

Leech Therapy: A History

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Bloodletting is an ancient procedure that was utilized for curing the ills of man. This article traces the use of leeches for bloodletting therapy from ancient Greek times to the Chapin Harris era in the 1840s to modern day usage by plastic surgeons. The leech is described as both a parasite and a therapeutic agent. The techniques used by both medicine and dentistry are historically documented.

Introduction: Definition

The word "leech" is a derivation of the Anglo-Saxon *lœce*, meaning "to heal." The physician was called a "leech" and his therapeutic book a "leechdom."⁴ Actually, the leech is an: "aquatic worm with a flattened body, tapering toward each end, and terminating in circular flattened discs, the hinder one being the larger of the two. It swims with a vertical undulating motion, and moves when out of water by means of these discs or suckers, fastening itself first by one and then by the other, and alternately stretching out and contracting its body. The mouth is placed in the centre of the anterior disc, and furnished with three cartilaginous lens-shaped jaws at the entrance of the alimentary canal. These jaws are lined at their edges with fine, sharp teeth, and meet so as to make a triangular incision in the flesh. The head is furnished with small,

raised points, supposed by some to be eyes."¹⁵ The leech belongs to the Phylum Annelida family of 'fresh-water parasitic invertebrates.'⁴

The leech is a hermaphrodite, but leeches mutually impregnate each other. They are oviparous, their eggs varying from six to fifteen. The eggs are deposited near the edge of the water and hatched by the heat of the sun. There were two kinds of leeches used for medicinal purposes in the United States, the American (*Sanguisuya medicinalis*) and the European (*Sanguisuya officinalis*). The two species may be distinguished from each other by the color of the belly, which is "brownish orange or reddish brown" in the American and "greenish or greenish yellow" in the European. The average length of a leech is three inches, and they can draw from "one fluidrachm to half an ounce or more of blood each."¹⁵

Leeches as Parasites

In 1799 when Napoleon's army marched from Egypt across the Sinai to Syria, the thirsty soldiers

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drank water from leech-infested ponds. The leeches attached themselves inside the mucous membranes of the oral cavity and throats of the men. Although small at first they soon swelled after gorging on blood, and caused death from bleeding or suffocation as the leeches blocked the respiratory tract. A similar problem developed for British soldiers in the Sinai in World War I, and for American troops in the jungles of Vietnam.⁷

Leeches in Medicine

The leech was used in medicine as a means of "local depletion" (bloodletting) from the ancient days of Greece, Rome, and Arabia. In Greece, they were first mentioned by Themison (80-40 B.C.), a pupil of Asclepiades, who lived a century before Christ.¹¹ Ambroise Paré (1510-90) recommended leeches for bloodletting in cases where cupping-glasses could not be used, "to those leeches may for the most part be put, as to the fundament to open the coat of the haemorrhoid veins, to the mouth of the womb, the gums, lips, nose, fingers."¹⁶ As part of the *materia medica* of the popular bloodletting treatment to get rid of bad blood, leeches were sold by apothecaries, both to physicians and directly to patients. Leeches were gathered in the spring of the year by netting or simply wading in the water and allowing them to attach themselves to the legs.⁴ In the 18th century they became commercially popular to the extent that some unscrupulous dealers bought up old and worn-out horses, drove them to ponds, fenced them in, and allowed the leeches to feed on them. This barbaric practice notwithstanding, the leeches so nourished would possibly convey "poisonous and infecting products to the human system." Leeches consumed the blood of both cold and warm-blooded animals, preferably the latter, and sometimes gorged themselves to the extent that they could not digest the meal and died. Leeches leave visible scars, and therefore, small leeches were popular to use on the face or neck.¹¹

There were fluctuations on leech prices as Richard Arnold, a Savannah physician, complained in 1838, when leeches were selling there at 50 cents each. He said the local medical society had contracted a druggist to supply the public at 25 cents a leech, but he sold out before he could complete his contract. Dr. Arnold said leeches unfortunately were "only in the reach of the rich."¹⁴

Bloodletting using leeches and other methods enjoyed a revival in the early 19th century, particularly in France. "Leech farms" were unable to keep up with the demand.⁴ In 1833, over 41,500,000 leeches were imported into France, and only nine or ten million exported. Francois-Joseph-Victor Broussais (1772-

1838), a surgeon in Napoleon's army, sometimes applied as many as ten to fifty leeches at a time for certain maladies. In cases of extreme debility he used only five to eight.⁶

A healthy leech can draw one or two fluid drachms of blood. It was noticed that leech bites continued to bleed after the leech was withdrawn. This phenomenon was finally explained in 1884 when John Berry Haycroft, a Birmingham chemist, discovered an anticoagulant, called "hirudin," that the leech injected into the blood, which kept the capillaries flowing.⁴

The Technique

The best leeches were obtained from Sweden and Hungary. They were generally sent out by dealers in boxes filled with marsh-sod and clay. The only care they required was to occasionally moisten the earth and remove dead or sickly leeches. The box had to be kept in a cool place, and preferably with air holes and immersed in rain-water. In their application the part to be leeches had to be perfectly clean and free of any medicinal smell or perspiration. The leeches had to be handled carefully with clean hands, and placed in a cupping jar, wine glass, or even a pill box partially filled with water, which helped them bite. After they attached themselves, the cup could be removed and the part surrounded by a soft cloth to absorb the moisture and blood and catch the leeches as they dropped off, which usually took about an hour. Often the leeches needed to be encouraged to bite. A slight scarification of the affected part helped. The leech held in a soft towel and its head directed to the scarified part, and withdrawing it a bit as it reached the site often helped.¹⁷

