

**OLIVE VIEW-UCLA MEDICAL CENTER/HEALTH CENTERS
ANGIOGRAPHY SUITE/CARDIOLOGY DIVISION
POLICY & PROCEDURE
PERCUTANEOUS CORONARY INTERVENTION**

**NUMBER: 4986
VERSION: 1**

SUBJECT/TITLE: PERCUTANEOUS CORONARY INTERVENTION

POLICY:

I. Definition of Service

PCIs are procedures used to treat blockages in coronary arteries. The procedures can involve an array of techniques, including, but not limited to, angioplasty, stenting, intravascular ultrasound, thrombus aspiration, fractional flow reserve measurement, and embolic protection. All procedures will be performed by privileged physicians.

Balloon angioplasty. During this procedure, a specially designed catheter with a small balloon tip is guided to the point of narrowing in the artery. Once in place, the balloon is inflated to compress the fatty matter into the artery wall and stretch the artery open to increase blood flow to the heart.

Coronary stent placement. Balloon angioplasty is usually followed by coronary stent placement. During this procedure, a specially designed catheter with a small metal tube called a coronary stent is guided to the point of narrowing in the artery. Typically this is done following balloon angioplasty. Once the stent is in the correct position, the stent delivery balloon is inflated to compress the stent into the artery wall and stretch the artery open to increase blood flow to the heart.

Intravascular Ultrasound (IVUS) is a diagnostic modality incorporating the use of a highly specialized ultrasonic catheter and corresponding compatible imaging system. IVUS provides “real time” imaging of the coronary arteries and can be of great assistance in quantitative coronary analysis and result outcomes for coronary interventional procedures.

A. Indications

1. Emergent PCI: patients with STEMI (including true posterior MI) or MI with new or presumably new LBBB who can undergo PCI of the infarct artery within 12 hours of symptom onset, if performed in a timely fashion (balloon inflation within 90 minutes of presentation (as per ACC guidelines)

a. Primary PCI should be performed as quickly as possible with a goal of a medical contact-to-balloon or door-to-balloon interval of within 90 minutes.

b. It is reasonable to perform primary PCI for patients with onset of symptoms within the prior 12 to 24 hours and 1 or more of the following:

- i. Severe CHF
- ii. Hemodynamic or electrical instability
- iii. Persistent ischemic symptoms.

2. Urgent PCI: is recommended (as per ACC guidelines) with a class I indication for patients with Unstable Angina (UA)/Non ST-segment elevation myocardial infarction (NSTEMI) who have no serious comorbidity and who have coronary lesions amenable to PCI and any of the following high-risk features:

- a. Recurrent angina or ischemia at rest or with low-level activities despite intensive medical therapy
- b. Elevated cardiac biomarkers (TnT or TnI)
- c. New or presumably new ST-segment depression
- d. Signs or symptoms of HF or new or worsening mitral regurgitation
- e. High-risk findings from noninvasive testing
- f. Hemodynamic instability
- g. Sustained ventricular tachycardia
- h. Prior PCI within 6 months
- i. Prior CABG
- j. High risk score (e.g., TIMI, GRACE)
- k. Reduced left ventricular function (LVEF less than 40%)

B. Contraindications

1. Lesion not amenable to PCI
2. Elective PCI
2. High-risk lesion with increased risk of perforation

C. Risk of Procedure

1. Procedural Mortality is dependent on clinical factors. However, average mortality rate in literature is 0.5-1.7% (Andersen et al, JACC 2002). Mortality in high-risk STEMI patients with cardiogenic shock can be up to 50%
2. Need for emergency cardiothoracic surgery: 0.14% (Seshadri et al, Circulation 2002).
3. Stroke: 0.07-0.4% (Fuchs et al, Circulation 2002)
4. Vascular complications including but not limited to: hematoma, pseudoaneurysm, retroperitoneal hemorrhage, peripheral artery dissection, 1-3% (Blankenship et al, AJC 1998)
5. Myocardial infarction: 1% (Braunwald, 2009)
6. Allergy to contrast: <1%. (Braunwald, 2009)
7. Contrast-induced nephropathy: 1-2% (Braunwald, 2009)

PROCEDURE:

II. Definition of Procedure

A. Level of Personnel

Attending Cardiology Faculty member with privileges to perform procedure, personnel qualified to administer conscious sedation (anesthesiologist, nurse anesthetist, or R.N. with M.D. orders), personnel qualified to monitor the patient during the procedure (anesthesiologist, nurse anesthetist, or R.N.), radiology technician to operate fluoroscopy equipment, cardiovascular technician for hemodynamic monitoring and recording.

