr 07:12  
(For endoscopic approach, see 33508, 33509, 37500)  
(For bilateral procedure, report 35600 with modifier 50)
- + 33517** Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)  
➔ *CPT Changes: An Insider's View* 2000, 2008  
➔ *CPT Assistant* Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18  
(Use 33517 in conjunction with 33533-33536)



## Practice Question 2

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Preoperative Diagnosis: Coronary artery disease associated with congestive heart failure. In addition, the patient has diabetes and massive obesity.

Postoperative Diagnosis: Same

Anesthesia: General endotracheal

Incision: Median sternotomy

Indications: The patient had presented with severe congestive heart failure associated with her severe diabetes. She had significant coronary artery disease, consisting of a chronically occluded right coronary artery but a very important large obtuse marginal artery coming off as the main circumflex system.

She also has a left anterior descending artery which has moderate disease and this supplies quite a bit of collateral to her right system. The decision was therefore made to perform a coronary artery bypass grafting procedure particularly because she is so symptomatic. The patient was brought to the operating room.

Description of Procedure: The patient was brought to the operating room and placed in supine position. Myself, the operating surgeon was scrubbed throughout the entire operation. After the patient was prepared, median sternotomy incision was carried out and conduits were taken from the left arm as well as the right thigh. The patient weighs almost three hundred pounds and with her obesity there was some concern as to taking down the left internal mammary artery. Because the radial artery appeared to be a good conduit, she should have an arterial graft to the left anterior descending artery territory. She was cannulated after the aorta and atrium were exposed and after full heparinization.

Attention was turned to the coronary arteries. The first obtuse marginal artery was a very large target and the vein graft to this target indeed produced an excellent amount of flow. Proximal anastomosis was then carried out to the foot of the aorta. The left anterior descending artery does not have severe disease but is also a very good target, and the radial artery was anastomosed to this target, and the proximal anastomosis was then carried out to the root of the aorta.

Sternal closure was then done using wires. The subcutaneous layers were closed using Vicryl suture. The skin was approximated using staples. What CPT® coding is reported?



## Practice Question 2: Breakdown

Description of Procedure: The patient was brought to the operating room and placed in supine position. Myself, the operating surgeon was scrubbed throughout the entire operation. After the patient was prepared, median sternotomy incision was carried out and conduits were taken from the left arm as well as the right thigh. The patient weighs almost three hundred pounds and with her obesity there was some concern as to **taking down the left internal mammary artery**. Because the radial artery appeared to be a good conduit, she should have an arterial graft to the left anterior descending artery territory. She was cannulated after the aorta and atrium were exposed and after full heparinization.

The first obtuse marginal artery was a very large target and the **vein graft** to this target indeed produced an excellent amount of flow. Proximal anastomosis was then carried out to the foot of the aorta. The left anterior descending artery does not have severe disease but is also a very good target, and the **radial artery** was anastomosed to this target, and the proximal anastomosis was then carried out to the root of the aorta.

1. **How many grafts were performed? 2**
2. **How many were arterial? Which artery (ies)? 1**
3. **How many were venous? Which vein(s)? 1**
4. **How were the grafts harvested? Open or endoscopic? Open**
5. Did the patient have a previous CABG? No



# Rationale

One **arterial** graft and one **vein** graft was performed.

Look in the CPT® Index for Coronary Artery Bypass Graft (CABG)/**Arterial-Venous** Bypass for range 33517-33519.

## Coronary Artery Bypass Graft (CABG)

Anomalous Artery 33503, 33504

Arterial Bypass 33533–33536

Arterial Bypass Graft

Harvest

Endoscopic 33509

Open 35600

Arterial-Venous Bypass 33517–33519, 33521–33523

Harvest 35500

Beta Blocker Administered 4115F

Harvest

Upper Extremity Artery

Endoscopic 33509

Open 35600

Upper Extremity Vein 35500

Internal Mammary Artery Graft 4110F

Reoperation 33530

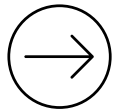
Revascularization 92937, 92938, 92941, 92943, 92944

