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## Transmyocardial Revascularization (TMR)

### What is transmyocardial revascularization?

Transmyocardial revascularization or TMR is a procedure used to relieve severe angina or chest pain in very ill patients who aren't candidates for bypass surgery or angioplasty.

### How is it done?

In this procedure, a surgeon makes an incision on the left breast to expose the heart. Then, using a laser, the surgeon drills a series of holes from the outside of the heart into the heart's pumping chamber. From 20 to 40 mm laser channels are placed during the procedure. Bleeding from the laser channels on the outside of the heart stops after a few minutes of pressure from the surgeon's finger.

In some patients TMR is combined with bypass surgery. In those cases an incision through the breastbone is used.

### How does it work?

How TMR reduces angina still isn't fully understood.

- The laser may stimulate new blood vessels to grow, called angiogenesis (an"je-o-JEN'eh-sis).
- It may destroy nerve fibers to the heart, making patients unable to feel their chest pain.

### How does it compare to other treatments?

Transmyocardial revascularization has received FDA approval for use in patients with severe angina who have no other treatment options. It has also produced early promising results in three large multi-center clinical trials. The angina of 80-90 percent of patients who've had this procedure has significantly improved (at least 50 percent) through one year after surgery. There's still limited follow-up data as to how long this procedure might last, however.

**Transmyocardial revascularization won't replace coronary artery bypass or angioplasty as the most common method of treating coronary artery disease.** These alternatives have been proven over time to be safe, effective ways to restore blood flow to the heart muscle. But TMR may be used for

- people who are high-risk candidates for a second bypass or angioplasty.
- people whose blockages are too diffuse to be treated with bypass alone.
- some patients with heart transplants who develop atherosclerosis (ath"er-o-skleh-RO'sis) after their transplant.

**Check with a large medical center in your area to find locations in your region where this procedure is being done.**

### DID YOU KNOW

During a 24-hour period, the heart of healthy adults averages 100,000 frequent or multiple ventricular heartbeats.

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