

Balloon Angioplasty (PTCA)

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When thinking about coronary (balloon) angioplasty, consider the following:

1. It's true, the rumors you've heard are accurate: We actually do inflate a balloon inside your heart vessel.
2. Remember, if you get a balloon, by definition you're not being operated on yet! So be thankful!
3. After the procedure, you often will be discharged the next day.
4. If you don't get "ballooned," the likelihood is you'll either be bypassed, stented, or atherectomized.

So let's say a few words about angioplasty. Also known as balloon angioplasty, percutaneous transluminal coronary angioplasty (PTCA) is the standard to which all other treatments, including stenting, bypass surgery, and drug therapy, are compared. We most frequently recommend balloon angioplasty when a person's symptoms are resistant to drug therapy. We may also choose angioplasty if a particularly advanced coronary artery blockage obstructs a major vessel.

Before angioplasty came along, the choices were either medicine or coronary bypass surgery. Now, with the incredible technical sophistication that exists, balloon catheter devices can be delivered virtually anywhere in your heart. We can reach and dilate 95% of the blockages we discover. So if we recommend PTCA, we expect a successful result. No wonder more and more balloon angioplasty procedures (and other catheter-related interventions) are being done, while bypass surgery is used less and less. As hard as it is to believe, almost one million angioplasty procedures were performed in 1996!

Try not to become upset if your angioplasty procedure is performed a day or so after your diagnostic catheterization study. Obviously, it would be great to get both procedures over in one fell swoop. On the other hand, sometimes it's

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difficult to combine the two. Keep in mind that your catheterization films need to be studied in detail so all important blockages can be identified. You do not want an unrecognized blockage to escape treatment, do you? Months or even years from now, it could flare up and make you go through the entire routine again. So it pays to be patient and let everyone review your situation in detail before the angioplasty procedure is performed.

Some dilations are technically more challenging than others. If your procedure is expected to be a little complicated, it is best to have an operating room available and a surgical team on stand-by just in case you need it. This way if, indeed, something does go wrong during the angioplasty, and surgery does become necessary, everything will be ready and in place.

As for the procedure itself, you will be awake, and as with the earlier diagnostic cardiac catheterization study, you will be swathed in sterile sheets. Again we use the femoral artery to gain access to your vascular highway. From there, it is a rather simple matter to navigate the balloon catheter up into your coronary vessel under x-ray guidance.

An angioplasty catheter is quite different from an ordinary diagnostic catheter. At its tip is a special balloon apparatus that can be expanded under great pressure to push against resistance. In your case, the resistance comes from an advanced accumulation of cholesterol. Ever so carefully, the catheterization doctor will meticulously position this balloon catheter in your heart vessel. Your doctor is a very patient and talented professional. He or she knows precisely how to talk to your catheter and when to twist and turn until it is positioned smack in the depths of your cholesterol obstruction.

Next, the catheterization specialist will glance up at the monitor. The intracoronary pressure recordings will be studied in detail. Beeping noises will be coming from all parts of the room. You might as well be in a spaceship heading for Mars, the technology is so sophisticated. When it gets really quiet—like the minutes before a storm breaks, with the sky pitch-black and all the birds silent—you know the moment is coming. Your doctor will pick up a syringe.

Then he or she will inject. The balloon, deflated but ready, will instantaneously burst open with a flourish. It will expand as crisply as a parachute first explodes into life. POP! No matter how often your doctor has done this procedure, he or she will be awestruck. The whole staff will marvel at the splendor of the event. No one will talk. Everyone will breathe softly. Excitement will fill the room. Ask people who have seen both events, and they'll tell you that opening a diseased heart vessel and landing a man on the moon are one and the same thing.

A balloon angioplasty successfully expanding a diseased vessel is one of the most wonderful sights medicine has to offer. WELCOME TO THE WORLD OF CARDIOLOGY!

Don't worry, no one gets carried away with the event; we still know you are there. Everything going on is being closely monitored. Try not to panic if you feel your anginal discomfort return during the balloon inflation. This is not at all unusual. **We repeat, this is not at all unusual.** In a way, it is expected. In fact, you should be happy to experience your discomfort again, since it means, by definition, that the culprit vessel, the one that caused all your symptoms in the first place, is finally being taken care of. Anyway, rest assured, the discomfort usually disappears promptly once the balloon is deflated.

