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The Vascularity of Ayurvedic Leech Therapy: Sensory Translations and Emergent Agencies in Interspecies Medicine

This article offers vascularity as a multi-dimensional imaginary for the interspecies entanglements constituting Ayurvedic leech therapy. Whether, when, where, and how a leech decides to bite, suck, and release comprise pivotal junctures in leech therapy as practiced in southern Kerala, India. In the course of leech-human intra-actions, leeches translate matter, providing sensory mediation, relief, and amusement. Enmeshed in social and ecological relations inflected by gender, religion, class, and caste, this analysis of Ayurvedic leech therapy reframes questions of agencies starting with and from the viewpoint of the vascular capacities of leeches in their interactions with humans. This image of vascularity provides an analytic for the emergent agencies of humans and leeches constituted by sensory intra-actions at branching points in this multispecies clinical practice. [vascularity, agencies, multispecies ethnography, sensory, leech, Kerala]

Introduction

The first time I held a leech in my gloved hand, I was moved by the softness and strength of its small agile body flexing and squirming. At that moment, I became an object of alarm and amusement to the clinician who had handed me the leech. When she instructed me to purge the leech, stroking from tail to head, my hand was oriented the wrong way. A fast, thin stream of blood shot out, almost spraying my colleague's blue kurta. Practicing the "arts of inclusion ... in these times of extinction" (Tsing 1: 92), this multispecies ethnography explores the entanglements of Ayurvedic leech therapy (Mal. *attacikitsa*, Skt. *jalaūkāvācāraṇa*) at a clinic in southern Kerala.¹

I suggest that we can best understand leech therapy and the clinical "intra-actions" it entails through its vascularity (Barad 2003).² In providing a multi-dimensional imaginary for leech-human engagements and emergent agencies in

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clinical practice, vascularity, as a multi-dimensional network of resilient paths and branchings, enables us to take into account resistances, obstacles, flow, and complexities. Leeches act as translators of matter, imbibing human blood while excreting pain-relieving saliva. They provide sensory mediation and amusement for physicians attempting to enroll them in leech therapy. A resistance-focused approach to understanding agencies in multispecies medicine following Callon's study of scallops, or Pickering's "mangle of practice" privileging human intentionality in the laboratory, would foreground leeches as disrupting the human agenda of leech therapy (Callon 1986; Pickering 1993). But, whether, when, where, and how a leech bites, sucks, and releases, comprise pivotal junctures in the process. The image of vascularity accounts for the dynamic co-constitution of agencies in this interspecies medicine. Here, human and leech agencies congeal through sensory intra-actions at branching points in the vascular practice that we will see illustrated in the ethnographic vignette below.

The Sanskrit names for leech, *jalaaukas*, "one whose abode is water," and *jalāyukā*, "one whose life is water," emphasize the leech's relationship with water (*jala*).³ According to Ayurvedic ontologies, living beings—including humans—are both fluid and participating in a distinct somatic interface with their environment (Zimmerman 1987). Practicing leech exceptionalism, let us think with the leech as emblematic of an Ayurvedic ecology. The leech whose "life is water" is the embodiment of fluidity bounded. Fluidity helps us understand leech lifeways and speaks to a quality that leeches bring to the clinic. Like De Laet and Mol's work on the fluidity of the Zimbabwe bush pump, the leech is changeable, mobile, and agentive in the flow of clinical practice (DeLaet and Mol 2000). However, leeches are also "sticky," a term used by Scott-Smith to indicate a viscous midpoint between "immutable mobiles" and fluid technologies (Latour 1987; Scott-Smith 2017). Leeches have a feeding practice, engaged by practitioners, of biting—literally, of sticking and then unsticking. When, how, where, and why they stick and unstick are matters of concern to practitioners and patients alike. But leeches are not bush pumps, rather, they are complex living and sensing beings.

The term *āyurveda* means knowledge (*veda*) of life, or long life (*āyus*), in Sanskrit. While the early first millennium medical treatises, the *Carakasambhitā* and the *Sūśrutasambhitā*, focus on human beings, the former construes a wider understanding of life as inseparably connected to sentience. Life and sentience are co-extensive and hinge on a particular sense-ability arising from the conjunction of mind, self, and sensing body.⁴ Leeches are sentient as they are understood to have the capacity to touch and possibly smell. Kohn's description of the Amazonian Runa worldview as an "ecology of selves" critiques the categories of human and nonhuman by recognizing as all living beings as "selves" capable of thought and communication through nonsymbolic signs. Like the jaguar that "sees" a human in a particular way, shaping their encounter (Kohn 2013: 1), how a leech perceives matters critically to the unfolding of treatment. What renders agency is the interactions of selves in communication (Kohn 2013: 91). In the case of Ayurvedic leech therapy, this communication is not only visual but also intersensorial and haptic. Leeches communicate with humans through the fluidity and stickiness of their feeding practices. Their choice to bite, to suck, in all of its specificities, are both felt by the patient, and felt and observed by the physician. Informed by early Ayurvedic notions of life, this study engages Ayurvedic leech therapy as a vascularity constituted by the emergent agencies of sensing selves in communication.

