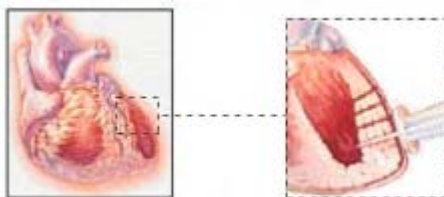


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TRANSMYOCARDIAL REVASCULARIZATION (TMR)

What is transmyocardial revascularization?

Transmyocardial Revascularization (TMR) is a surgical procedure used to increase blood flow to regions of heart muscle provided by blocked blood vessels that are not adequate for bypass surgery or angioplasty. It uses a laser to create small passageways, or channels, through the heart muscle. TMR provides improved blood flow to the ischemic (oxygen-deprived) heart tissue probably by stimulating the growth of new blood vessels (angiogenesis). This often results in relief of symptoms of angina (chest pain) and may allow oxygen-rich blood to flow to regions of the heart muscle that do not have normal blood flow.



How is the procedure performed?

This procedure is done under general anesthesia. A surgeon makes an incision on the left side of the chest. A laser is inserted into the chest cavity. The laser shoots holes through the heart's left ventricle in between heartbeats to create a direct blood supply for the portion of the heart muscle that lacks proper blood supply. The TMR procedure itself will take 2-3 hours and the postoperative care will be the same as for any cardiac surgery. One can expect to stay in the hospital for 4-6 days after the surgery.

How does it compare to other treatments?

TMR is a new procedure with limited clinical experience. However, initial studies have produced promising results. Eighty to 90 percent of patients who have had this procedure have improved from Class IV (the most severe chest pain) to Class I or II, enabling them to live relatively normal lives.

TMR is less invasive, less expensive and requires less recovery time than coronary artery bypass surgery. Because it doesn't require stopping the heart (and a heart-lung machine to support circulation), there is less risk of damage to the kidneys, brain and other organs.

Both angioplasty and coronary artery bypass surgery have been proven over time to be generally safe and effective. TMR is still an investigational procedure and will not replace these proven methods unless extensive clinical information supports such a decision. However, it can be used as an alternative for certain patients who are not

good candidates for bypass surgery or angioplasty. Ask your doctor any questions you might have about this procedure.

What is percutaneous direct myocardial revascularization?

TMR can now be accomplished without the need for surgery or a general anesthetic. Using special catheters placed into the left ventricular cavity, small laser channels can be placed into those regions of heart muscle whose blood supply is inadequate stimulating angiogenesis.

This is a new procedure and clinical trials are underway to test its usefulness in the treatment of coronary heart disease.