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Mechanical Leeches In The Medical Environment

Leeches are annelid creatures meaning that they are kind of segmented worm. Most species are carnivorous and feed on small crustaceans. Few species such as the *Hirudo medicinalis* “medical leeches” are haemophagic parasitic “blood sucking”, and have been used in medical treatment dating back to 50 B.C.

“Medical Leech” therapy has a long history. Records indicate that Egyptians used leech therapy 3,500 years ago. Leech treatments were very popular during the Middle Ages as well. Leech therapy was commonly practiced in the 1800's by American physicians treating a variety of diseases. Napoleon's top military surgeon Francois -Joseph-Victor Broussaiss was said to have had 40 million leeches imported into France for medical use. Leeches have the ability to remove blood from their host (human). In the blood removing process the leech will release a pain-killing (anesthetic) and a blood-thinning (anticoagulant) substance with their saliva. The ability of the leech to release this pain killer substance into the host was valued greatly in the 1800s when cures for most modern diseases were unknown.

In a recent study Andreas Michalsen of the Essen-Mite Clinic in Essen, Germany, and colleagues conducted a pilot study involving 16 patients who had had knee pain for more than six months. X-rays revealed telltale signs of osteoarthritis in all of the participants, whose average age was 68. Ten patients received leech therapy for the pain. This involved placing four medicinal leeches on the inflamed knee and leaving them there for 80 minutes. The other six patients were given conventional pain treatment.

The researchers recorded pain levels three days prior to starting pain treatment and 28 days after treatment had finished. Although the initial leech bite proved slightly painful to some of the patients, the therapy brought significant pain relief within 24 hours. The alleviation continued four weeks later, without side effects or infections. Those participants who received conventional treatment, in contrast, did not report pain relief.

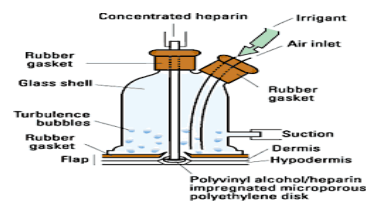
Live leeches cause patients to be squeamish about having them placed on their bodies. Leeches are not sterile, and contain bacteria that can cause infections. Leeches have the ability to feed until they are full (1-5mL blood per meal). Once they are full they tend to slip off the patient and reattach themselves in unwanted areas.

The Mechanical Leech serves all the same purposes of the live leeches without the look and appeal the live leeches have. Michael Conforti and a team of researches at the University of Wisconsin

devolved a mechanical leech. “The prototype consists of a small Teflon cone that sits under a surgical incision made in the skin. A stainless steel tube that delivers a saline solution that irrigates the wound and keeps the blood flowing.

The patient interface unit that sits above these parts, controlling the irrigant flow and providing mechanical agitation to increase anticoagulation.” Research showed device was effective in decongesting the skin in a 15 hour period.

Mechanical leeches are sterile and contain no bacteria causing infection. They are more eye appealing, and will not detach and reattach themselves. The suck more blood (about 10mL per tank), contain a removable blood reservoir, can be ready to use on the spot, and are much cheaper compared to an average 350\$ live leech session.



Mechanical Leech Model “Conforti”

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