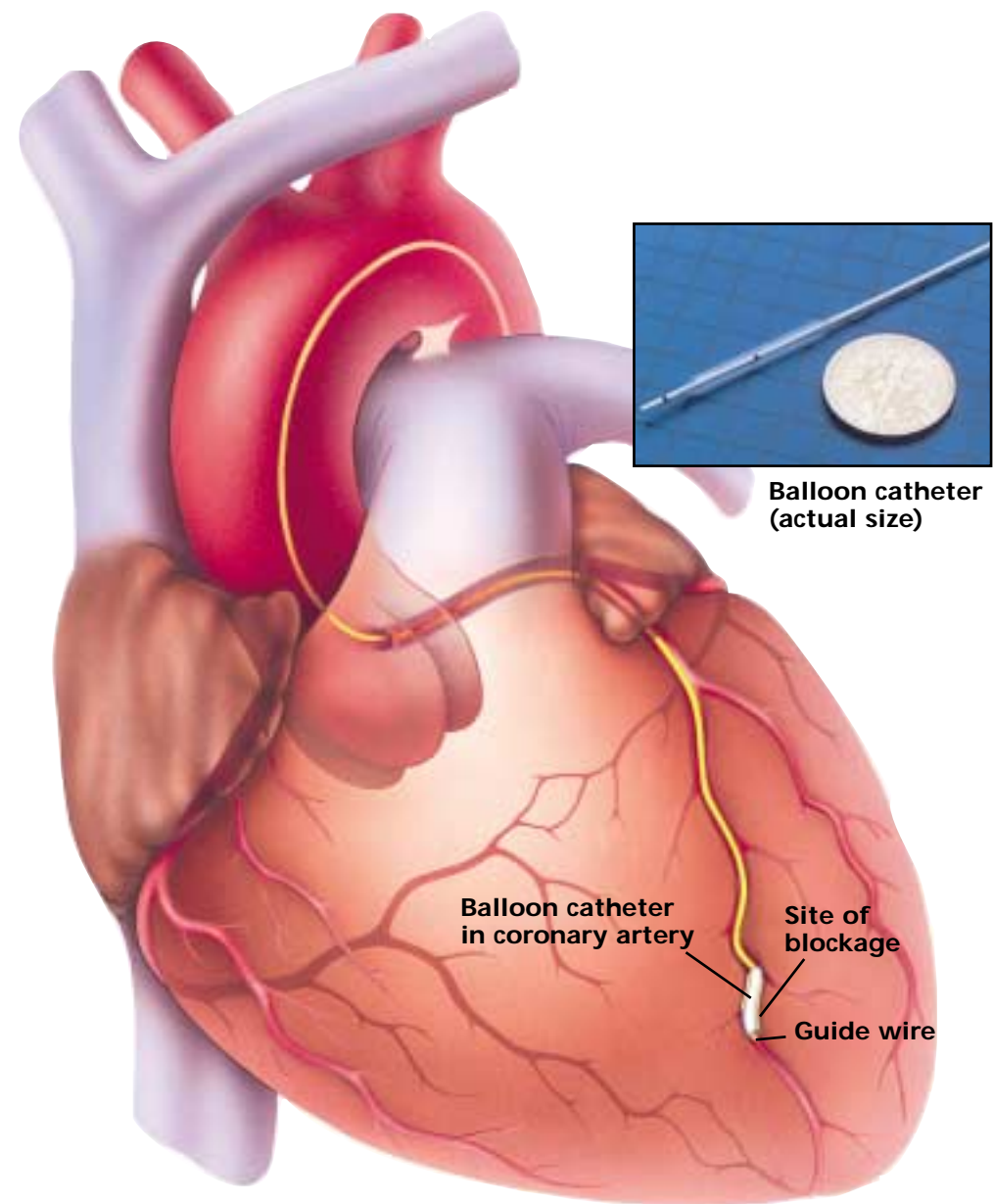
Contrary to what you might have imagined, a balloon catheter does not blast your cholesterol deposit to smithereens. No, it doesn't pulverize it to pieces and reduce everything to a pile of rubble. Nothing could be further from the truth. Instead, the blockage itself, along with the vessel wall, is reshaped, stretched, and remodeled. Once all this reorganization is finished (sometimes multiple balloon inflations are necessary), the inner caliber of your vessel is significantly enlarged. In fact, it should be close to normal again. Now more blood can pass through. And with more blood, your heart muscle gets the nourishment it needs. Thus, your symptoms tend to disappear.

Once your doctor is satisfied with the result, he or she removes the balloon catheter from your femoral artery and leaves a short plastic tube (called the

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Figure 6:
 At the tip of the angioplasty catheter is a special balloon which, when positioned properly and inflated, reshapes both the vessel and the cholesterol blockage. The reshaped vessel allows more blood to pass through.



Percutaneous Transluminal Angioplasty (PCTA)