B. Equipment/Medications

1. Equipment

- a. Appropriate sterile environment in catheterization laboratory. Appropriate supplies for maintaining sterile procedure.
- b. Fluoroscopy equipment
- c. Equipment to monitor blood pressure, heart rhythm, oxygen saturation
- d. Two “crash carts” available, at least one in the room. Both carts with tested, functioning external defibrillators.
- e. PCI supplies, including but not limited to: guide catheters, coronary wires, coronary balloons, stents (bare-metal and drug-eluting), IVUS equipment, embolic protection equipment.
- f. ACT Machine.

2. Medications

- a. Topical injectable anesthesia
- b. Various agents for conscious sedation at the discretion of the Attending Cardiologist, Anesthesiologist, or Nurse Anesthetist
- c. Nitroglycerin, calcium channel blockers, and adenosine available for intracoronary administration
- d. Heparin, glycoprotein IIb/IIIa inhibitors, and bivalirudin available for intravenous and/or intra-arterial administration.
- e. Medications found in standard crash cart

C. General Considerations

1. Emergent or urgent PCI will be performed on inpatients. Any elective PCI cases on outpatient catheterization cases will be referred to a center with cardiac surgical backup for elective PCI.
2. Patients will require a monitored bed for at least 18-24 hours post procedure.
3. The Cardiology Service will determine the level of inpatient care required on an individual basis.

D. Pre-Procedure

SUBJECT/TITLE: PERCUTANEOUS CORONARY INTERVENTION
Policy Number: 4986
Page Number: 4

1. Pre-procedure patient instructions will be given by a physician or nurse knowledgeable in the procedure.
1. Consent will be obtained by a physician.
2. Patient will be NPO for 6 hours prior to procedure if possible. In setting of emergent PCI, this may not be possible.
3. There will be verification prior to the procedure of patient identification, NPO status, signed consent form, and readiness of resuscitation equipment.

E. During the Procedure

1. Patient will be monitored with automatic blood pressure cuff or intra-arterial line as appropriate, continuous ECG monitor, and pulse oximetry. Monitoring of vital signs, O₂, ECG rhythm, and general well being will be continuous, and documented. The Attending Cardiologist will be immediately alerted to any abnormality or potential abnormality; particularly hypotension, respiratory depression, O₂ desaturation, arrhythmia.
2. Intravenous anesthesia, conscious sedation, will be administered by M.D., R.N. with M.D. order, or nurse anesthetist.
3. Please see attached protocols for angioplasty and stenting for specific features of each procedure.
4. At termination of PCI, decision will be made regarding whether an access closure device can be deployed based on angiographic and clinical information. If closure device not used, ACT will be determined at end of procedure and sheath will be sutured into place.

F. Post Procedure

1. After termination of the PCI, the patient will be observed on a monitored bed. This will be done as per Conscious Sedation Protocol with monitoring of vital signs etc. and utilizing the Aldrete Score.
2. When the patient is fully recovered and appropriate for transfer, he/she will be taken to a monitored bed.
3. If sheath sutured, decision to remove sheath will be based on anticoagulant used.
 - a. If bivalirudin used, Sheath will be removed 4 hours after discontinuation of bivalirudin.
 - b. If heparin used, ACT will be checked hourly starting 3 hours post-procedure. Once ACT <170, can remove sheath

SUBJECT/TITLE: PERCUTANEOUS CORONARY INTERVENTION
Policy Number: 4986
Page Number: 5

III Quality Assessment

A. Infection Control

Universal infection precautions are to be observed.

A. Procedure Complications

All procedures, complications, and statistical data including door to balloon time will be maintained and reviewed periodically.

A. Staff Qualifications and Privileging

The Attending Cardiologist must have Hospital Staff Privileges in good standing.

References:	
Approved by: Robin Wachsner (Chief of Cardiology)	Date: 11/22/2011
Review Date: 07/11/2017	Revision Date:
Next Review Date: 07/11/2020	
Distribution: Cardiology, Cardiology/Cath Lab	
Original Date: Not Set	