Cohere Medical Policy - Coronary Atherectomy

Clinical Guidelines for Medical Necessity Review

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Important Notices

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Guideline Information:

Disease Area: Cardiovascular Disease

Guideline Name: Coronary Atherectomy

Date of last literature review: 10/24/2024
Document last updated: 01/02/2025
Type: [**X**] Adult (18+ yo) | [**X**] Pediatric (0-17yo)

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Service: Coronary Atherectomy

Recommended Clinical Approach

Coronary atherectomy is a percutaneous coronary intervention (PCI) that removes or ablates atheromatous (composed of fatty material) coronary plaque by cutting, drilling, shaving, pulverizing, lasing, or sanding to achieve improved compliance of the wall of the blood vessel and patency of the treated lumen. Three atherectomy devices are approved and are characterized by their mode of action: 1) rotational (RotaPro, Boston Scientific); 2) orbital (Diamondback, CSI); and 3) excimer laser (ELCA, Phillips). These devices are typically used as adjuncts to balloon angioplasty and stenting procedures and are rarely used as stand-alone treatments. They improve procedural success in patients with fibrotic and/or moderate to severely calcified lesions and in lesions that are unable to be crossed or adequately expanded with a balloon.[1-7] Atherectomy may also be useful to improve procedural success in eccentric lesions, lesions that are due to in-stent restenosis (rotational or laser)[8-11], aorto-ostial or branch ostial (bifurcation) lesions, and in under-expanded stents (rotational or laser).[11-13] Additional procedures sometimes used with atherectomy or to treat similar lesions include atherectomy devices (cutting and scoring balloons) and intracoronary lithotripsy.[14-17]

In patients with multivessel coronary artery disease (CAD) with multiple vessels requiring treatment, treatment of additional coronary lesions may be needed over several procedures. Staging may be needed if: 1) the patient has chronic kidney disease and it is necessary to limit contrast dose; or 2) if the initial procedure reached the recommended limit of contrast dose or radiation exposure; or 3) if there is a complication during the initial procedure that requires a delay in treatment of subsequent lesions.

An atherectomy is usually performed as a single service; however, under certain circumstances, one or more additional services may be needed within 1-2 months.

Medical Necessity Criteria

Indications

- ➔ A **coronary atherectomy** is considered appropriate if **ANY** of the following is **TRUE**:
  - ◆ The patient is undergoing percutaneous coronary intervention (PCI) and **ANY** of the following is **TRUE**:
    - After successful wire crossing to treat balloon uncrossable lesions; **OR**
    - Lesions in which the balloon fails to expand or dilate the lesion (including chronic total occlusions [CTOs]) to facilitate successful PCI)[6,10-11,18]; **OR**
    - Rotational atherectomy to treat **ANY** of the following:
      - PCI of fibrotic or heavily calcified lesions to achieve plaque modification to improve procedural success [1-2-3,7,10-11]; **OR**
      - In-stent restenosis lesions to facilitate successful PCI [8-11,18]; **OR**
      - Aorto ostial or branch ostial stenoses (bifurcations) to debulk lesions and facilitate successful PCI[10-11,18-19]; **OR**
      - Under-expanded stents in lesions previously treated with stents to allow full expansion and reduce subsequent cardiac events (stent thrombosis or restenosis)[10-13]; **OR**
    - Orbital atherectomy for a patient undergoing PCI of fibrotic or heavily calcified lesions to achieve plaque modification to improve procedural success [1,4-6,18]; **OR**
    - Excimer laser atherectomy to treat **ANY** of the following:
      - In-stent restenosis lesions to facilitate successful PCI [8-11,18];
      - Aorto ostial or branch ostial stenoses (bifurcations) to debulk lesions and facilitate successful PCI[10-,11,18-,19]; **OR**
      - Under-expanded stents in lesions previously treated with stents to allow full expansion and reduce subsequent cardiac events (stent thrombosis or restenosis)[10-13]; **OR**
      - Saphenous vein graft lesions or to treat large thrombus burden in native coronary arteries[18]; **OR**
      - The patient is undergoing PCI of fibrotic or heavily calcified lesions to achieve plaque modification to improve procedural success.[1,4-6,18]

