



## Laser Angioplasty: A Revolutionary Approach to Treating Cardiovascular Disease

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### INTRODUCTION

Cardiovascular disease remains a leading cause of death worldwide, with millions of lives affected by conditions like Coronary Artery Disease (CAD) and Peripheral Artery Disease (PAD). These diseases often result from the buildup of fatty plaques within the arteries, leading to reduced blood flow and, in severe cases, life-threatening complications. Traditional treatment options include medication, lifestyle modifications, and surgical interventions like angioplasty and stent placement. However, recent advancements in medical technology have brought forth an innovative approach known as laser angioplasty, offering new hope to patients facing vascular challenges. Laser angioplasty is a minimally invasive procedure used to treat blockages or narrowings within arteries. Unlike traditional angioplasty, which involves the inflation of a balloon to compress plaque against the arterial walls, laser angioplasty uses laser energy to vaporize or remove plaque buildup. This approach is particularly useful in cases where balloon angioplasty alone may be insufficient due to calcified or otherwise stubborn plaque [1]. Before the procedure, the patient is prepared by administering a local anesthetic or sedation to ensure comfort and relaxation during the treatment. A thin guidewire is inserted into the affected artery and advanced to the site of the blockage, guided by fluoroscopy or angiography.

### DESCRIPTION

A specialized laser catheter, equipped with a fiber optic tip, is inserted over the guidewire and positioned at the site of the blockage. Once the laser catheter is in place, the surgeon activates the laser, delivering high-energy pulses of light to the plaque. The laser energy vaporizes or ablates the plaque, creating a channel within the artery. In some cases, balloon angioplasty is performed after laser ablation to further widen the artery and ensure that it remains open. A stent may also be inserted to provide long-term support to the artery. After

the procedure is completed, the catheter is removed, and the incision site is closed. Patients are typically monitored for a brief period before being discharged. Laser angioplasty allows for precise removal of plaque, even in calcified or complex lesions, reducing the risk of complications and restenosis. The procedure is minimally invasive, requiring only a small incision, and often performed on an outpatient basis, reducing hospitalization time and recovery. Patients usually experience a faster recovery time compared to traditional open surgical procedures. Laser angioplasty minimizes the risk of damage to the arterial walls, reducing the likelihood of complications such as dissections or perforations. By effectively removing plaque, laser angioplasty can lead to improved long-term outcomes and reduce the need for repeat interventions [1-4].

### CONCLUSION

Laser angioplasty is particularly effective in breaking down and removing calcified or heavily calcified plaques that can be resistant to balloon angioplasty. When stent re-narrowing (restenosis) occurs, laser angioplasty can help reopen the stent and restore blood flow. Laser angioplasty is used to treat CTOs, which are long-standing blockages that are difficult to pass with traditional angioplasty. Laser angioplasty is a revolutionary advancement in the treatment of cardiovascular disease, offering a highly effective and minimally invasive option for patients facing arterial blockages and plaque buildup. With its precision, reduced complication rate, and faster recovery times, laser angioplasty has the potential to significantly improve the quality of life for individuals suffering from coronary artery disease and peripheral artery disease.

### ACKNOWLEDGEMENT

None.

### CONFLICT OF INTEREST

The author's declared that they have no conflict of interest.

<b>Received:</b>	02-October-2023	<b>Manuscript No:</b>	IPIC-23-18328
<b>Editor assigned:</b>	04-October-2023	<b>PreQC No:</b>	IPIC-23-18328 (PQ)
<b>Reviewed:</b>	18-October-2023	<b>QC No:</b>	IPIC-23-18328
<b>Revised:</b>	23-October-2023	<b>Manuscript No:</b>	IPIC-23-18328 (R)
<b>Published:</b>	30-October-2023	<b>DOI:</b>	10.21767/2471-8157.9.10.91

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**Citation** Chen C (2023) Laser Angioplasty: A Revolutionary Approach to Treating Cardiovascular Disease. *Interv Cardiol J*. 9:91.

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