Ayurvedic medicine was first codified on the Indian subcontinent in Sanskrit compendia roughly dating from the second century BCE through the seventh century CE. It is one of seven healing systems recognized by India's Ministry of AYUSH. Ayurvedic lineages of practice in relation to the early treatises are complex, regionally variant, and discontinuous (on Kerala, see Cerulli 2018; Cleetus 2007; Menon 2019; Panikkar 1992). Local histories of Ayurvedic philosophies and practices vary across India and have been intertwined with those of medicines such as early Buddhist medicine (Zysk 1999), Tamil Siddha (Weiss 2009), Yunani (Attewell 2007; Leslie 1976; Sivaramakrishnan 2006), and biomedicine (Brooks 2018; Cohen 1995; Halliburton 2016; Lang 2018; Langford 2002; Mukharji 2016; Naraindas 2014). In colonial and independent India—and audible in the way practitioners in Kerala refer to biomedicine as “modern” medicine—Ayurvedic medicine has often been situated as “the Other of ‘the modern,’” as both “traditional” and “indigenous” (Gupta 1998). The contested and shifting category of Ayurveda has been engaged in biopolitical projects of the colonial and post-colonial states (Berger 2013; Khalikova 2017), in evoking nationalism (Alter 2015), and as medium for the global corporatization and commodification of traditional medicines (Bode 2006; Hardiman 2009).

The imaginary of Ayurvedic leech therapy in its vascularity reflects these multiple temporalities and body-ontologies. As in Nading's work on dengue fever in Nicaragua, there are spatial, temporal, epistemic, and bodily facets to the entanglements of leech therapy (Nading 2014). Ayurvedic physicians in Kerala practice with leeches with reference to the *Suśrutasamhitā* and *Aṣṭāṅgahṛdaya*, first millennium Sanskrit Ayurvedic treatises included in institutionalized Ayurvedic medical curriculum and adapted through local lineages of Ayurvedic surgical practice. Through this multi-temporal engagement, the vascular possibilities of clinical practice, textured by uneven social distributions of care, are inflected through an imagined past. In the clinic, physicians shift between entangled fluid body mappings, as veins, arteries, lymph, *sirās* (Skt. vessels, Mal. veins), *srotases* (Skt. channels), and *dhamanīs* (Skt. conduits, Mal. (*dhamanīs*) arteries) come into and out of focus, suggesting an accretive image of a hyper-vascularized body. These dynamic body mappings suggest multiple ontologies constituting the coherence of the vascularity of leech therapy (Mol 2003). As explained to me in the clinic, leeches remove excess and vitiated blood. They excrete pain-relieving saliva containing a panacea of substances, including hirudin (an anticoagulant). Their cool and watery nature renders leeches ideal for pacifying the Ayurvedic *doṣa* (humor) of *pitta* (bile). However, leeches are often engaged in removing blood and revascularizing diseased tissue in conditions involving the other two *doṣas*, *vāta* (wind) and *kapha* (phlegm), including venous ulcers, hemorrhoids, arthritis, keloids, and psoriasis. Elsewhere, I write at length about Ayurvedic leech therapy and bloodletting in terms of Ayurvedic *tridoṣa* theory, and of leeches and leech therapy in the early Sanskrit Ayurvedic treatises (Brooks 2020, Forthcoming). Here, following physicians in the clinic, educated primarily in institutional settings with “integrationist” syllabi established by the Central Council for Indian Medicine (Cerulli 2018), I resist a comparative unstranding of Ayurvedic and biomedical ontologies of leech therapy.

The Sanskrit term, *jalaūkāvacaṛaṇa*, “application” or “employment” of leeches, implicates a practice framed around the human intentions of healing and palliation.

Likewise, foregrounding human instrumentalizing of leeches, the Malayalam phrase used in the clinic to describe leech therapy—“cause the leech to bite” (*aṭṭaye koṇḍū kaḍippikkuka*)—employs a causative verbal form.⁵ But these human agendas are also predicated on a leech’s intention to feed on blood. Instrumentalizing is inherent to our intertwined being and becoming, and a multispecies ethnographic approach to studies of healing necessitates consideration of care and response-abilities beyond the human (Fuentes 2019; Puig De la Bellacasa 2017; Sharp 2019). Leech therapy is a practice around which humans and leeches engage, to remove blood for healing/imbibe blood for food—to excrete saliva for palliation and healing/excrete saliva for feeding. If we understand Ayurvedic leech therapy as predicated on the “porosity” of “bodies and environments,” as in Solomon’s study of the dynamics of absorption and metabolism in contemporary Mumbai, a unidirectional anthropocentric human–leech hierarchy breaks down. Here, the work of porosity—of “moving materials across uncertain boundaries”—is a leech–human endeavor, centering not only around absorption, but also on excretion and transformation (Solomon 2016: 9). Leeches play a central role in determining the course of treatment and the information gleaned during treatment. However, they are captive, and, like their kin in the clinic, their lives are at stake.

From Pond to Clinic

This article follows the one-way journey of leeches from pond to clinic, while gesturing to a leech’s wide web of world-making engagements (Tsing 2010b). Multispecies ethnographies in medical anthropology have contributed to our understanding of the intertwined nature of human animal health, through engagement with therapeutic human–animal relationships (Lee Davis et al. 2015), laboratory animals (Friese and Latimer 2019), zoonosis (Keck and Lynteris 2018), and biopolitical and ecological entanglements (Brown and Nading 2019; Nading 2014). While intersecting these terrains, this ethnography of Ayurvedic leech therapy explores leeches as central actants in the intertwined processes of clinical treatment and diagnosis. By providing an analytic for clinical multispecies medicine, vascularity turns our attention to the ways that human and leech agencies and beings co-constitute and unfold through sensory intra-actions in practice.