Venous Bypass 33510–33516

Harvest 35500

Ventricular Restoration 33548

- 33517 Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)  
➡ CPT Changes: An Insider's View 2000, 2008  
➡ CPT Assistant Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18  
(Use 33517 in conjunction with 33533-33536)
- 33518 2 venous grafts (List separately in addition to code for primary procedure)  
➡ CPT Changes: An Insider's View 2008  
➡ CPT Assistant Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18  
(Use 33518 in conjunction with 33533-33536)
- 33519 3 venous grafts (List separately in addition to code for primary procedure)  
➡ CPT Changes: An Insider's View 2008  
➡ CPT Assistant Fall 91:5, Winter 92:13, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18  
(Use 33519 in conjunction with 33533-33536)





## Rationale Continued

Next, look for **Arterial** Bypass which directs you to 33533-33536. This was a **combination arterial-venous** graft with **one vein** graft (33517) and one **arterial** graft (33533).



### Coronary Artery Bypass Graft (CABG)

Anomalous Artery 33503, 33504

Arterial Bypass 33533–33536

Arterial Bypass Graft

Harvest

Endoscopic 33509

Open 35600

Arterial-Venous Bypass 33517–33519, 33521–33523

Harvest 35500

Beta Blocker Administered 4115F

Harvest

Upper Extremity Artery

Endoscopic 33509

Open 35600

Upper Extremity Vein 35500

Internal Mammary Artery Graft 4110F

Reoperation 33530

Revascularization 92937, 92938, 92941, 92943, 92944

Venous Bypass 33510–33516

Harvest 35500

Ventricular Restoration 33548



**33533** Coronary artery bypass, using arterial graft(s); **single** arterial graft

➔ *CPT Changes: An Insider's View* 2000

➔ *CPT Assistant* Winter 92:12, Nov 99:18, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18

**33534** **2** coronary arterial grafts

➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

**33535** **3** coronary arterial grafts

➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

**33536** **4** or more coronary arterial grafts

➔ *CPT Assistant* Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18



## Rationale Continued

Procurement of the artery for grafting is included in the description of the work for 33533-33536 and should not be reported as a separate service or co-surgery, except when an upper extremity artery (eg, radial artery) is procured. **To report harvesting of an upper extremity artery, use 33509 or 35600.** To report harvesting of an upper extremity vein, use 35500 in addition to the bypass procedure. To report harvesting of a femoropopliteal vein segment, report 35572 in addition to the bypass procedure. When surgical assistant performs arterial and/or venous graft procurement, add modifier 80 to 33517-33523, 33533-33536, as appropriate. For percutaneous ventricular assist device insertion, removal, repositioning, see 33990, 33991, 33992, 33993, 33995, 33997.

The **upper extremity radial artery** graft procurement (35600) is separately reportable.  
CPT® code 35600 is modifier 51 exempt.  
Code +33517 is an add-on code and is modifier 51 exempt.

⊙ **35600** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, **open**

➔ *CPT Changes: An Insider's View* 2001, 2008, 2022

➔ *CPT Assistant* Apr 07:12

(For endoscopic approach, see 33508, 33509, 37500)

(For bilateral procedure, report 35600 with modifier 50)



## Practice Question 2 Answer

What CPT® coding is reported for this procedure?

CPT: 33533, 35600, 33517

**33533** Coronary artery bypass, using arterial graft(s); single arterial graft

→ CPT Changes: *An Insider's View* 2000

→ CPT Assistant Winter 92:12, Nov 99:18, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18

⊖ **35600** Harvest of upper extremity artery, 1 segment, for coronary artery bypass procedure, open

→ CPT Changes: *An Insider's View* 2001, 2008, 2022

→ CPT Assistant Apr 07:12

(For endoscopic approach, see 33508, 33509, 37500)

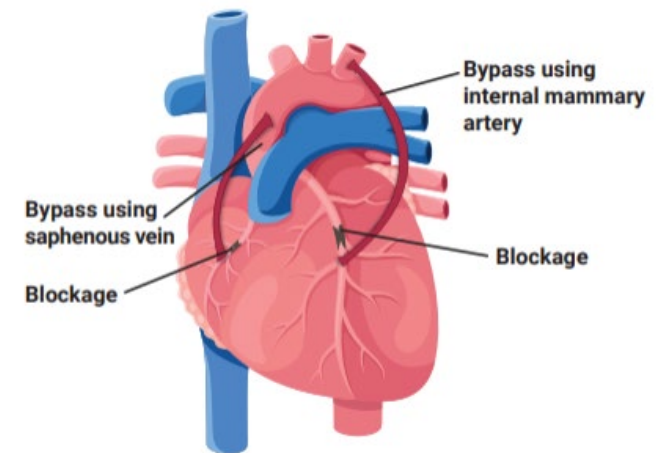
(For bilateral procedure, report 35600 with modifier 50)