Non-Indications

- ➔ **A coronary atherectomy** is not considered appropriate if **ANY** of the following is **TRUE**:
  - ◆ The patient does not have an indication for coronary artery revascularization; **OR**
  - ◆ The facility where the procedure is to be performed does not meet **ANY** of the following[20]:
    - There is no emergency cardiac surgery backup; **OR**
    - Absence of a transfer agreement with a cardiac surgery facility; **OR**
    - Absence of a proven plan to transfer to a facility with cardiac surgery back up within an acceptable time frame; **OR**
  - ◆ The procedure is intended to be performed in the setting of a significant coronary artery dissection; **OR**
  - ◆ The lesion is not successfully crossed by a guidewire; **OR**
  - ◆ The patient is undergoing routine atherectomy and **ANY** of the following is **TRUE**:
    - The lesion is not heavily calcified by angiography; **OR**
    - Does not meet the criteria by intravascular ultrasound (IVUS) or optical coherence tomography (OCT) that predicts non-dilatable lesions or impaired stent delivery and expansion (e.g., calcium thickness greater than 670 um by OCT or greater than 270-degree arc of calcium by IVUS or OCT or other proposed scoring system that predicts stent under expansion)[21-22]; **OR**
    - Has not been first treated with full inflation and expansion of an appropriately sized balloon; **OR**
  - ◆ Orbital atherectomy is performed in **ANY** of the following:
    - A previously stented lesion (in-stent restenosis); **OR**
    - A saphenous vein graft lesion; **OR**
    - The setting of large clot burden; **OR**
  - ◆ Rotational atherectomy is performed in **ANY** of the following:
    - A saphenous vein graft lesion; **OR**
    - The setting of large clot burden; **OR**
  - ◆ The patient can be managed medically; **OR**
  - ◆ The patient has **ANY** of the following:

- Presence of comorbid conditions (e.g., advanced malignancy, active bleeding, acute renal failure, acute systemic infections); **OR**
- Stable coronary artery disease (CAD) and chronic kidney disease (CKD), and the patient is asymptomatic with no compelling indication.[1]

Level of Service Criteria

Inpatient or outpatient

Procedure Codes (CPT/HCPCS)

CPT/HCPCS Code	Code Description/Definition
92924	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; single major coronary artery or branch
92925	Percutaneous transluminal coronary atherectomy, with coronary angioplasty when performed; each additional branch of a major coronary artery
92933	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch
92934	Percutaneous transluminal coronary atherectomy, with intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery
92944	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (list separately in addition to code for primary procedure)
C9602	Percutaneous transluminal coronary atherectomy, with drug eluting intracoronary stent, with coronary angioplasty when performed; single major coronary artery or branch

C9603	Percutaneous transluminal coronary atherectomy, with drug-eluting intracoronary stent, with coronary angioplasty when performed; each additional branch of a major coronary artery
C9607	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; single vessel
C9608	Percutaneous transluminal revascularization of chronic total occlusion, coronary artery, coronary artery branch, or coronary artery bypass graft, any combination of drug-eluting intracoronary stent, atherectomy and angioplasty; each additional coronary artery, coronary artery branch, or bypass graft (list separately in addition to code for primary procedure)
C1724	Catheter, transluminal atherectomy, rotational

Medical Evidence

Khan et al. (2019) conducted a meta-analysis to compare the safety and efficacy of rotational atherectomy (RA) performed using trans-radial (TR) and transfemoral (TF) access to evaluate the widespread reluctance to use TR access for complex percutaneous coronary intervention (PCI), including RA, for heavily calcified coronary lesions. The meta-analysis includes 5 retrospective studies with 3315 patients undergoing RA via TR access and 5838 patients undergoing RA via TF access. TR access was associated with lower major access site bleeding (OR: 0.45, 95% CI: 0.31-0.67, *P* less than 0.001) and radiation exposure (MD: -16.1, 95% CI: -25.4--6.7 Gy cm^2, *P* equal to 0.0007). No significant differences were observed in all-cause in-hospital mortality, major adverse cardiac events (MACE), stent thrombosis, myocardial infarction, hospital stay, procedure time, or procedure success between the two groups.[24]