At the clinic, vascular practice is illustrated through a generalized description of leech therapy woven with an ethnographic vignette. These narratives, contingent on the particular sociality of a small Ayurvedic clinic in Kerala, highlight sensory intra-actions, branching points where the course of practice congeals or shifts, forming a vascularity. By recognizing leeches and humans as mutually constitutive and enmeshed in a network of social and ecological relations inflected by intersectionalities of gender, religion, class, and caste, this analysis of Ayurvedic leech therapy reframes questions of agencies and response-ability starting with and from the viewpoint of the vascular capacities of leeches in their intra-actions with humans (Haraway 2008).

Lotus Pond

We begin in a pond. Pond time is slow and seasonal. For a leech, it is digestive hibernation punctuated by occasional hunting, foraging, and feeding. According to the

Suśrutasaṃhitā (Sū 13.13–15), to be a breeding habitat for non-venomous leeches, it must be a pond filled with clear water populated by lotuses and other ecologically homologous flora and fauna.⁶ Leeches used medicinally in India are harvested from ponds and lakes, whereas in Europe and Russia the breeding of *Hirudo medicinalis* and other leech species has been industrialized in “leech factories.” *H. medicinalis* is listed as Near Threatened on the IUCN Red List due to wetland loss and climate change (IUCN Red List 2018). There is no listing for *H. manillensis* leeches, the species likely used in the clinic, and their conservation status in India is unknown. Given the rapid development of wetlands in South India, loss of habitat is likely the greatest threat to *H. manillensis* in India.

Skin

To gather these aquatic beings, a leech collector pricks his lower legs. Entering the water, bleeding, he lures them to his own body. Through this porous exchange, humans appeal to the sensory stimuli needed to entice a leech to bite and feed. Ramakrishnan Padmanabhan, a 75-year-old leech catcher in Kerala, reports catching up to 10 per day and has about 15 “disciples,” who have learned from him, manual laborers earning supplemental income through leech catching. “‘Catching leeches is a noble service to someone in distress,’ says Padmanabhan. But many, including his sons, are reluctant to follow his path. ‘For them this is a dirty job’” (Kurian 2008). According to the clinic owner, the job of leech catching is seen as inferior because of its financial instability and entailments of manual labor. Padmanabhan’s statement reflects, in Chua’s terms, the expanded “aspirational horizons” of a new generation in urban Kerala, many of whom engage in migrant labor to Gulf States, valuing “consumption and other public displays of wealth, new forms of white-collar employment, higher education, and practices of cosmopolitanism” (Chua 2014: 3). One of the clinic leech catchers, a Muslim man with a stable government job serving food at an Ayurveda College, would happily speak about his supplemental leech-catching income. The second, a security guard and fisherman, resided farther from these aspirational horizons. Coming from a lower socioeconomic strata of the upwardly mobile, formerly untouchable, Ezhava community, whose medical practices were “reconstituted” into an Ayurvedic framework during the colonial period (Cleetus 2007), he explained that he would never mention leech catching because people would make fun of him. This attribution of low status to manual labor reflects a legacy of early–mid-1900s Ezhava reform movements that aimed to disassociate Ezhavas from their hereditary occupation of coconut tree climbing and toddy tapping (Osella and Osella 2000: 39). The children of both men have no interest in the porous bodily labor of leech catching because, as the clinic owner, Dr. Lokesh, noted, they are now well-settled.

Transport Jar

Dr. Lokesh, drives his car to deliver cash in exchange for leeches.⁷ The leeches have come from a freshwater lake in central Kerala or from a large waterway near this southern metropolis where the clinic is located. Leeches are purchased en masse, with seasonally variable prices peaking during summer and monsoons. When I asked

about the sustainability of leech harvesting, Dr. Lokesh reflected, “It is not ethically correct until I have a replenishable source.” Eventually, he began experimenting with leech aquaculture in a repurposed bathtub on his roof.

The outpatient Ayurvedic clinic is located near a major bus stand, temple, and highway overpass. When the road was built 10 years ago, surrounding wetlands were paved over; once fluid leech habitat now clogged by concrete. To attract business for leech therapy the clinic staff runs advertisements in local Malayalam daily newspapers *Flash* and *Big News*, targeting a clientele Dr. Lokesh characterized as “the common man” and “lower level working classes,” such as auto drivers and manual laborers. Most commonly, people find the clinic through chains of association. In the urban habitat of the clinic, leeches are engaged to enhance a patient’s own vascular system, most often, in the clinic’s specialty treatment for leg ulcers.

