



Commentary

Early history of laser acupuncture: who used it first?

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Acupuncture used to stimulate acupuncture points includes widely known techniques such as needle acupuncture, acupressure, and moxibustion, among others.¹ In particular, within the fascinating field of laser acupuncture, the indium gallium aluminum phosphide (InGaAlP) laser (630–685 nm), the most commonly practiced laser acupuncture, is often used for pediatric patients or those who are afraid of needles because it causes almost no irritation or pain. The helium neon (HeNe) laser (633 nm), the first implemented laser, is rarely used today because it was replaced by the InGaAlP lasers, while gallium aluminum arsenide (GaAlAs) and gallium arsenide (GaAs) lasers are still commonly used. CO₂ lasers and yttrium aluminum garnet (YAG) lasers, classified as class 4 lasers, are also used for laser acupuncture and moxibustion.¹

Although the history of other acupuncture therapies traces back thousands of years, laser acupuncture was implemented in the early 1970s.^{2,3} This is because the laser beam was first developed in the 1960s, applied in surgery in the mid-1960s, and employed for acupuncture shortly after it was first used for non-surgical purposes. Scholars believe that Friedrich M. W. Plog (1920–2009), a German-Canadian medical doctor, first practiced laser acupuncture in 1973.⁴ However, some believe that another person first utilized laser acupuncture.^{5–7} The literature documents beyond the conventional view. Therefore, as now is a suitable time for debating the origins of laser acupuncture, we will discuss its beginnings.

Laser acupuncture is believed to have been first implemented by Plog (1920–2009) in 1973. In the paper “Biophysical application of the laser beam” published in *Lasers in Medicine*, Volume 1, 1980, he described the laser acupuncture procedure in detail.⁴ Plog explained that he started implementing lasers in acupuncture

in place of metal needles in 1973–1974, developed the first laser acupuncture device, called “akupLaser System Plog,” in 1975–1976 at Messerschmitt-Bolkow-Blihm GmbH (MBB), and then introduced “akupLas PL” and “akupLas HLW.” Afterwards, he argued that Marah S.A. developed “MARAH BioLaser PL” with permission in Switzerland in 1977 and that a few small German companies produced the device. In his paper, Plog presented four photographs illustrating specific treatment techniques and 17 indications for laser acupuncture, including headache, cervical pain, lumbar pain, herpes zoster, and insomnia, and presented detailed treatment methods. Moreover, he reported that he wrote about such treatments in the article entitled “Application advantages of laser beam irradiation on the acupuncture sector” (in German) in 1975.⁴

Of course, there were claims that laser acupuncture was first developed in China and the USSR (present-day Russia).^{5–8} However, because most of that research was published in proceedings that simply claimed the use of laser acupuncture, there was no disagreement in the academic community in support of Plog as the first practitioner of laser acupuncture.^{2,3}

Nonetheless, it is also true that studies conducted in the USSR have not been fully appreciated. Shchur (1975) introduced laser acupuncture, first published in English, implemented in the USSR and reported a contemplation of hypertension treatment.⁹ Gamaleya (1977) provided the details of laser acupuncture used in the USSR in the paper entitled “Laser biomedical research in the USSR,” which was also published in English.¹⁰ According to the report, Utemuratova and Sokolova (1970) reported that 118 patients with hypertension were treated with a HeNe laser by irradiation of acupuncture points.¹⁰ Moreover, Ermukhambetov (1971) described that 31 patients with hypertension were treated with 12 mW HeNe laser by irradiating acupuncture points for 10–20 seconds each day for 10 days. Twenty-two patients underwent laser acupuncture only and 9 received the laser treatment with antihypertensive drugs.⁹ While both groups

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showed blood pressure improvement, the former displayed better results. Shakirova and Inyushin (1971) attempted to treat infantile cerebral palsy with a HeNe laser. Shchur (1972) reported treating 18 patients with hypertension using 20 mW HeNe laser.¹⁰ The authors administered 12–25 treatment sessions irradiating reflexogenic zones and acupuncture points for 10–30 second durations at the early stage of treatment and gradually increased the durations to several minutes. Chatskii et al (1972) described 55 hypertensive patients treated with a 16 mW HeNe laser by irradiating various reflexogenic zones for 5 seconds. Voronina (1972) and Voronina and Inyushin (1972) reported treating patients with bronchial asthma with a HeNe laser by irradiating acupuncture points.¹⁰ They employed a 25 mW HeNe laser to irradiate various acupuncture points for 40–60 seconds each day for 10–20 sessions. They reported that patients underwent 1–3 courses of treatment at 1–2 month intervals. In addition, Chekurov and Paremshkaya (1972) managed inflammatory disease of the spinal cord and Kunin and Stolyar (1973) attempted to treat certain mental diseases with laser acupuncture.