+ **33517** Coronary artery bypass, using venous graft(s) and arterial graft(s); single vein graft (List separately in addition to code for primary procedure)

→ CPT Changes: *An Insider's View* 2000, 2008

→ CPT Assistant Fall 91:5, Winter 92:13, Nov 99:18, Apr 01:7, Feb 05:14, Dec 21:18

(Use 33517 in conjunction with 33533-33536)



## Practice Question 3

Patient undergoes a **three artery** CABG. A surgical assistant procures the artery

What CPT® coding is reported for the assistant surgeon.

1. **How many grafts were performed?** 3
2. **How many were arterial? Which artery (ies)?** 3
3. How many were venous? Which vein(s)? 0
4. How were the grafts harvested? Open or endoscopic? n/a
5. Did the patient have a previous CABG? n/a

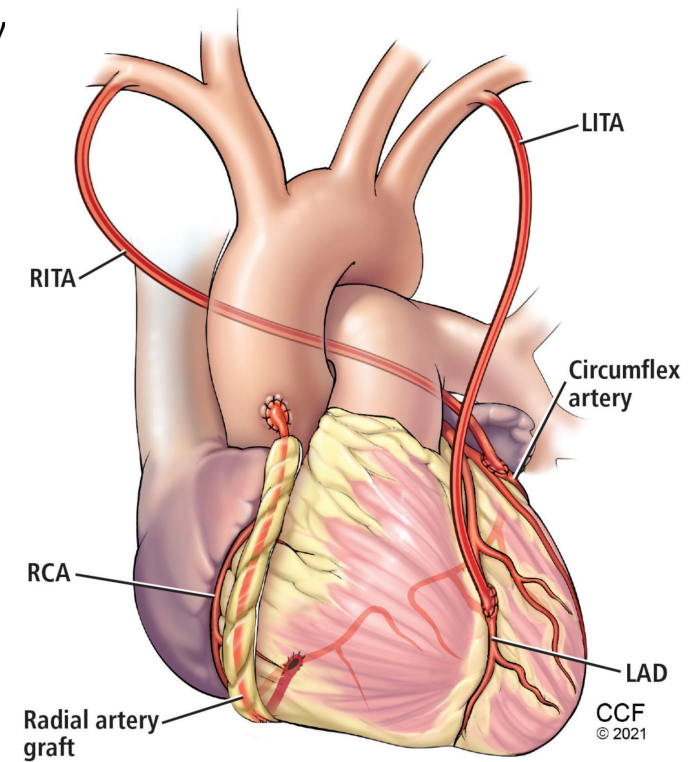


Illustration for visual purposes only, not representative of the procedure in this example.



# Rationale

Look in the CPT® Index for Coronary Artery Bypass Graft (CABG)/**Arterial** Bypass referring you to 33533-33536. There are **three arterial grafts**; therefore, 33535 is correct.



## Coronary Artery Bypass Graft (CABG)

Anomalous Artery 33503, 33504

Arterial Bypass 33533–33536

Arterial Bypass Graft

Harvest

Endoscopic 33509

Open 35600

Arterial-Venous Bypass 33517–33519, 33521–33523

Harvest 35500

Beta Blocker Administered 4115F

Harvest

Upper Extremity Artery

Endoscopic 33509

Open 35600

Upper Extremity Vein 35500

Internal Mammary Artery Graft 4110F


Reoperation 33530

Revascularization 92937, 92938, 92941, 92943, 92944

Venous Bypass 33510–33516

Harvest 35500

Ventricular Restoration 33548



33533 Coronary artery bypass, using arterial graft(s); **single** arterial graft

➔ CPT Changes: An Insider's View 2000

➔ CPT Assistant Winter 92:12, Nov 99:18, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18

33534 **2** coronary arterial grafts

➔ CPT Assistant Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

33535 **3** coronary arterial grafts

➔ CPT Assistant Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

33536 **4** or more coronary arterial grafts

➔ CPT Assistant Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Nov 14:14, Dec 21:18



## Rationale Continued

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Procurement of the **arterial** conduit is bundled into 33535 and reported with modifier 80 for the surgical assistant according to the guidelines.