Medicines are prepared onsite and labeled with the clinic’s logo listing the ingredients used and texts cited. The staff prepares custom medicines to address patients’ specific conditions and do not carry patented or proprietary products marketed by large companies. At stake in this choice are epistemic and political claims of Ayurvedic authenticity (Cerulli 2018; Leslie 1976; Wujastyk 2008). It is logistically and financially challenging for a small clinic in Kerala to manufacture most of its own medicines. The full leech therapy treatment, including medicated oils, decoctions, and powders, adapted from the owner’s teacher, reflects textual engagements with the *Suśrutasaṃhitā* and *Aṣṭāṅgahṛdaya* (Sanskrit) as well as the *Sahasrayogam* and *Cikitsāmañjari* (Sanskrit, Mañipravālam, and Malayalam).⁸

Practically speaking, the clinic was run by Dr. Jyoti and Dr. Daisha, both BAMS graduate physicians. Bachelor in Ayurvedic Medicine and Surgery (BAMS) is the five-and-a-half-year professional degree for practicing Ayurveda in India. The elder, Dr. Jyoti, was in her late 30s, Hindu, from a middle-class background, married and with two school-aged children. Dr. Daisha was in her 20s, Muslim, and grew up with few financial resources in a village. These two physicians had different relationships with the leeches in the clinic, reflecting their clinical demeanors. Dr. Jyoti, who moved with a relaxed saunter, often called the leeches “naughty” and emphasized that if they weren’t “activated” through swishing in turmeric-water, they would be lazy. In contrast, Dr. Daisha, always one step ahead in thought and action, explained her early exasperation trying to catch escaping leeches in terms of her relationship with Dr. Lokesh:

There was once a time I couldn’t manage leeches. ... So if Sir gave me three leeches and one tray, and he would ask me to look after them— each time one will go. I’ll go after it. ... And he used to make fun of me. Like, if someone wants to make me engaged, [he would say] “Just give three leeches to her. She will be very much engaged.”

In these playful “framings” of leeches we might understand, in Bateson’s terms, an “externalization” of familiar psychological characteristics to create a navigable clinical space in the face of unpredictable leech behavior (Bateson 2006: 322). These

interspecies engagements shape the flows of clinic sociality, constituting the vascular possibilities of clinical practice.

Clinic Tank

On a micro-scale, clinic-time is linear. A patient arrives, participates in leech therapy, receives medicines and instructions, and leaves. On a medium scale, it is linear and cyclic. A patient comes, is treated, leaves, waits seven to 14 days (or more), comes again hopefully showing improvement, is treated. The process repeats. This latter cycle is mediated by a spectrum of compliance concerning medicine and home-care instructions, which in turn, are bound by human networks of care. Sometimes the cycle is interrupted—by holidays, weddings, excursions to additional forms of medical care, or financial challenges—only to be resumed when the patient is ready. Other times, the cycle ends before healing is complete. Depending on human and leech compliance and the severity of the patient's ulcers, treatment can take from a few months to more than a year. In the clinic, a leech may spend its time curled up with other leeches nourished by packaged turtle food, or conscripted into medical treatment, entering a cycle of feeding and purging mediated by treatment regimes and the vagaries of human schedules and inclinations.

After leeches are gathered in the clinic, they are sorted by one of the physicians who tries to extract venomous leeches from the batch. Describing the collection, obtainment, and sorting of leeches Dr. Daisha explained:

They dip a leather bag in the water and they (leeches) stick to the outside. The people giving them to us are not professionals, they don't know which are good or bad. We can tell here when we touch. If they are slimy and soft they are unpoisonous, if they are hairy or hard they are poisonous. Out of a hundred, two to five are poisonous. We crush and bury them.

Dr. Daisha represents the process of collection in a manner resembling the *Suśrutasaṃhitā* passage (*Sū* 13.17) where a piece of moist hide is used, rather than the method attested by *Padmanabhan*. For Dr. Daisha, collectors are not professionals as they cannot assess leeches by touch. Rather, the tactile sorting of poisonous and non-poisonous leeches is the domain of physicians, and constitutive of both physicians and leeches. Sorting constitutes the leech as suitable for clinic labor—and survival—as a “medicinal leech.”

Leeches are placed into a water-filled oxygenated glass in the owner's home adjacent to the clinic. After a turtle that had been kept in larger fish tank died, the leeches were upgraded to the deceased turtle's aquarium. This new habitat, featuring rocks and aquatic plants, more closely resembled the idealized habitat for leech aquaculture described in the *Suśrutasaṃhitā* (*Sū* 13.17). While living in the tank, leeches are fed weekly with packaged turtle food. Adhering to the tank's glass walls, leeches tangle with one another, resting or moving, until assigned to a patient.

Treatment Room

On the wall of the treatment room is the “leech library,” shelves containing jars of conscripted leeches labeled with patient names. In the center rests a large treatment table, made of *kañjiram* (Mal. strychnine) wood, with a drainage system for liquids applied to patients. For leech therapy, physicians dress the table with a hospital-green cotton sheet and pillow. A reusable piece of rubber is placed at its foot. Physicians use the previous days’ newspapers to wipe up blood and to pad the heels of sensitive patients.

Hailing from the city and nearby towns and villages, some as distant as four hours away, patients arrive by car, auto rickshaw, bus, and scooter to seek relief from chronic and acute lower leg ulcers. They are men and women of varying ages, ranging between 30 and 80, generally of middle or lower economic classes, and from caste/religious communities that include Hindu Nair, Ezhava, and Scheduled Castes and Schedule Tribes, Latin Catholic, and both Shia and Sunni Muslim. This diversity hinges on the clinic’s location (a predominantly Nair neighborhood surrounded by Christian and Muslim fishing villages) and the presence of a Hindu and a Muslim physician.

