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Hirudotherapy in France: Historical Rise, Decline, and Contemporary Clinical Revival — A Narrative Review with an Ayurvedic Perspective

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Abstract

Background: France holds a unique place in the history of medicinal leech therapy (hirudotherapy). During the nineteenth century it was the world's largest consumer of medicinal leeches, and it retains a leech-farming tradition in Gironde that dates to that period.

Objective: To trace the evolution of hirudotherapy in France from the Broussais era to present-day hospital practice, to summarise its current clinical indications and safety concerns, and to compare French experience with the classical Ayurvedic doctrine of Jalaukavacharana.

Methods: Narrative review of indexed biomedical literature, French historical and pharmaceutical-history sources, hospital protocols, institutional theses, and producer records.

Results: Leech use in France expanded dramatically in the early nineteenth century under the influence of François Broussais, leading to overharvesting of wild populations and the development of industrial leech farming in Gironde. Indiscriminate bloodletting later discredited the practice, and environmental change eliminated much of the wild stock. A single producer, Ricarimpex, preserves the Gironde tradition and supplies hospitals. Contemporary French use is concentrated in plastic, reconstructive, and trauma surgery for venous congestion, with emerging interest in osteoarthritis. Aeromonas infection and antimicrobial resistance are the principal safety concerns. Outside hospitals, practice is heterogeneous and training is short.

Conclusion: The French trajectory illustrates that the therapeutic value of hirudotherapy depends on disciplined indication, controlled sourcing, and infection prevention, principles that closely mirror those described by Sushruta.

Keywords: Hirudotherapy; Hirudo medicinalis; Jalaukavacharana; Broussais; France; Microsurgery; Venous congestion; Aeromonas

Introduction :

The medicinal leech has been used therapeutically for more than two millennia, with references in Egyptian, Greco-Roman, Chinese, and Indian medical traditions [1,2]. In Ayurveda, Sushruta described *Jalaukavacharana* (leech application) as the gentlest form of *Raktamokshana* (therapeutic bloodletting), classifying leeches into twelve types, six venomous (*Savisha*) and six non-venomous (*Nirvisha*), and specifying their collection, storage, application, and post-procedure care [3].

Among Western nations, France occupies a distinctive position. It was the epicentre of the nineteenth-century leech boom, experienced a sharp collapse of the practice, and has since reintegrated leeches into modern surgical care [1,4]. This review examines that trajectory and considers what it offers hirudotherapy practitioners, including those working within the Ayurvedic framework.

Methods :

This is a narrative review. Sources included peer-reviewed biomedical articles on the clinical use of *Hirudo medicinalis*; French-language historical and pharmaceutical-history literature; hospital clinical protocols and a hospital pharmacy thesis; records published by the principal French leech producer; and descriptions of practice outside hospitals. The study drew classical Ayurvedic content from the Sushruta Samhita. Given the heterogeneity of sources, no quantitative synthesis was attempted.

Historical Development

The Broussais era

The rise of leech therapy in France is closely associated with François-Joseph-Victor Broussais (1772–1838), a surgeon of the Napoleonic army whose "physiological medicine" attributed most disease to inflammation,

particularly of the gastrointestinal tract [4,7]. He favoured local blood depletion by leeches, and under his influence France became the world's largest consumer of medicinal leeches [4,8]. Historical reviews record that France imported tens of millions of leeches annually at the height of the practice [1]. In some regions, the leech largely displaced the lancet, and an entire economy of harvesting, farming, storage, importation, and application developed around the animal [6].

Overexploitation and the birth of leech farming

Demand rapidly exceeded natural supply. Producer records describe how harvesting that initially took only standard-sized animals became uncontrolled as prices rose; the largest pond at Capestang in Gironde, once yielding around 15,000 leeches per day, declined drastically within fifteen years [5]. Farming emerged as the solution. Gironde farmers, notably the Béchade family, addressed the central problem of feeding, and by 1854 leech farming in the department extended over roughly 5,000 hectares, much of it used for grazing horses on which the leeches fed [4]. Contemporary accounts describe driving old or injured livestock into marshes to feed the leeches, practices that would be unacceptable today [8]. The Brière marshes and the Audenge basins in Gironde were among the most productive centres, grading leeches by size much as commercial seafood is graded [6].

Decline :

Excess ultimately discredited the practice. Prolonged convalescence, haemorrhage, and skin infections resulting from indiscriminate use undermined confidence in Broussais' doctrine and in leeches themselves [4]. Sanitary problems in farming areas, linked to the use of diseased horses and marsh flooding, compounded the decline [4]. Over the following decades, marsh drainage and agricultural chemical use

eliminated much of the wild leech population in France [1]. Nevertheless, leeches never disappeared entirely from therapeutics [6].

Continuity of Supply: The Gironde Tradition

A notable feature of the French story is institutional continuity. The Béchade enterprise passed through family succession; in 1901, it established breeding basins at Audenge on the Arcachon basin, and in 1960, the business adopted the name Ricarimpex [5]. In 2001 the company established a breeding laboratory to intensify and control production, and in 2002 it obtained ISO 9001 certification [5]. It describes itself as the only French enterprise continuing Gironde's tradition of hirudiniculture [4], and it maintains more than one million specimens in approximately fifteen basins at Audenge, supplying reconstructive surgery, cosmetology, and the pharmaceutical industry [8]. Table 1 summarises key milestones.

