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The role of acupuncture in Anesthesia

Essay

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List of abbreviation

PCA	Patient controlled analgesia
ACC	Anterior cingulated cortex
ACI	Blood flow acceleration index
BC	Before Christ
BL	Bladder
CO	Cardiac output
CV	Conception vessel
GB	Gall bladder
GV	Governing vessel
HIV	Human immune deficiency virus
HR	Heart rate
IVF-ET	In vitro fertilization and embryo transfer
LI	Large intestine
LU	Lung
MAP	Mean arterial pressure
MRI	Magnetic resonant image
PC	Pericardium
PONV	Post operative nausea and vomiting
PPI	Post operative paralytic ileus
RNA	Ribonucleic acid
RPP	Rate pressure product
SD	Standard deviation
SP	Spleen
ST	Stomach
SVR	Systemic venous resistant
TCM	Traditional Chinese medicine
TENS	Trans cutaneous electrical nerve stimulation
THAL	Thalamus
TOF	Train of four

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INTRODUCTION

ACUPUNCTURE is an integral part of an ancient Chinese system of medicine that has been used for more than 2,500 yr to treat diseases and relieve pain (*Bouevitch, 2003*).

Acupuncture involves the insertion of thin, sterile needles into precise anatomical locations on the body associated with neural and vascular structures (*Shaozong, 2001*). Stimulation of these structures then influences various neurophysiologic processes in the direction toward healing. In terms of pain control, acupuncture treatment encourages the production and liberation of various neuroendocrine and neurochemical substances which then activate endogenous pain control systems, often providing an effective, non-pharmacologic means to control pain (*Pomeranz, 1996*). In fact, the analgesia afforded by acupuncture, especially electro-acupuncture can be so profound that it has at times been used as the sole pain-relieving measure during surgery (*Xiao-Hong et al., 1994*). While acupuncture has existed for at least 2,500 years, the application of acupuncture as the sole anesthetic aid began relatively recently, i.e., in 1958(*Narda, 2007*). The first surgical procedure performed under “acupuncture anesthesia” was a tonsillectomy. Soon thereafter, as a result of political pressure from Mao Tse Tung, nearly all major and minor surgical procedures took place with acupuncture alone providing the anesthesia. In China currently, however, anesthesiologists limit

the use of acupuncture for surgical analgesia predominantly to head and neck surgery, and for selected patients undergoing neurosurgery or cardiothoracic surgery (*Narda, 2007*).

Nevertheless, acupuncture can play an important role in the peri-operative and recovery periods, reducing gas and injectable anesthetic requirements, easing emergence from anesthesia, and facilitating recovery following the procedure. In addition, acupuncture needles placed in the ear (i.e., auricular acupuncture) can reduce pre-operative anxiety (*Narda, 2007*).

Historical Perspective

The earliest health care in China involved Shaman-like rituals to placate spirits or demons (*Kaptchuk, 2000& Unschuld, 1985*). At the same time, during the first few centuries BC, when philosophical systems such as Confucianism and Taoism were significantly replacing earlier Chinese supernatural thinking, acupuncture and other associated practices began to supplant antecedent magico-religious healing approaches (*DeWoskin, 1983&Roetz, 1993*). China's emerging philosophies required a new medical system, free of supernatural thought and compatible with "naturalistic," human-centered presuppositions (*DeWoskin, 1983&Roetz, 1993*).

The precise origin of acupuncture techniques is a subject of scholarly debate (*Unschool, 1985*). Early awareness of practical, needle-like therapy that used bamboo or bone needles to open abscesses may have contributed to the development of acupuncture (*Unschuld, 1985*). Knowledge of exact body locations (now considered acupuncture points) found in nondecorative tattoos on Stone Age mummies suggest another precursor route (*Dorfer et al., 1999*).