Schwarz et al. (2022) conducted a systematic review and meta-analysis to compare periprocedural characteristics and outcomes of planned atherectomy (PA), bailout atherectomy (BA), and RA. PA is defined as RA performed immediately prior to balloon pre-dilation, while BA is defined as RA after failure to expand a pre-dilating balloon. Pooling 2120 patients from 5 studies, the authors found no difference in procedural success (PA vs BA risk ratio [RR] 1.03; 95% confidence interval [95% CI] 0.99–1.07), major adverse cardiovascular events on follow-up (RR 1.04, 95% CI 0.62–1.74), death (RR 0.98, 95% CI 0.59–1.64), myocardial infarction (MI) (RR 1.16, 95% CI 0.62–2.18), target vessel re-vascularization (RR 1.40, 95% CI 0.83 to 2.36), stroke (RR 1.50, 95% CI 0.46–4.86), or stent thrombosis (RR 0.82, 95% CI 0.06–10.74). However, compared to BA, PA was associated with shorter procedural times (mean difference [MD] -25.88 min, 95% CI -35.55 to -16.22), fewer coronary dissections (RR 0.50, 95% CI 0.26–0.99), fewer stents (MD -0.20, 95% CI -0.29 to -0.11), and a trend toward less periprocedural MI (RR 0.77, 95% CI 0.54–1.11).[25]

Abusnina et al. (2022) conducted a systematic review to evaluate the clinical outcomes of atherectomy in treating coronary artery calcification (CAC) in patients with reduced left ventricular ejection fraction (LVEF). The review includes 7 studies involving 2,238 unique patients with a median follow-up duration of 22.4 months. Comparing patients with severely reduced LVEF

compared to those with moderately reduced or preserved LVEF, the authors found the risk ratio (RR) of in-hospital all-cause mortality using atherectomy was 5.28 (95% CI 1.65–16.84; *P* equal to 0.005) and RR for long term all-cause mortality was 2.84 (95% CI 1.16–6.95; *P* equal to 0.02). The results indicate that treating severe CAC with atherectomy in patients with severely reduced LVEF had significantly higher in-hospital and long-term all-cause mortality risks compared to the patients with moderate or preserved LVEF. While there was no significant difference in in-hospital cardiac mortality between the two groups, long-term cardiac mortality was significantly higher in patients with severe CAC and severely reduced LVEF who underwent atherectomy.[26]

References

1. Lawton JS, Tamis-Holland JE, Bangalore S, et al. 2021 ACC/AHA/SCAI guideline for coronary artery revascularization: A report of the American College of Cardiology/American Heart Association Joint Committee on Clinical Practice Guidelines *Circulation*. 2022;145(3):e18-e114. doi: 10.1161/CIR.0000000000001038. PMID: 34882435. Erratum in: *Circulation*. 2022 Mar 15;145(11):e772. doi: 10.1161/CIR.0000000000001060.
2. Abdel-Wahab M, Richardt G, Joachim Büttner H, et al. High-speed rotational atherectomy before paclitaxel-eluting stent implantation in complex calcified coronary lesions: The randomized ROTAXUS (Rotational Atherectomy Prior to Taxus Stent Treatment for Complex Native Coronary Artery Disease) trial. *JACC Cardiovasc Interv*. 2013;6(1):10-19. doi: 10.1016/j.jcin.2012.07.017. PMID: 23266232.
3. Abdel-Wahab M, Toelg R, Byrne RA, et al. High-speed rotational atherectomy versus modified balloons prior to drug-eluting stent implantation in severely calcified coronary lesions. *Circ Cardiovasc Interv*. 2018;11(10):e007415. doi: 10.1161/CIRCINTERVENTIONS.118.007415. PMID: 30354632. Erratum in: *Circ Cardiovasc Interv*. 2018 Oct;11(10):e000040. doi: 10.1161/HCV.0000000000000040.
4. Chambers JW, Feldman RL, Himmelstein SI, et al. Pivotal trial to evaluate the safety and efficacy of the orbital atherectomy system in treating de novo, severely calcified coronary lesions (ORBIT II). *JACC Cardiovasc Interv*. 2014;7(5):510-518. doi: 10.1016/j.jcin.2014.01.158. PMID: 24852804.
5. Shlofmitz E, Martinsen BJ, Lee M, et al. Orbital atherectomy for the treatment of severely calcified coronary lesions: Evidence, technique, and best practices. *Expert Rev Med Devices*. 2017;14(11):867-879. doi: 10.1080/17434440.2017.1384695. PMID: 28945162.
6. Fernandez JP, Hobson AR, McKenzie D, et al. Beyond the balloon: Excimer coronary laser atherectomy used alone or in combination with rotational atherectomy in the treatment of chronic total occlusions, non-crossable and non-expansible coronary lesions. *EuroIntervention*. 2013;9(2):243-250. doi: 10.4244/EIJV9I2A40. PMID: 23454891.
7. Armstrong EJ, Stanislawski MA, Kokkinidis DG, et al. Coronary atherectomy is associated with improved procedural and clinical outcomes among patients with calcified coronary lesions: Insights from the VA CART program. *Catheter Cardiovasc Interv*. 2018;91(6):1009-1017. doi: 10.1002/ccd.27213. PMID: 28766833.