One author recommended throwing them in a saucer of fresh beer and leaving them until they began to get "quite lively." After they began to move around a bit, they could be taken out and applied. Even "dull leeches" will "do their duty."¹⁰ Another, recommended keeping them in a pint jar with a perforated lid, and merely supplying them with fresh rain-water twice a week. The leeches appear just as "lively in twenty-four hours after use as before." He put them in a clean wash basin after they had sucked themselves full of blood, sprinkled fine salt on them, allowed them to "crawl and squirm" until they disgorged, and then washed and returned them to their jar with fresh rain-water.¹³

Some leech dealers considered the American leeches worthless and inferior to the European; however, those exported to this country were generally full of blood. They had to be placed in purging ponds and left to digest their last meal. Until that was digested, the leeches were useless. Sometimes they remained in the purging pond in order for this digestion to occur.

Leeches were known to make their home in the human stomach and intestines and to live for fifty to one-hundred years. Leeches were hardy creatures but subject to skin diseases. Sick leeches could be cured on a milk diet.²

Leeches in Dentistry

In 1817, Thomas Bell treated a case of an oroantral fistula with facial swelling with six leeches "applied to the face."⁸ Chapin A. Harris in 1839 recommended the application of leeches to the gum for drainage of an abscessed tooth.¹ Tubes were made to assist the application of leeches to the gums at a specific site. Leeches could be used over again after they digested the blood they gorged with; however, a leech used on an infected person could transmit the disease to others.¹⁷ Leeches were used to treat odontalgia, periodontitis, and alveolar abscess. They gave the patient immediate relief from pain.¹⁵ In 1854 C. Spencer Bate successfully treated a large cavity in a maxillary central incisor with swelling with "a leech to the gum." Several days later, he reported the "tooth firmer, with less swelling." The leech had been "misapplied and took only on the lip; the tumor got worse, and a second leech was more successful, removing the pain and bringing down the swelling."⁵

In 1882, a death occurred in Berne, Switzerland, attributed to a leech bite. A dentist recommended that a patient suffering from a toothache apply a leech which he purchased at a chemist's shop to his swollen gums. Two hours later, he felt sick and had swelling of the lips, cheek, neck, and chest. The following morning, when the physician was called in, the patient's head was "much inflamed, his breath laboured, delirium ensued, and in twenty-four hours he expired." The postmortem revealed the cause of death to be blood poisoning. It was evident that the leech, although it had spent seven days at the chemist's shop, had transmitted the poison.¹²

Leeches in Modern Times

In 1983, Henderson et al reported a case where leeches were used in the post-operative treatment of a scalp avulsion case.⁹ In the 1990s researchers in Russia were finding new uses for leeches. Leech therapy has

made a resurgence in Russia for treatment of hypertension, migraines, phlebitis, varicose veins, arthritis, hemorrhoids, and ovarian cysts. In the United States, plastic surgeons use them to drain blood from wounds after limb or tissue reattachment. The anti-coagulant they secrete into a wound prevents a scab from forming and allows healing from the inside outwards.³

References

1. American Academy of Dental Science. *History of dental and oral science in America*. Philadelphia, Samuel S. White, 1876. p. 75.
2. The American leech trade. *Dent Register*, 1877, 31: 87-88.
3. Bor J. Russians become attached to their leech treatments. *The Sun* (Baltimore), November 12, 1997.
4. Davis A, Appel T. *Bloodletting instruments in the National Museum of History and Technology*. Washington, DC, Smithsonian Institution Pr., 1979. pp. 34-36.
5. Dental Abstracts. *Dent Register of the West*, 1854, 7: 136-37.
6. Garrison FH. *An introduction to the history of medicine: with medical chronology, suggestions for study and bibliographic data*. 4th ed. reprint. Philadelphia, Saunders, 1961. p. 409.
7. Halton CM. *Those amazing leeches*. Minneapolis, Dillon Press, 1989. pp. 11-12.
8. Harris CA. *The principles and practice of dental surgery*. Philadelphia, Lindsay & Blackiston, 1845. p. 466.
9. Henderson HP, et al. Avulsion of the scalp treated by microvascular repair: the use of leeches for post-operative decongestion. *Br J Plast Surg*, 1983, 36: 236-37.
10. How to make leeches bite. (*Med Ex-Weitenweber Beitr, and Schmidt's Jahrb-Western Lancet*), quoted in *American J Dent Sc*, 1843, 4: 128.
11. Leeches. *Dent Register*, 1881, 35: 246-48.
12. Leeches unsafe. (*Missouri Dent J*), quoted in *Dent Record*, 1882, 2: 261-62.
13. A little experience with leeches. (*Dent Register*), quoted in *Dent Quarterly*, 1862, 1: 53-54.
14. Porter R, ed. *The Cambridge illustrated history of medicine*. Reprint. Cambridge, Cambridge Univ. Pr., 1998. p. 122.
15. Richardson J. Leeches: their therapeutic value in dental practice — pathological conditions indicating their employment — mode of application — manner of preserving them. *Dent Cosmos*, 1861, ns, 3: 128-32.
16. Seigworth GR. Bloodletting over the centuries. *NY State J Med*, 1980, 80: 2026.
17. Stearns F. Remarks on leeches. *Dent Register of the West*, 1858, 12: 202-3.