

20 years of the intravascular stent: Did we have sufficient progress?

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From its initial concept, the intravascular stent has evolved through significant changes, particularly affecting design and mechanical properties. Stent materials and surface properties have received comparatively less effort. As it has happened with most vascular implantable devices, the materials used in stents have been adapted from previously existing materials. This is similar to the early design of pharmaceuticals, where new drugs were adapted from existing ones rather than developed anew. Just like modern drugs are developed after establishing a molecular target using a molecular mechanistic approach, vascular biomaterials will be developed with a specific molecular interaction as a goal. Identifying molecular targets will require significant investment of resources into merging surface science and molecular biology. Micro and nanotechnology will be the predominant developmental tools.