Although most of this literature is in the form of brief reports, we should not overlook them because they presented treatment indications and methods. In Shchur's report (1975), specific treatments and evaluation methods are mentioned in detail.⁹ However, as in other early Russian literature, the names of the acupuncture points used are not also known. In addition, the reflexologic zones and the acupuncture points are sometimes used together at the same time in early Russian literature. However, zone therapy and acupuncture should be considered as different treatments for rationale.¹¹ Therefore, further discussion of the origins of laser acupuncture in the academic community is necessary. While it is undeniable that Plog first systematically reported the use of laser acupuncture, it also may be possible that Utemuratova and Sokolova might be the first to actually perform the procedure.

On the other hand, Yuecheng Zhou, the first Chinese scientist recognized by the West for using laser acupuncture, reported that he had anesthetized patients in the field of dentistry with laser acupuncture since 1979.¹² However, we identified that the first laser acupuncture in China was actually performed in 1976, in which it is reported that a CO₂ laser was used to treat patients with leukopenia.¹³ Otherwise, while laser acupuncture was conducted in Korea (1980)¹⁴ and Japan (1983),¹⁵ each was performed much later.

Another interesting point is that Plog did not use the term “laser acupuncture.” The term laser acupuncture first appeared in the magazine 'Omni' (1978) in the introduction of the AkupLas laser acupuncture device manufactured by the German company MBB.¹⁶

Here we briefly reviewed the early history of laser acupuncture. Not long after the development of the laser beam, laser therapy was utilized in the medical field and soon became an acupuncture method. There have been a few controversies regarding laser acupuncture, such as its ability to penetrate the skin,

arguments about *deqi*, and whether laser stimulation is a noxious stimulus.^{2,17,18} Nonetheless, the treatment effects and indications for laser acupuncture are now acknowledged. The footprints left by Plog in the early history of laser acupuncture are still significant. However, we should also pay attention to the early Russian studies of laser acupuncture that were hitherto overlooked. We hope that further discussions and reviews will occur in the future.

Conflict of interest

The author declares no conflict of interest.

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References

1. Tuner J, Hode L. *Laser phototherapy, clinical practice and scientific background*. Grangesberg, Sweden: Prima Books AB; 2014:119–21.
2. Whittaker P. Laser acupuncture: past, present, and future. *Lasers Med Sci* 2004;19:69–80. <http://dx.doi.org/10.1007/s10103-004-0296-8>.
3. Baxter GD. Laser acupuncture analgesia: an overview. *Acupunct Med* 1989;6:57–60.
4. Plog FMW. Biophysical application of the laser beam. In: Koebner HK, editor. *Lasers in medicine*. New York: John Wiley; 1980:21–37.
5. Jun MH, Kim YM, Kim JU. Modern acupuncture-like stimulation methods: a literature review. *Integr Med Res* 2015;4:195–219. <http://dx.doi.org/10.1016/j.imr.2015.09.005>.
6. Hill S. Light surgery. *Esoteria* 1977;28:107–10.
7. Goidenko V. Soviet health ministry champions acupuncture. *Acupunct Electro Therapeut Res* 1979;4:61–2.
8. Laser communication team of Guangzhou science and technology museum, Laser technology information network of Guangdong province, Medical laser collaboration group of Guangdong province. Trends of laser in medical application. *Guangdong Med Inform* 1977;8:8–11. <http://dx.doi.org/10.13820/j.cnki.gdyx.1977.07.002>.
9. Shchur VV, Makeyeva NS, Belyayev VP, Starshinov GV. Arterial hypertension and neurological illnesses treated by helium–neon laser. *Am J Acupunct* 1975;3:165–6.
10. Gamaleyeva NF. Laser biomedical research in the USSR. In: Wolbarsht ML, ed. *Laser applications in medicine and biology*. vol. 3. New York: Plenum Publishing Corp; 1977:1–173.
11. Ingham ED. *Stories the feet can tell thru reflexology*. Florida, USA: Ingham Publishing Inc; 1938:1–9.
12. Zhou Y. An advanced clinical trial with laser acupuncture anesthesia for minor operations in the oro-maxillofacial region. *Lasers Surg Med* 1984;4:297–303.
13. Shanghai seamen's hospital. Laser irradiation on the acupoints is helpful for the early stage of leukopenia. *Laser* 1976;3:48 [In Chinese].
14. Choi I, Kim B, Choi Y. The analgesic effect of laser acupuncture. In: *The commemorative collection of theses in honour of the sixtieth of Dr Cho Young-sik*; 1981:1051–60 [In Korean].
15. Kubo U. Medical lasers. *Rev Laser Eng* 1983;11:83–4.
16. Laser acupuncture [article]. *Omni* 1978;1:46.
17. Baldry P. Laser therapy. In: Filshie J, White A, editors. *Medical acupuncture: a western scientific approach*. Edinburgh, UK: Churchill Livingstone; 1998:193–201.
18. Lundberg T, Zhou J. Low power laser irradiation does not affect the generation of signals in a sensory receptor. *Am J Chin Med* 1988;16:87–91.