35600 is used for harvesting an **artery** of the upper extremity; however, there is no mention of this in the report. The guidelines in the codebook above 33535 instruct you to use modifier 80 when a surgical assistant performs an arterial graft procurement.

**Procurement of the artery for grafting is included** in the description of the work for 33533-33536 and should not be reported as a separate service or co-surgery, **except when an upper extremity artery** (eg, radial artery) is procured. To report harvesting of an upper extremity artery, use 33509 or 35600. To report harvesting of an upper extremity vein, use 35500 in addition to the bypass procedure. To report harvesting of a femoropopliteal vein segment, report 35572 in addition to the bypass procedure. When surgical assistant performs arterial and/or venous graft procurement, add modifier 80 to 33517-33523, 33533-33536, as appropriate. For percutaneous ventricular assist device insertion, removal, repositioning, see 33990, 33991, 33992, 33993, 33995, 33997.

**80 Assistant Surgeon:** Surgical assistant services may be identified by adding modifier 80 to the usual procedure number(s).



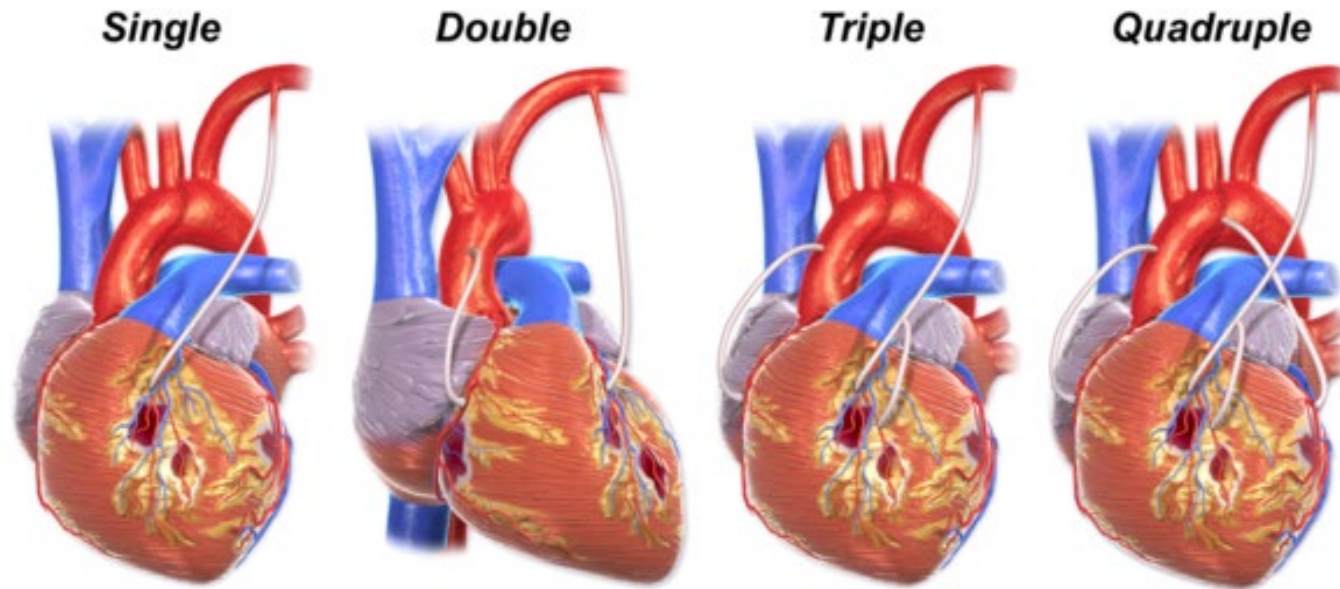
## Practice Question 3 Answer

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What CPT® coding is reported for this procedure?

