Removable airway stent could revolutionize surgery

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Erney Mattsson and colleagues experiment with a new kind of stent that can be removed after it has done its job. Credit: Stein Roar Leite, NTNU

A knitted rag sock inspired this professor and MD to develop a stent that can easily be removed after it has done its job.

Two years ago MD/PhD Erney Mattsson from the Norwegian University of Science and Technology (NTNU) launched a new type of stent for use in blood vessels. Now he and his colleagues are in the process of attempting to use the same type of stent in the respiratory tract.

A stent is a cylindrical mesh tube that can be placed in arteries or in the lungs to open blockages or areas that are narrow or weak.

Traditional stents work well, but have the disadvantage that they must remain in the body. NTNU researchers are now testing the new kind of stent to see how it can be used in the lungs. This new type of stent can be removed. The advantages of this are clear, Mattsson says.

"That's because a foreign object causes the body to react so that the vessel narrows again. The best is if we can simply remove the stent after it has done its job," he said.

Mattsson evaluated and tried several different methods, but he found the ultimate solution in a pair of old socks.

Mattsson's stent is knitted, and like a sock can be unraveled after it has been used. This allows the stent to be removed when it is not needed anymore.

"It sounds simple once you know about it, but basically we tried different ways of removing stents. But it wasn't until I saw a pair of old-fashioned rag socks that I had an Eureka moment. So that was it," he said. "All we have to do is leave a thread sticking out, and then we have to have a hold on the stent. Then we pull the thread and the stent unravels, and gets smaller and smaller."

Mattsson's colleague and collaborator Tore Amundsen says the stent can be used in pulmonary medicine, especially in patients who are short of breath due to narrowing of the airways, especially in the central respiratory tract. This may be caused by lung cancer or narrowing of the airways from cancer that has spread from other organs to the lungs or airways.

The collaborators have already wondered if the stent could also be used to allow surgeons to do surgery via the airways.

"Being able to use a stent like this to temporarily open access to small tumors will be of great importance. And then you can avoid doing open surgery," Amundsen said.

More information: A new removable airway stent. *European Clinical Respiratory Journal*, doi: dx.doi.org/10.3402/ecrj.v3i0.30010

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