Lower leg ulcers more commonly afflict people who stand long hours while working, carry heavy loads, or have experienced post-natal varicosity. The clinic sees an even distribution of men and women treated for this condition; however, I followed the cases of two male patients most closely. My research involved visual documentation of leeching sessions, and due to conventions of modesty and stigma associated with ulcers, men were more comfortable with this. Sitting together in his waiting room, Dr. Lokesh spoke of this stigma:

Patients always have a fear of the look of the ulcer. ... It looks so weird—psychologically people get upset ... and the bystanders, the relatives, and people who see the ulcer will say, “What is this, why is it not healing?” ... Something happens in the skin and the worry is more, because in the skin it is expressed.

Both classically and popularly persistent skin diseases are morally valenced by being labeled as *karmajā* (Skt.), “arisen through karma.” As painful and visible reminders of the porosity and vulnerability of embodiment, skin ulcers raise questions of culpability and care.

A patient’s success with leech therapy is likewise visible and intertwined with the concerns of community and kin. For example, the success of Titan, a retired police officer from a Christian fishing village, led several of his neighbors to the clinic. The physicians attributed his steady healing to the support of his wife, Leela, who prepared proper foods, administered medications, bandaged, and cared for him so that he could adequately “take rest.” To relieve venous pressure, patients are instructed to keep the injured area elevated and compression bandaged. Like much of Ayurvedic treatment, the clinic’s varicose ulcer treatment hinges on the patient’s proper diet and behavior at home. For the leech therapy and accompanying oral medicines, such as the decoction (Skt. *kaṣāya*) to be effective, the patient must comply with a “*pathyam*” (Mal.), a restrictive diet excluding meat, spicy, oily, and fermented foods, smoking,

coffee, and alcohol. Leela would accompany Titan to his leech therapy sessions. On observing his progress, the physicians invariably complimented her care, implicating the gendered dimensions of treatment adherence. Clinical practice, then, hinges on community, family, and self-care, and of course, the leech, which ultimately becomes part of the human body's vascular apparatus in the course of leech therapy.

Although Titan's wife accompanied him, men often arrive at the clinic alone. In contrast, Malayali women seeking medical care almost always go to appointments accompanied by a relative or friend, making compliance with ongoing treatment a challenge. For example, Shanthi, a Nair mother of two working as an administrator, did not have her husband's support and expressed guilt at channeling the family's resources toward her ulcer treatment. After a few sessions of leech therapy, she would occasionally scramble to reach the clinic buying only the smallest bottle (100ml) of *jathyadi keram* (Mal.), medicated coconut oil with turmeric, which she would use insufficiently on her wound. Talking about her case, Dr. Daisha used the colloquial phrase *bhūmiyōlam kṣamikkuka* (Mal. "to bear up to the earth"), referencing Sītā, Rāma's idealized wife in the epic Rāmāyaṇa, who is popularly represented as bearing her wifely trials with "submissive acquiescence" until she eventually disappears by taking refuge in her mother, the Earth (Sutherland 1989). The gendered management of family resources curtails the vascular possibilities of treatment for those women who lack family commitment towards their therapy.

The capacity to "take rest" can also pose a significant social and economic challenge for patients. When John, a patient in his 60s, returned to the clinic due to a small, newly developed ulcer, I inquired whether he was maintaining *pathyam* and taking rest. Seated on the treatment table he began crying, gestured to his shoulder and explained that he was a non-union head-load worker. He did not want to rely on his three sons for support. John's fear of burdening his children through the high cost of adherence echoes Venkat's discussion of a Tamil father's devastated concern regarding the social and financial costs of his daughter's HIV treatment (Venkat 2017). As John's case illustrates, the cyclic nature of clinic time is mediated by the specter of an ulcer's recurrence. The treatment offered by the clinic proffers a cure that might best be understood temporally as a "promise rather than a rupture" (Venkat 2016: 477). That promise is what compels patient compliance in the face of adversity. The clinic physicians instructed me that it is never the leech therapy itself that fails but rather the patient's incapacity to comply with *pathyam* or the daily regime of Ayurvedic medicines. Thus, the vascular possibilities offered by leeches in this human-leech medicine are contingent on overlapping spatial, temporal, social, and bodily entanglements of care.

Many patients have first sought out other forms of treatment, including antibiotics, sclerotherapy, or skin grafts. Often patients come to the clinic because it is more affordable than other options. One treatment including leeching and medicines ranges from Rs. 500 to 1,500, depending on the number of leeches conscripted and the medicines sold. The treatment regime was catered to the contingencies—time, capacity, money—of the patient and their lifestyle. Patients may end up on the treatment table early, when a small ulceration has appeared, or before that, when venous insufficiency causes itching. But often, they arrive only after their ulcers have advanced in stage, penetrating beyond the skin. Patients experience pain, sometimes extreme loss of sensation, and feelings of oozing and

itching in and around the ulcer. Leeches and their bite, although initially causing some patients additional fear, become a source of relief and sometimes amusement.

Terms commonly used to describe the patients' conditions at the clinic are "lower leg venous ulcer," "*murivū*" (Mal. wound), "*vraṇa*" (Skt. wound/ulcer), and "*unāṅgata murivū*" (Mal.)/"*duṣṭa vraṇa*" (Skt.) (chronic ulcer). Once a wound starts to involve the *doṣas*—*vāta*, *pitta*, and *kapha*—then it is understood as *duṣṭa*, and difficult to cure. The physicians explained the etiology to me as congestion of venous vessels causing decreased vascularity and weakened skin. The area can burst, or a small trauma such as scratching can cause a wound that becomes hard to heal. They also explained the etiology in terms of itching, usually related to an increase in *kapha*. Etiologies of "vascular congestion" and "increased *kapha*" slip into, inform, and merge with one another, reminiscent of Mol's study of the conceptual simplifications and complexities that take place in patient treatments for arterial disease: "This relation of in/dependence that makes disease/s multiple is also a form of complexity, the complexity of being more than one and less than many" (Mol 2002: 247).

