

Management of Atherosclerotic Renal Artery Stenosis

This guide summarizes clinical evidence about the effectiveness and safety of angioplasty and medical therapy for treating atherosclerotic renal artery stenosis (ARAS).

This guide does not address how to choose among diagnostic strategies for evaluating suspected ARAS, and it does not discuss renal artery stenosis due to fibromuscular dysplasia.

CONFIDENCE SCALE

The confidence ratings in this guide are derived from a systematic review of the literature. The level of confidence is based on the number and quality of individual studies, duration of followup, and consistency across studies.

HIGH ●●● Consistent results from at least two high-quality studies with long-term followup.

MEDIUM ●●○ Findings are supported but are from fewer than two high-quality studies or from high-quality studies that lack long-term outcomes.

LOW ●○○ Results may be inconsistent or based on moderate to poor quality studies or studies of a population that may have little direct relevance to the question.

CLINICAL ISSUE

Atherosclerosis causes 90 percent of all renal artery stenosis, the narrowing of one or both renal arteries. It can adversely affect blood pressure and kidney function. Among people with diffuse atherosclerotic vascular disease, as many as half develop ARAS. Medical therapy with antihypertensive drugs can reduce blood pressure in most people with ARAS. While medical therapy can lower the risk of cardiovascular events, it does not always prevent deterioration of kidney function. Historically, surgical repair of the blocked artery was the definitive treatment for ARAS, but newer procedures have largely supplanted surgery. Currently, the most common method of improving renal artery blood flow is percutaneous balloon angioplasty with stent placement.

CLINICAL BOTTOM LINE

Overall, there is **insufficient evidence** to determine whether angioplasty with stenting is a better treatment for ARAS than aggressive medical therapy alone.

- There is no difference in the long-term kidney function of people who have angioplasty compared with people who have medical therapy alone.

LEVEL OF CONFIDENCE ●●○

- Both medical therapy and angioplasty lower blood pressure. Antihypertensive drugs can lower blood pressure 20–50 mm Hg systolic and 8–42 mm Hg diastolic. The combination of angioplasty and antihypertensive drugs typically lowers blood pressure 6–32 mm Hg systolic and 0–17 mm Hg diastolic.

LEVEL OF CONFIDENCE ●●○

- Attainment of blood pressure control is more likely after angioplasty than with medical therapy alone. However, the benefit of angioplasty may be limited to people with bilateral disease.

LEVEL OF CONFIDENCE ●●○

- A small percentage of people who have had angioplasty plus stent (4–18 percent) can discontinue blood pressure medications.

LEVEL OF CONFIDENCE ●●○

Arteriogram Showing Renal Artery Stenosis

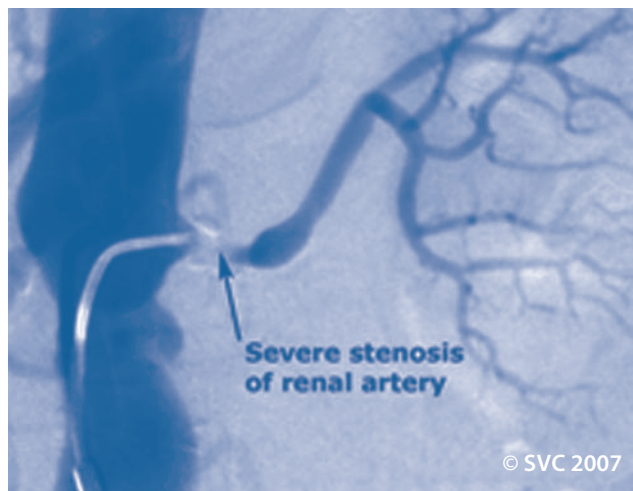


Image reproduced by permission from the Society for Vascular Surgery. For more information visit www.VascularWeb.org.

RISKS

There are not enough data to compare the risks of adverse events for ARAS treatments, and there is insufficient evidence to determine whether rates of death or cardiovascular events differ between treatments. However, there is some information about the risks of each treatment.

Medication Risks

- The most common side effects of antihypertensive drugs are dizziness, sexual problems, headache, and cough.

Angioplasty Risks

- About 1 percent of people who have angioplasty die within the first 30 days after the procedure.
- 10–21 percent of people who have angioplasty with stent placement have restenosis within 40 months.

SOURCE The source material for this guide is a systematic review of 56 studies. The review, *Comparative Effectiveness of Management Strategies for Renal Artery Stenosis* (2006), was prepared by Tufts-New England Medical Center Evidence-based Practice Center. The Agency for Healthcare Research and Quality (AHRQ) funded the systematic review and this guide.

This guide was prepared by Sandra Robinson, M.S.P.H., Elizabeth Eckstrom, M.D., and David Hickam, M.D. of the Eisenberg Center at Oregon Health & Science University. They developed this guide using feedback from clinicians who reviewed preliminary drafts.

STILL UNKNOWN

- There are not enough data to know whether individual characteristics (such as baseline health status, diagnostic test results, or type of medications used for hypertension) have an effect on ARAS treatment outcomes.
- We do not know how different types of blood pressure medications compare in treating ARAS.
- There is insufficient evidence to determine whether angioplasty reduces the number of antihypertensive medications required after the procedure.
- There is no research about how angioplasty and medical therapy compare in treating people who have acutely decompensating hemodynamic and kidney function.

ON THE HORIZON

Results from the Cardiovascular Outcomes in Renal Atherosclerotic Lesions (CORAL) trial, currently underway, will be reported in 2010. This large, multi-center trial will examine whether patients with ARAS who undergo angioplasty with stent placement followed by aggressive medical treatment of hypertension have different outcomes than patients treated with aggressive medical treatment of hypertension alone.

RESOURCE FOR PATIENTS

Renal Artery Stenosis Treatments: A Guide for Consumers is a companion to this Clinician's Guide. It can help people talk with their health care professional about ARAS. It provides information about:

- Types of ARAS treatments.
- Benefits and risks of ARAS treatments.
- Research findings about ARAS treatments.
- Seeking advice from a health care professional.

FOR MORE INFORMATION

For electronic copies of the consumer's guide, this clinician's guide, and the full systematic review, visit this Web site:

www.effectivehealthcare.ahrq.gov

For free print copies call:

The AHRQ Publications Clearinghouse, (800) 358-9295

Consumer's Guide, AHRQ Pub. No. 07-EHC004-2A

Clinician's Guide, AHRQ Pub. No. 07-EHC004-3