CPT: 33535-80

33535 3 coronary arterial grafts  
→ CPT Assistant Winter 92:12, Apr 01:7, Feb 05:14, Jan 07:7, Mar 07:1, Dec 21:18

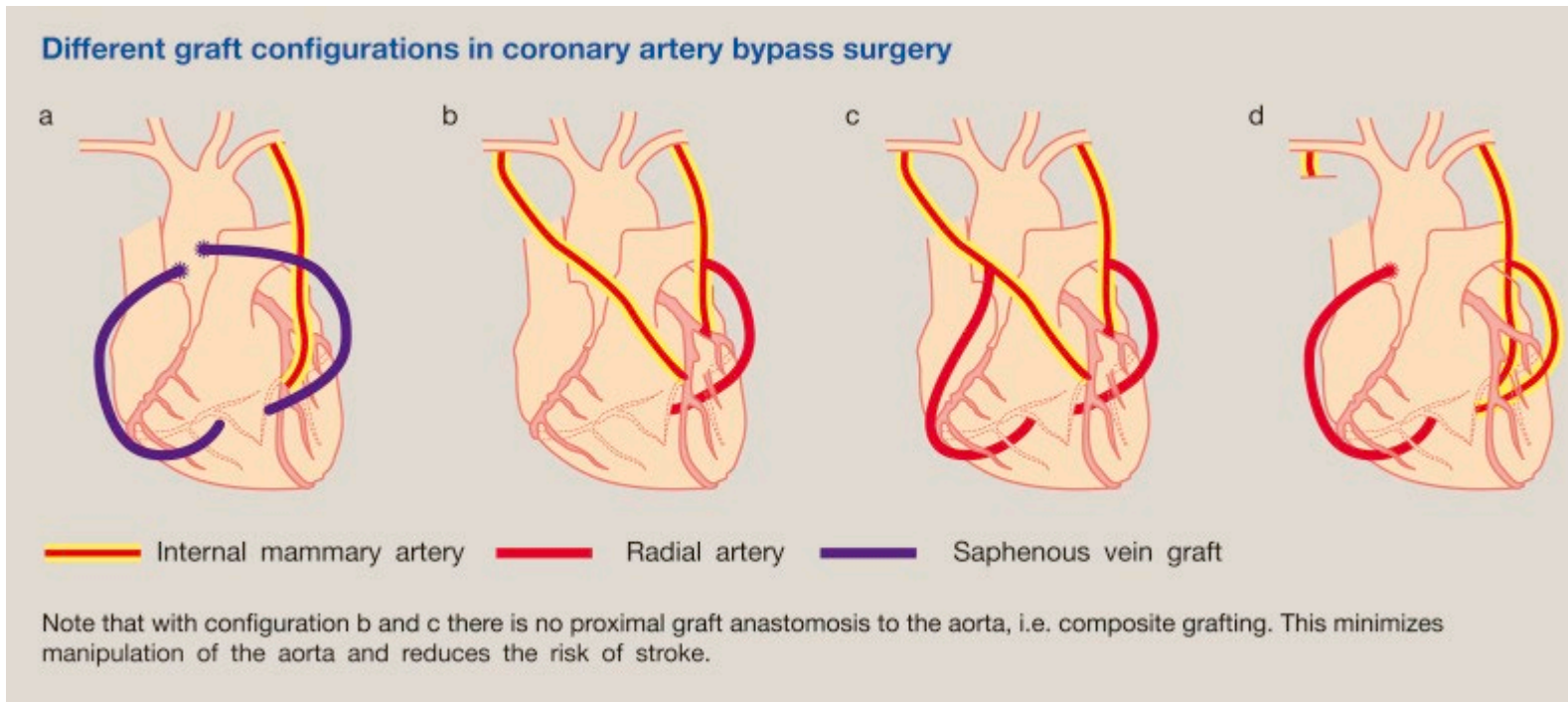


**Coronary Artery Bypass Graft (CABG)**

# Reminder!

When reading the documentation keep these questions in mind.

1. How many grafts were performed?
2. How many were **arterial**? Which **artery** (ies)?
3. How many were **venous**? Which **vein**(s)?
4. How were the grafts harvested? Open or endoscopic?
5. Did the patient have a previous CABG? Within the last 30 days?







## References

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