

The Mechanical Leech

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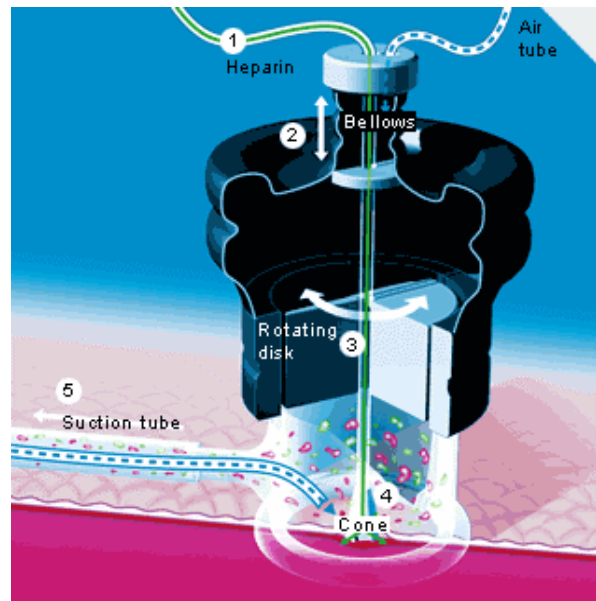
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Leeches have been used to treat many different ailments from headaches to stomach aches in ancient Egypt. Napoleon's military surgeon, Francois-Joseph-Victor Broussais who was such a firm believer in the medical benefits of leeches that in 1833; he had more than 40 million imported into France. In today's medical field leeches are used mostly to treat venous congestion. Venous congestion is a post-surgical complication that can occur after reconstructive surgery. Venous congestion is a complication that can happen after head, neck, or breast reconstruction, limb or digit reattachment, or other complicated procedures where tissue is moved from one place to another. Leeches increase the blood flow to compromised tissue. Complications happen as the arteries pump blood into the reconstructed tissue, but the associated veins do not let the blood flow out, usually because the veins have become clotted. The excess blood in the tissue, if severe enough, can deprive the tissue of oxygen and other nutrients and can cause it to die.

In cases of venous congestion where reestablishing the flow of blood is essential, leeches have great therapeutic value because, as they consume their meal of blood, they promote blood flow through the tissue. Even after a leech detaches from the body, the anticoagulants it secreted into the tissue allow the wound to ooze blood for hours afterward. This oozing promoted by the leech's natural anticoagulants also allows blood to continue flowing through the tissue.

The mechanical leech was developed at UW-Madison. The way it works is:

1. Tube delivers a solution containing Heparin, an anticoagulant, to the wound.
2. Miniature bellows move the tube up and down, preventing blood from clotting at the bottom.
3. Actuator-driven disk rotates tube, also to prevent clotting.



4. Holes in the cone release the solution to cleanse wound.
5. Suction draws blood and solution out to promote circulation

This mechanical leech has many advantages for example it can penetrate a deeper level under the skin, tapping into larger blood vessels and treat a larger area of tissue. Leeches are not sterile and can cause bacterial infections. Nurses and pharmacists tend not to like working with leeches because they can sometimes slip off patients and reattach themselves to other parts of the body not in need of therapy. Most patients' don't enjoy having leeches attached to their bodies. The mechanical leech will be able to reduce this psychological stress.

The mechanical leech has only been tested on pigs' skin. Michael Conforti and Nadine Connor are currently working toward a mechanical leech that is smaller and easier to use. Within the next three years this product should be ready for human patients.

<http://www.popsi.com/popsi/medicine/article/0,12543,230229,00.html>

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