



Function to Stop Bleeding Promptly and Protect Our Lives

SANYO
PRODUCT
TOPICS

The heart that supports our lives always serves to pump out blood. Therefore, when cardiovascular surgery is performed, hemostasis is very important. We will introduce the product with a function to stop bleeding more reliably in a life-threatening surgery.

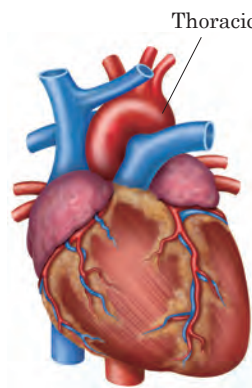
Diseases of the thoracic aorta that cause life-threatening serious consequences

The heart serves as a pump that pumps out blood whose oxygen has been exchanged in the lung throughout the body and recovers it. At first, the blood circulating through the body is pumped out of the aortic valve, the outlet of the heart, and passes through the blood vessel called the thoracic aorta. A swelling in this blood vessel or a tear in the vessel layer is a disease called thoracic aortic aneurysm or thoracic aortic dissection.

There are various causes, but many of them are considered to be due to lifestyle factors, such as arteriosclerosis, hypertension, smoking, and stress, and the incidence increases with age. If the blood vessel ruptures due to this disease and the blood leaks, it may lead to life-threatening consequences. There are many such cases in those who suddenly fall in winter and are transferred by an ambulance.

“Blood vessel prosthesis implantation” for which hemostasis under difficult circumstances is required

Since natural healing is impossible if the blood vessel ruptures, “blood vessel prosthesis implantation” in which the affected blood vessel is replaced by a synthetic graft is performed. In the surgery, the synthetic graft



Heart model diagram

and the blood vessel are anastomosed with suture, and if there is bleeding from the anastomosis site, bleeding should be stopped by applying a hemostatic agent. Since a delay of hemostasis may greatly affect the life and prognosis of the patient, hemostasis at the anastomosis site is important. Particularly when the patient is emergently transferred and undergoes emergency surgery, there is no time to lose.

However, since the thoracic aorta is a blood vessel directly connected to the heart, the blood pressure is high and also the pulsation is felt. The blood vessel surface is often wet with blood during surgery, and the hemostatic agent may not adhere to the anastomosis site easily.

In the meantime, the number of patients with these heart diseases increases by about 5% a year recently due to aging and changes in lifestyle. For that reason, better hemostatic agents had been awaited in medical practice.

‘Hydrofit’ that allowed more reliable hemostasis in a humid environment

The product that overcame these challenges in the cardiovascular surgery and allowed more reliable hemostasis is ‘Matsudyte’ (Pet name: ‘Hydrofit’). ‘Hydrofit’ is a reactive urethane prepolymer and has a feature of reacting with water and forming a cured coating film. Therefore, it forms a cured coating film as quickly as in a few minutes after application even under humid conditions in the body without relying on the clotting feature of blood itself. It can stop bleeding by physically blocking bleeding from the anastomosis site. Also, since it can be stored at room temperature and is filled in a syringe in one component beforehand, advance preparation,

such as mixing with other drugs, is not required. It can also reduce the time and trouble of surgery.

In addition, since the cured coating film formed by 'Hydrofit' has flexibility and can expand and contract to fit the movement of the blood vessel, there is little risk of affecting the nature of the blood vessel. Since it is a synthetic compound of nonbiological origin, it is the product in which the advantages of urethane are effectively utilized without a risk of infection, a disadvantage of biological materials.

“Last defense against hemostatic difficulty” from Japan to abroad

'Hydrofit' was designed and developed by Dr. Takehisa Matsuda at the National Cerebral and Cardiovascular Center in 1980, and industrialized utilizing the urethane technology of Sanyo Chemical Industries. In Japan, it obtained a manufacturing and marketing approval in 2011 and was released in 2014. Since then, it has greatly contributed to reducing the burden on physicians, to say nothing of patients, and has been appraised high enough to be called “Last defense against hemostatic difficulty”. In July 2019, it obtained the CE marking that allows it to be marketed in European Union (Product name abroad: 'AQUABRID®'). There are little examples that a Japanese product obtains the CE marking in the most tightly controlled categories,



'Hydrofit'

“New medical devices”^{*1} and “Specially controlled medical devices”^{*2}, but it has won high acclaim from local physicians as well from the demonstration phase.

At present, we promote the development of new products along with expanding the application range and sales area of 'Hydrofit'. At Sanyo Chemical Industries, we will actively promote the development of products that can contribute to diagnosis, prevention and treatment of people all over the world and will contribute to society in the future as well.

*1: Medical devices whose structure, usage, indications, efficiency or performance clearly differ from those of approved medical devices.

*2: Medical devices that are highly invasive to the patient and potentially have a direct impact on human life when a malfunction occurs.