Table 1. Milestones in the history of hirudotherapy in France

Period	Milestone
Early 19th c.	Broussais' physiological doctrine popularises local bloodletting by leeches; France becomes the largest consumer [4,8]
1815–1850s	Rising demand drives overharvesting of wild stocks and steep price increases [5,6]
1854	Leech farming in Gironde extends over about 5,000 hectares [4]
Late 19th c.	Complications of indiscriminate use discredit Broussais' doctrine; practice declines [4]
1901	Breeding basins established at Audenge, Gironde [5]
1960	The enterprise adopts the name Ricarimpex [5]
1970s	Renewed interest alongside reconstructive and microsurgery [9]
2001–2002	Breeding laboratory established; ISO 9001 certification obtained [5]
2004	US FDA clearance of medicinal leeches as a medical device, noted in French hospital literature [14]

Contemporary Clinical Practice in France

Hospital use

In contemporary French practice, live leeches are largely confined to hospitals, principally plastic, reconstructive, and trauma surgery departments; despite renewed interest from the 1970s, hirudotherapy has remained at the margins of available therapeutics [9]. The principal indication, consistent with international practice, is venous congestion in replanted digits and in flaps, where venous outflow is inadequate [10,11]. Leech saliva contains hirudin and other bioactive molecules with anticoagulant, vasodilatory, anti-inflammatory, and local anaesthetic effects that together relieve congestion while the tissue re-establishes venous drainage [2,10].

Protocols in French-speaking hospitals describe sequential application of individual leeches for approximately 20–45 minutes, spontaneous detachment when engorged, retrieval with forceps, and prohibition on forcible removal; application is by medical prescription and supply is coordinated through the hospital pharmacy [16].

Osteoarthritis and other indications

Interest has also grown in musculoskeletal use. French pharmaceutical literature notes application in osteoarthritis [9]. Randomised trials in Germany have reported short-term pain relief in knee osteoarthritis following leech therapy compared with topical diclofenac [12] and in a separate randomised study [13]. Reviews also describe use in thrombophlebitis, haematoma, and varicose conditions, although the evidence for these indications is less robust [2,17].

Infection risk and prophylaxis

The main safety concern is infection with *Aeromonas* species, which are part of the leech's obligate gut flora and help digest blood [15]. A retrospective study at CHU Amiens-Picardie reviewed nine years of hospital hirudotherapy and noted that hirudotherapy-associated infections and antimicrobial resistance in *Aeromonas* are increasingly reported; it also proposed a decontamination protocol for leeches before dispensing to clinical wards [14]. The international literature widely recommends antibiotic prophylaxis during therapy [10,11,15]. Other risks include prolonged bleeding requiring transfusion, allergic reactions, and scarring [15,17].

Practice outside hospitals

Outside hospitals, hirudotherapy in France is offered by a small, heterogeneous group of practitioners. Directories list hirudotherapists who may be general practitioners, naturopaths, practitioners of Chinese medicine, or reflexologists; training courses typically last one to five days and cover regulation, traceability, storage, application, hygiene, disposal, mechanisms of action, and contraindications [18]. This variability in practitioner background and training contrasts with the controlled hospital environment and highlights an area where clearer standards could improve patient safety.

Discussion:

An Ayurvedic Perspective

The French experience offers an instructive comparison with the classical Ayurvedic approach. Sushruta presented leech therapy not as a universal remedy but as a targeted procedure: .

Jalaukavacharana was recommended especially for Pitta-vitiated blood and for patients unsuited to more aggressive bloodletting, such as children, the elderly, women, and the delicate [3]. He specified selecting suitable non-venomous leeches, preparing them, applying them, managing the wound, and caring for the leech after use [3].

Broussais' system departed from each of these principles. It applied leeches indiscriminately, in very large numbers, based on a single speculative pathology, and the resulting complications led to its collapse [4]. The modern French revival succeeded by reintroducing discipline: narrow, well-defined indications; reliable farmed sources; single-use leeches; pharmacy control; and infection prophylaxis [5,14,16]. In effect, contemporary French hospital practice has rediscovered the structured, indication-driven logic that Ayurveda codified many centuries earlier.

Ayurvedic practitioners should pay particular attention to two areas. First, modern *Jalaukavacharana* protocols should incorporate the French emphasis on microbiological safety, including *Aeromonas* surveillance and decontamination. Second, French producer practice, including controlled breeding, quality certification, and prolonged pre-use fasting, provides a useful benchmark for leech sourcing in India. Conversely, the Ayurvedic framework of patient assessment and indication-specific application could inform France's currently heterogeneous non-hospital practice.

Limitations :

This narrative review draws partly on historical, institutional, and grey-literature sources, which may be subject to bias. Figures on nineteenth-century leech consumption vary between sources. Published data on the volume and outcomes of contemporary French hirudotherapy, particularly outside hospitals, are limited.

Conclusion :

Hirudotherapy in France has passed from uncontrolled mass use, through near-abandonment, to a precise and evidence-guided role in reconstructive surgery. The continuous Gironde farming tradition links these phases. The central lesson of the French experience is that the value of the medicinal leech depends on disciplined indication, controlled sourcing, and rigorous infection prevention. These principles, articulated in the Sushruta Samhita, remain equally relevant to modern Ayurvedic and biomedical practice.

Declaration :

Conflict of Interest : None

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