The Invention

Cardiovascular disease is one of the leading causes of death in the Western world. An increasingly common form of treatment for this disease involves implanting a stent into an artery where a blockage is present. Stents used at present are sometimes inflexible and may not behave in the same way that a blood vessel inside the body would. This can result in stresses within the walls of the blood vessels, to which the body may react negatively. Additionally, when the stents are deployed, they tend to get shorter which may cause some difficulties in the correct placement of the stent within the vessel.

Our team of researchers have designed heart stents using auxetic materials, making them less likely to collapse due to the material’s ability to expand the artery as the flow of blood increases. This capability keeps the artery open and reduces the occurrence of thrombosis, which is when the blood vessel becomes completely blocked leading to heart attacks.

Novelty

Auxetic heart stents have an advantage over conventional stents by being able to widen the artery without shrinking in length hence risking becoming misplaced. Dislodging of heart stents is a major cause of their failure. Auxetic heart stents may overcome many dangers of conventional stents such as sliding out of place or damaging the artery. Stent insertion is, therefore, made easier for the doctor, giving a better result to the patient. Such interventions would be more efficient, reducing operating times and costs while sparing the patients from undue stress.

Application Fields

The stent was created for implantation into an artery. However, by altering the size of the stent, one could envision the use of such a device for other scenarios (such as oesophageal cancer).