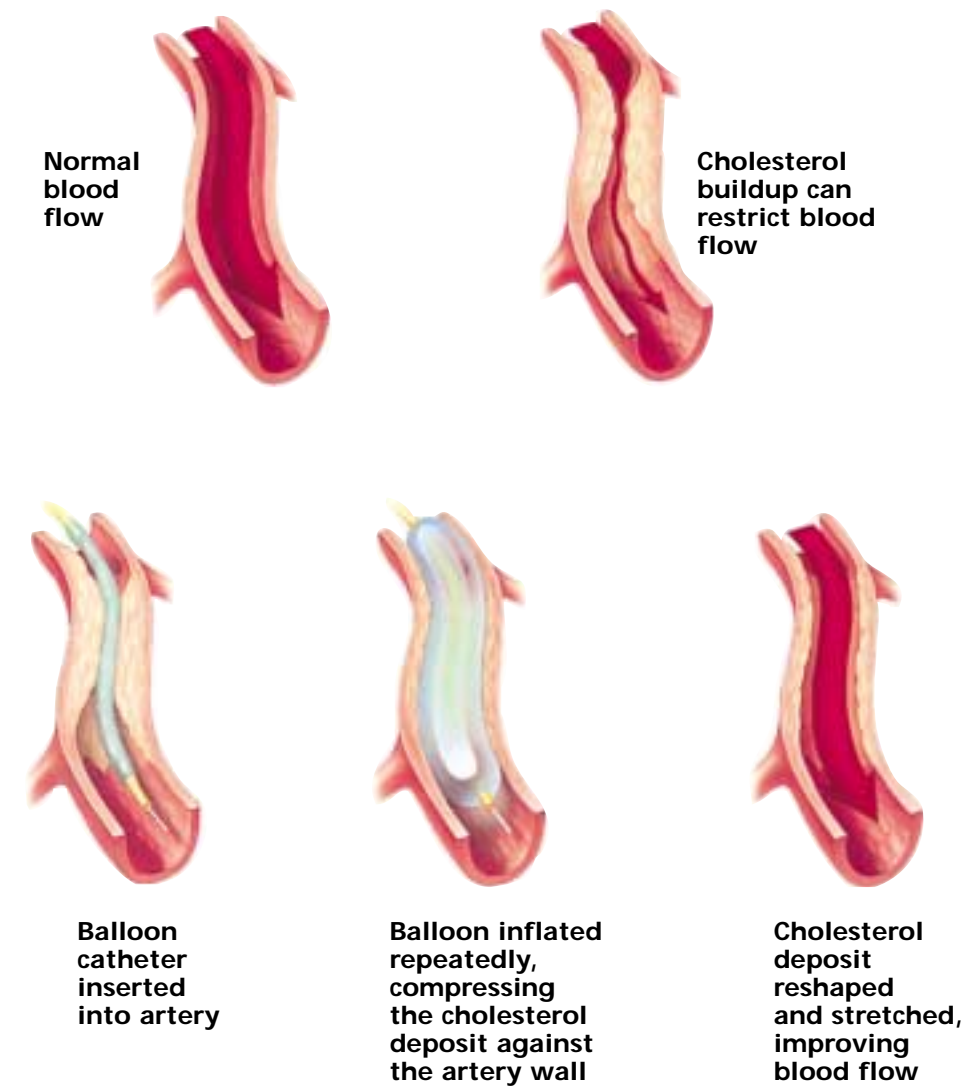


Figure 7:
 An angioplasty catheter has a balloon at its tip that can be expanded under great pressure. It does not pulverize your cholesterol obstruction to smithereens. Instead, the vessel wall, along with the blockage itself, is reshaped and stretched, so when the procedure is over, the inner caliber is significantly enlarged.

Percutaneous Transluminal Angioplasty (PCTA)

introducer sheath) in its place. This sheath is there just in case your coronary artery later clots off suddenly at the angioplasty site and causes you intense chest discomfort. Although this is an exceedingly uncommon event, it can happen. Angioplasty doctors are no different than anyone else. They do not like unpleasant surprises. The introducer sheath allows your doctor to get the angioplasty catheter back into your femoral artery within seconds and correct the coronary problem before it gets out of control.

If you remain stable following your procedure, you will be taken back to your room. After several hours, the sheath is removed. Shortly thereafter, you should be able to get out of bed and start moving around. Heparin (a blood thinner given through your vein to prevent clot formation) is routinely administered during your angioplasty procedure and continued for the next 12 to 24 hours.

Patients react in a variety of ways once the procedure is over. We recall one fellow who immediately donned a white laboratory coat, hung a stethoscope around his shoulder, and imperiously marched down the hospital corridor impersonating a doctor. In every patient chart, he ordered an angioplasty procedure. Our psychiatric colleagues assure us that this response is natural and perfectly understandable. Should you feel such an urge, please stifle it.

Complications can occur during an angioplasty procedure. In three to five percent of patients, the inner layer of a dilated coronary artery splits open or tears. When this happens, unless something is done, a heart attack can result. Fortunately, we have an effective antidote. By compressing the area with a series of prolonged balloon inflations, the vessel can be expanded open. If this maneuver is not successful, we then try to stent the area. In rare instances (about one percent of all angioplasty cases), no measure works and emergency bypass surgery becomes necessary. This is the reason that surgical backup is always at the ready during technically challenging cases. Only very rarely does a vessel actually rupture or a fatal heart attack occur. The same complications described for routine cardiac catheterization also apply for angioplasty procedures as well.

There is one last issue you should know about: **restenosis**. Although a balloon procedure may be executed successfully, the human body has an incredible capacity to heal itself and return things to their original state. And with this healing can come narrowing of the vessel once more and the subsequent return of one's symptoms. Weeks or months can go by before restenosis appears, but restenosis does occur in about one out of every three cases, usually within three to six months after a successful balloon procedure. **So if your symptoms return, contact your doctor immediately; restenosis may be present.** And if restenosis has indeed occurred, anticipate another balloon angioplasty. Then again, don't be surprised if your doctor opts for a different procedure altogether, such as stenting, atherectomy, or even bypass surgery.

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