8. Noble S, Bilodeau L. High energy excimer laser to treat coronary in-stent restenosis in an under expanded stent. *Catheter Cardiovasc Interv*. 2008;71(6):803-807. doi: 10.1002/ccd.21490. PMID: 18324694.
9. Lee T, Shlofmitz RA, Song L, et al. The effectiveness of excimer laser angioplasty to treat coronary in-stent restenosis with peri-stent calcium as assessed by optical coherence tomography. *EuroIntervention*. 2019;15(3):e279-e288. Published 2019 Jun 12. doi: 10.4244/EIJ-D-18-00139. PMID: 29769164.
10. Tomey MI, Kini AS, Sharma SK. Current status of rotational atherectomy. *JACC Cardiovasc Interv*. 2014;7(4):345-353. doi: 10.1016/j.jcin.2013.12.196. PMID: 24630879.
11. Barbato E, Carrié D, Dardas P, et al. European expert consensus on rotational atherectomy. *EuroIntervention*. 2015;11(1):30-36. doi: 10.4244/EIJV11I1A6. PMID: 25982648.
12. Latib A, Takagi K, Chizzola G, et al. Excimer Laser LEsion modification to expand non-dilatable stents: The ELLEMENT registry. *Cardiovasc Revasc Med*. 2014;15(1):8-12. doi: 10.1016/j.carrev.2013.10.005. PMID: 24290659.
13. Whiteside HL, Nagabandi A, Kapoor D. Stentablation with rotational atherectomy for the management of underexpanded and undilatable coronary stents. *Cardiovasc Revasc Med*. 2019;20(12):1203-1208. doi: 10.1016/j.carrev.2019.02.025. PMID: 30842041.
14. Albiero R, Silber S, Di Mario C, et al. Cutting balloon versus conventional balloon angioplasty for the treatment of in-stent restenosis: Results of the restenosis cutting balloon evaluation trial (RESCUT). *J Am Coll Cardiol*. 2004;43(6):943-949. doi: 10.1016/j.jacc.2003.09.054. PMID: 15028348.
15. Kufner S, Joner M, Schneider S, et al. Neointimal modification with scoring balloon and efficacy of drug-coated balloon therapy in patients with restenosis in drug-eluting coronary stents: A randomized controlled trial. *JACC Cardiovasc Interv*. 2017;10(13):1332-1340. doi: 10.1016/j.jcin.2017.04.024. PMID: 28683939.
16. Ali ZA, Nef H, Escaned J, et al. Safety and effectiveness of coronary intravascular lithotripsy for treatment of severely calcified coronary stenoses: The Disrupt CAD II Study. *Circ Cardiovasc Interv*. 2019;12(10):e008434. doi: 10.1161/CIRCINTERVENTIONS.119.008434. PMID: 31553205.