Leech Library

A gloved hand scoops a leech up from the glass tank. Prying their rear sucker from the tank requires effort and digital deftness. The leech squirms as if trying to escape a predator's grasp, not knowing they are about to be fed on human blood. Leeches selected for a specific patient are housed in a bottle with their blood-sucking companions on the shelves of the leech library. Each leech jar is checked out by only one patient.

Now leeches enter a new, faster cycle than that of harvest-from-pond and wait-in-tank. Slow clinic time, tangling in the tank with other leeches, becomes fast clinic time in periodic contact with humans and their blood. Leeches become medicinal leeches in their entry into the vascular practice of the clinic. It is in this role that we see complex agentive intra-actions as leech inclinations determine the course and human experience of treatment. Leeches' actions are translated by physicians into information about the pathology and health of the patient, before, during, and after leech therapy.

The Vascularity of Practice

A patient arrives at the clinic and is taken into the treatment room. Their bandage is cut and unwrapped. Using saline solution, cotton gauze is gingerly removed. The wound is swabbed, examined, and discussed with the patient in terms of their healing and experience of pain and/or itching. The physician retrieves the patient's jar of leeches from the library. If one does not release from the side of the jar, the physician selects another. The leech is held in the physician's hand and brought to the site of the ulcer where a vascular wrangling takes place as illustrated in the ethnographic vignette (in italicized font) woven through this narrative.

Paul, a brick-carrier in his '40s, arrived on foot from the nearby bus stand. He has had four prior varicose vein removal surgeries. Paul's lower left leg

was unwrapped revealing an irregular L-shaped wound. The tissue around the whitish-yellow ulcer was pink, bordered by light brown skin with dark splotches indicating compromised circulation. Dr. Jyoti brought four leeches in a jar. Prying one out of the jar with gauze, she held their mouth near the ulcer's lower edge. Quickly, at 11:47 am, the first leech bit. She removed the gauze and the leech stretched toward the table.

Leeches are directed to bite on the wound in specific places selected by the physician. The leeches will sometimes bite in those places, but often in other places. If they won't bite at all, they may be activated by being swished in a surgical tray filled with turmeric-water, but more likely the physician performs pricking (Skt. *pracchāna*) to elicit small drops of blood. Whereas large drops of blood supposedly cause leech aversion, small drops may entice the leech to bite. If the leech still won't bite, they may be put back into their jar. Sometimes they are replaced by another leech and sometimes not. Upon biting, a leech's head assumes a shape resembling a horse's hoof, as described in the *Suśrutasamhitā* (*Sū* 13.20).⁹ The leech's sucking is apparent by a pulsing in their neck.

The leech began to probe down the ulcer. For an instant, they assumed a horseshoe posture and retracted, thickening. Then they release and probe again. Dr. Jyoti applied a leech to the opposite end of the ulcer. That leech bit, and a small pulse was visible in their neck. The first leech continued probing. Dr. Jyoti picked up the leech trying to get them to bite at the ulcer's margin. "It's a trick, it's just simply playing," she said calmly. A moment later when the other leech released, she gestured, "It's also playing."

Leeches are covered by moist cotton gauze and left to suck. They may suck, release, or move to another location. While engorging with blood, they change shape and size. Sometimes leeches stay attached but suck slowly or do not suck at all. Often the leech bite will reduce the patient's discomfort and prepare them for the complimentary blood-letting technique of pricking. Physicians determine the location, duration, timing, and quantity (sometimes none) of pricking based on the patient's pain level in response to the analgesic effect of the leech's saliva and the quantity of blood sucked by the leeches (see Photo 1. Additional photos are available in the web version of the article.).

The leeches probed Paul's lower leg. Changing tactics, Dr. Jyoti put them back in their jar and brought a needle. "I'll take one needle, give one prick." The wound was filled with yellowish slough. She pricked, but no blood came. "Since blood is not coming out, I will give maximum pricks." Dr. Jyoti pricked until a large drop of blood beaded out. She wiped it away and tried to place a leech. At 11:53 am, the leech appeared to bite.

Patients were usually lying on their backs when leeches were applied, so they would not see the leeches up close unless they sat up during the process to observe. Some patients initially responded to the leeches with surprise or fear, but for many, interaction with leeches was primarily through feeding—mouth to leg—and



Photo 1. Pricking and sucking. Photo Credit: Copyright ©2016 Lisa Allette Brooks.

involved healing and relief. The lengthy process of leech therapy was an analgesic interval offering patients a chance to nap.

Dr. Jyoti paused, picked up a second leech, and resumed pricking, drawing tiny specks of blood. “Vēdanonṭō?” (Does it hurt?), she asked. “Illa.” (No.) She addressed me as she applied the second leech, “One (attached leech) started drinking. It (leech in hand) will go and disturb. At that time, the other will also go away.” At 11:56 am, the second leech bit the ulcer and retracted, thickening.

