



## Stenting: A Vital Advancement in Cardiovascular Treatment

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### INTRODUCTION

Cardiovascular Diseases (CVDs) are among the leading causes of death worldwide. These conditions, including heart attacks, strokes, and atherosclerosis, affect the blood vessels and the heart itself. One of the most critical advancements in the treatment of cardiovascular diseases is stenting, a minimally invasive procedure that has significantly improved outcomes for patients suffering from blocked or narrowed arteries. Stenting involves the placement of a small, mesh-like tube, known as a stent, into an artery to keep it open and restore normal blood flow. This article will explore the origins, types, procedures, benefits, risks, and future developments of stenting, with a particular focus on its role in treating Coronary Artery Disease (CAD). Stenting has its roots in the broader field of angioplasty, a procedure developed in the late century to widen arteries narrowed by plaque buildup. The breakthrough came in the 1970s when German radiologist Dr. Andreas Gruentzig successfully performed the first balloon angioplasty on a human coronary artery. Though revolutionary, angioplasty had a drawback-many arteries would eventually reclose, a condition called restenosis. To counteract this problem, stents were developed in the late 1980s [1,2]. The first stents were Bare Metal Stents (BMS), designed to provide a physical scaffold to prevent arteries from collapsing after angioplasty.

### DESCRIPTION

However, restenosis still occurred in some cases, mainly due to tissue growth inside the stent. The advent of Drug Eluting Stents (DES) in the early 2000s was a significant improvement. These stents are coated with medication that prevents the growth of scar tissue, reducing the rate of restenosis. Today, stenting is a standard treatment for coronary artery disease, and innovations continue to make the procedure safer and more effective. Stenting is typically performed during a procedure called Percutaneous Coronary Intervention (PCI), also known as angioplasty with stent placement. The process begins with the insertion of a catheter, a thin, flexible tube,

into an artery-usually in the groin or wrist. The catheter is guided to the location of the blockage in the coronary artery. Once the catheter reaches the blockage, a balloon at its tip is inflated to widen the artery. The stent, which is mounted on the balloon, expands with it, pushing against the artery walls and compressing the plaque. After the stent is in place, the balloon is deflated and removed, but the stent remains permanently in the artery, holding it open and ensuring blood flow is maintained [3,4]. The procedure typically takes about an hour and is usually done under local anesthesia.

### CONCLUSION

Patients can often return to normal activities within a few days, although they may need to take medications to prevent blood clots from forming on the stent. These were the first stents developed and are made of a thin metal mesh. They are effective in providing structural support to the artery but are associated with a higher risk of restenosis due to tissue growth. These stents are coated with a medication that is slowly released into the artery to prevent tissue growth and scar formation. DES has significantly reduced the rate of restenosis compared to BMS. Also known as biodegradable or absorbable stents, these are designed to dissolve in the body over time, leaving behind no permanent foreign material.

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None.

### CONFLICT OF INTEREST

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

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