17. Kereiakes DJ, Di Mario C, Riley RF, et al. Intravascular lithotripsy for treatment of calcified coronary lesions: Patient-level pooled analysis of the Disrupt CAD Studies. *JACC Cardiovasc Interv*. 2021;14(12):1337-1348. doi: 10.1016/j.jcin.2021.04.015. PMID: 33939604.
18. Badr S, Ben-Dor I, Dvir D, et al. The state of the excimer laser for coronary intervention in the drug-eluting stent era. *Cardiovasc Revasc Med*. 2013;14(2):93-98. doi: 10.1016/j.carrev.2012.12.008. PMID: 23332778.
19. Chambers JW, Warner C, Cortez J, et al. Outcomes after atherectomy treatment of severely calcified coronary bifurcation lesions: A single center experience. *Cardiovasc Revasc Med*. 2019;20(7):569-572. doi: 10.1016/j.carrev.2018.08.017. PMID: 30201481.
20. Grines CL, Box LC, Mamas MA, et al. SCAI expert consensus statement on percutaneous coronary intervention without on-site surgical backup. *JACC Cardiovasc Interv*. 2023;16(7):847-860. doi: 10.1016/j.jcin.2022.12.016. PMID: 36725479.
21. Mehanna E, Abbott JD, Bezerra HG. Optimizing percutaneous coronary intervention in calcified lesions: Insights from optical coherence tomography of atherectomy. *Circ Cardiovasc Interv*. 2018;11(5):e006813. doi: 10.1161/CIRCINTERVENTIONS.118.006813. PMID: 29743161.
22. Fujino A, Mintz GS, Matsumura M, et al. A new optical coherence tomography-based calcium scoring system to predict stent underexpansion. *EuroIntervention*. 2018;13(18):e2182-e2189. Published 2018 Apr 6. doi: 10.4244/EIJ-D-17-00962. PMID: 29400655.
23. O'Neill WW, Anderson M, Burkhoff D, et al. Improved outcomes in patients with severely depressed LVEF undergoing percutaneous coronary intervention with contemporary practices. *Am Heart J*. 2022;248:139-149. doi: 10.1016/j.ahj.2022.02.006. PMID: 35192839.
24. Khan AA, Panchal HB, Zaidi SIM, et al. Safety and efficacy of radial versus femoral access for rotational atherectomy: A systematic review and meta-analysis. *Cardiovasc Revasc Med*. 2019;20(3):241-247. doi: 10.1016/j.carrev.2018.06.006. PMID: 30030065.
25. Schwarz K, Lovatt S, Borovac JA, et al. Planned versus bailout rotational atherectomy: a systematic review and meta-analysis. *Cardiovasc Revasc Med*. 2022;39:45-51. doi: 10.1016/j.carrev.2021.09.013. PMID: 34627732.

26. Abusnina W, Mostafa MR, Al-Abdouh A, et al. Outcomes of atherectomy in treating severely calcified coronary lesions in patients with reduced left ventricular ejection fraction: a systematic review and meta-analysis. *Front Cardiovasc Med*. 2022;9:946027. Published 2022 Sep 20. doi: 10.3389/fcvm.2022.946027. PMID: 36204563.

Clinical Guideline Revision History/Information

Original Date: July 1, 2023		
Review History		

Version 2	01/02/2025	• Version 1 of this policy included coronary artery atherectomy and intracoronary lithotripsy.
		• Intracoronary lithotripsy (non-covered) was split into a separate policy - see policy *Coronary Intravascular Lithotripsy (IVL)*.
		• This annual review builds upon the 2023 atherectomy draft.
		• The policy was restructured according to updated guidelines.
		• Medical evidence was added.
		• Indications were updated and restructured for rules conversion:
		  ○ "**ANY** of the following" was added in this indication statement: "Rotational atherectomy to treat **ANY** of the following:"
		  ○ New references were added: Khan et al, 2019 (for rotational atherectomy), Lawton et al, 2021 (ACC guidelines); Abusinina et al, 2022.
		  ○ All abbreviations were expanded at first use.
		• Clinical approach was updated.
		• All existing references were updated and new references added.
		• Updates to CPT/HCPCS procedure codes.