As they feed, leeches anchor their rear sucker for stability. A leech may move to a different location or will not bite and is consigned to their jar. Slow sucking is interpreted as a result of “black blood” or “toxic blood,” which is thicker and coagulates. According to the *Suśrutasaṃhitā* and in clinical practice, if a patient

feels burning or itching later in the treatment, then the leech has shifted from sucking spoiled blood to sucking unspoiled blood. Attendant to this, nonvenomous leeches are regarded as having special capacity (Skt. *prabhāva*) to suck spoiled blood from the patient before extracting unspoiled blood.

Surveying the leeches, Dr. Jyoti rested for a moment. Then the second leech detached. Dr. Jyoti repeated her ambidextrous pricking-while-holding-a-leech. “We can’t trust that the leech will catch,” she said, trying to reapply the leech. She released when the leech appeared to bite, but immediately they were off. “Hey!” she reprimanded the leech, trying again. I asked if the first leech was drinking or just sitting there. “I think it’s simply sitting.”

Where and when a leech bites is prognostically relevant. Excess slough is unappealing to a leech and indicates an abundance of *kapha*. Conversely, they may not want to bite when there is too much dryness caused by *vāta*. When a leech is sucking, the speed of blood flow provides information about the area’s vascularity, having implications for prognosis and the arc of treatment. Dr. Lokesh spoke of the need for physicians’ attentiveness to a leech’s sensory evaluation of the patient:

The fitness of the blood is assessed for sure by the leech before it sucks, the chronicity of the condition and the area. If there is more slough and all those things, this is determinate of how much sucking effort it should put. We can see from his body—the speed of the suction can be felt usually in its neck portion and that indicates the vascular richness of the area being sucked.

For example, a small sucking pulse in the leech’s neck can indicate that the wound will heal more slowly. In this case, if only a small amount of blood is being let, then physicians may employ additional leeches or pricking to increase blood flow and revascularization of the area.

The leech probed directly into the head of another sucking leech. “Please, no touching that area too,” Dr. Jyoti clicked repeatedly. “It is a trick ... it will simply catch somewhere, and we will think, oh, it has caught this side. But when we keep it in another position it will move away. See. This one is not for drinking, it will just disturb the others.” At 12:03 pm, she put the leech back in their jar. She began pricking at the margins of the wound for bloodletting, changing tactics.

Dr. Daisha arrived and enticed two other leeches to bite as Dr. Jyoti continued pricking. By 12:08 pm, three leeches were attached to the now bloody ulcer. All three of us left the room for some time. Dr. Daisha went to check on Paul and returned grinning, “He is calling his relatives and telling that he is doing leech therapy.”

After between 60 and 90 minutes, a leech will release. They are on the move immediately. The leech is caught by the physician and placed into a metal surgical



Photo 2. Leech purging. Photo Credit: Copyright ©2016 Lisa Allette Brooks.

tray. Turmeric is poured onto the head of the leech. They writhe and vomit, swirling turmeric and blood in the tray (see Photo 2).

During the purging, the physician will scoop up the leech and dip their head in turmeric, stroking them from tail to head. Adequate purging means life or death for the leech. The color of the blood is observed by the physician; blackish blood is noted as impure and bright red blood as pure. Post-procedure death of the leech can indicate inadequate vomiting or blood toxicity. In the case of a leech's insufficient purging, I was told they will suffer from what the *Suśrutasamhitā* calls, “*indramada*,” which inevitably results in death (*Sū* 13.22). The death of leeches in certain cases

was explained to me by Dr. Daisha as an “*ariṣṭa lakṣaṇa*” (Skt. sign of impending death) for the patient:

If there is *ariṣṭa lakṣaṇa*, in the case of hepatitis, (for example) then they die. By observing the leech after therapy, we can see. In one case here, his leeches died. The patient had tested negative for Hepatitis C, but he had it. There was a patient with a dog bite. He had taken the rabies vaccine and the leeches all died.

Here, leech mortality renders unseen shared toxicities and infections—even those missed by a conventional lab test—detectable to the physician.

After purging, leeches are taken to the sink and rinsed. They are slippery and sometimes wash down the drain. Leeches are placed in their jar and returned to the leech library.

Back to the Lotus Pond

For leeches, regardless of the toxicity of blood, it is a one-way trip from the tank to the leech library. The image I engage here of borrowing and circulation—of leeches as things—fostered by the naming of the “library,” softens the fact that the two ways leeches leave the clinic are by escaping when washed accidentally down the drain and by being flushed down the toilet if discovered dead. Things that are flushed down the toilet return to the clinic’s septic system. The mixed resonance of leeches as things-to-be-flushed and as selves-drinking-to-excess comes together. In either case, in the cycle of leech-space invading clinic-time, the leech, “*jalaukas*,” “whose life is water,” returns to water.

Conclusion

Some people are afraid that the leech may come off the ulcer and go into their dress and go missing. ... They may leave the site and go to other parts. If a man is wearing a loose dress, it could go inside. We will say it won’t go, but it can happen. It can go into the thigh region. It can go into the upper body. Usually when leeches go missing it can go into the entire house. You can ask the doctor’s wife. She has caught one in her kitchen.

—(Dr. Daisha)

Leech potentialities—to enter intimate terrains where they might bite, disappear, or slip inside—trigger human anxiety. Leeches trouble Ayurvedic classificatory schemes and invert the hierarchy of “eater and eaten” (Brooks Forthcoming; Zimmerman 1987: 203). The epistemic and practical squirminess of leeches, however, is not unique to Ayurvedic medicine. In the 19th century, the popularity of leech therapy in France drove the population of *H. medicinalis* in Europe nearly to extinction (Sawyer 1999). Tube-shaped “leech glasses” were employed to restrict leeches’ probing head movements and orient their bite, as leeches challenged physicians desiring clinical predictability (Kirk and Pemberton 2013: 68). Approved in 2004 by

the U.S. FDA as a “surgical device,” leeches are increasingly used for revascularization in conventional biomedical plastic and reconstructive surgeries. To engage leeches in a delicate finger-reattachment procedure, a group of surgeons propose “an easy, noninvasive, and reliable method for dealing with ‘bloody disobedient’ leeches” (Geishauser et al. 2009): Attach a surgical bandage with a small hole at the desired site of the bite. This disciplinary foreclosure upon leech–human clinical intra-actions represents a restrictive mediated vascularity, one departing from the open intersensorial vascularity that we have seen shaping Ayurvedic clinical practice. Rather, in the Ayurvedic clinic, the vascular possibilities of practice are vitally shaped by leech human sensory intra-actions and communication; practitioners gain information from observing and wrangling with leeches, as leeches respond to touch and stimuli offered by patients’ clinical conditions.

Leech therapy is bound up with human and leech mortality. It is a temptation, then, to understand vascularity as constituted only through instrumental moments of translation when the leech determines the course of treatment or when the physician interprets the behavior of the leech as a sensing being. But as we have seen, there are also moments of wrangling that feel playful, in which leeches “exceed humans’ instrumentalized knowing and use” (Langwick 2018): “It’s a trick, it’s just simply playing.” In these moments, we can understand leeches at the center of a therapeutic kinship, mediating the asymmetries of authority and status among beings in the clinic. There is more at stake, however, in these ruptures as Langwick describes in her study of the entanglements of plants and people in Tanzania, “Plants rather lead us to forms of knowing open to multiple histories, times, spaces, and senses as well as their incommensurabilities and frictions. To the world multiple.” (Langwick 2018: 156). With attention to the entanglements of leeches and humans, the imaginary of a vascularity opens us to recognizing more-than-human agencies in the clinical practice of medicine as constituted in moments of resistance, co-operation, and play, and via obstacles, networks, and flows. Starting from the perspective of leeches and their becoming with and through humans, we can better understand the multiplicity of intra-acting sensorial knowledges, socialities, and lifeways constituting the vascular possibilities of multispecies medicine.

Notes

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1. Sanskrit (Skt.) and Malayalam (Mal.) terms are labeled unless it is clear that I am discussing the contents of a Sanskrit treatise or citing dialog in the clinic. All translations are mine. This ethnographic study is based on the observation and documentation of leech therapy sessions treating lower leg ulcers over the course of nine months at an Ayurvedic clinic in southern Kerala, during two years of field research. As a scholar working primarily in Sanskrit and Pāli, I began my field research in India focused on first millennium Ayurveda, but the awe and affection inspired by leeches led me to spend a second year in the field conducting detailed ethnographic research and continuing formal study of Malayalam.

2. Throughout this essay, I engage Karen Barad's term "intra-action" to indicate agencies as formed through relationships (Barad 2003). Although Barad's concept emerges from her study of physicist Neil's Bohr's laboratory experiments, I find intra-action a useful point of departure for conceiving of the unfolding relationalities of interspecies clinical practice (and see Haraway 2008).

3. These etymologies are offered in *Suśrutasaṃhitā Sūtrasthāna* 13.9. The *Sūtrasthāna* (*Sū*) is the first of six sections (*sthānas*) of the *Suśrutasaṃhitā* (*SS*). References are given according to the Trikamjī 2015 reprint of the treatise. Leeches are hermaphroditic annelids, agentive beings, and named through all three grammatical genders in Sanskrit. After the opening vignette describing our first encounter, I refer to leeches using the pronouns they/them/their.

4. *Carakasamhitā Sūtrasthāna* 1.48.

5. Common terms for "leech" in Malayalam are *aṭṭa* also meaning "worm," and *kūlayaṭṭa* (lit. pond-worm).

6. These passages typologize leeches into six venomous and six-non venomous types of leeches homologous to their respective environments. This typology is replicated in contemporary medical and nonmedical contexts, for example, it is used but not cited in the introduction to Mahesh Chandra's *The Leeches of India—A Handbook*, published by the Zoological Survey of India in 1991. See Brooks (Forthcoming) for an expanded study of Ayurvedic leech therapy along with a full translation and analysis of *Suśrutasaṃhitā Sū* chapter 13 on leech therapy.

7. I refer to the clinic staff and patients using pseudonyms to protect their privacy and in accordance with my institutional IRB protocol.

8. For more details and context regarding the clinic's leech therapy treatment regimen, see Brooks (Forthcoming).

9. "And when it fixes, having made [its] face like a horse's hoof and arching [its] neck, then one should know 'it takes hold,' and having covered the grasping [leech] with a wet cloth, one should maintain it" (*yadā ca nivīśate 'śvakhuravadānanam kṛtvonnamiya ca skandham tadā jāniyād gṛhṇātīti gṛhṇantīm cādravastrāvaccannām kṛtvā dhārayet* (*SS Sū* 13.20).

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