Recent examinations of Otzi, a 5,000-year-old mummy found in the Alps, have identified over 50 tattoos on his body, some of which are located on acupuncture points that would today be used to treat ailments Otzi suffered from. Some scientists

believe that this is evidence that practices similar to acupuncture were practiced elsewhere in Eurasia during the early Bronze Age. According to the previous article by *Dorfer et al., 1999* " There might have been a medical system similar to acupuncture (Chinese Zhenjiu: needling and burning) that was practiced in Central Europe 5,200 years ago. A treatment modality similar to acupuncture thus appears to have been in use long before its previously known period of use in the medical tradition of ancient China. This raises the possibility of acupuncture having originated in the Eurasian continent at least 2000 years earlier than previously recognized (*Harper, 1998*)

The earliest Chinese archeologic textual material points to the existence of methods of heat stimulation at precise regions of the body (which are clearly related to acupuncture channels) before any needling of acupuncture sites occurred (*Harper, 1998*) . Another possible origin of acupuncture may be the bloodletting described in the earliest acupuncture sources. Bloodletting was originally used for "magical" healing, but by the time of the early acupuncture literature, it was being used for "naturalistic" reasons at acupuncture points based on Chinese medicine theory (*Epler, 1980*).

The earliest Chinese medical text that first describes acupuncture is the Yellow Emperor's *Classic of Internal Medicine*,

which was compiled around 305–204 B.C. However, the Chinese medical texts (Ma-wang-tui graves, 68 BC) do not mention acupuncture. Some hieroglyphics have been found dating back to 1000 B.C. that may indicate an early use of acupuncture (**Harper, 1998**).

Acupuncture may be started in China when some soldiers who were wounded by arrows in battle experienced a relief of pain in other parts of the body, and consequently people started experimenting with arrows (and later needles) as therapy (**Harper, 1998**).

Following the Revolution of 1911 in China, Western Medicine was introduced and acupuncture and Chinese herbology were in drastic decline. Due to the large population and need for medical care, acupuncture and herbs remained popular among the folk people, and later on with the emergence of "barefoot doctors." (**Maciocia, 1989**)

Modern research on the basic mechanism of acupuncture started after the People's Republic of China was founded in 1949, and Mao Tse Dong encouraged the practice of acupuncture in the country. Ten years later, acupuncture was introduced in the former Soviet Union, where research work was initiated. These results remained essentially unknown to most Western scientists

and physicians. This typically reflects a failure to publish articles in English-along with a lack of interest in the Western research community **(Pomeranz & Stux, 1998)**.

There was a surge of interest in acupuncture in the United States after President Nixon's visit to China in 1971. This resulted in part because James Reston, a *New York Times* reporter, was in China covering President Nixon's trip when he developed acute appendicitis. His postoperative pain was treated with acupuncture. He described his experience on the front page of *The New York Times*, and interest in acupuncture exploded **(Reston, 1971)**. Subsequently, American and European physicians visiting China witnessed surgeries being performed with acupuncture as the only anesthetic. An enormous number of articles in newspapers and magazines about the use of acupuncture in anesthesia followed. Serious fundamental research on acupuncture started only in 1976 after the endorphin hypothesis of acupuncture's mechanism of action was introduced. Further development of acupuncture research was prompted by introduction of magnetic resonance imaging (MRI) and positron emission tomographic scanning, which revealed the relation between acupuncture stimulation and activation of certain brain structures **(Biella,2001)& (Wu, 2002)**.

In Vietnam, Dr. Van Nghi and colleagues used the classical Chinese medical texts and applied them in clinical conditions without reference to political screening. They rewrote the modern version: Trung E Hoc. Van Nghi was made the first President of the First World Congress of Chinese Medicine at Beijing in 1988 in recognition of his work (***Macioccia. 1989***).

From the 1970s to the present, acupuncture continues to play an important role in China's medical system and China has taken the lead in researching all aspects of acupuncture's application and clinical effects (***Macioccia. 1989***).

The theory of Traditional Chinese Medicine

Basic theory of acupuncture

From the Chinese perspective, acupuncture is necessarily embedded in a complex theoretical framework that provides conceptual and therapeutic directions. Unlike the earliest Chinese healing, which relied on supernatural guidance, classic Chinese medicine relies on ordinary human sensory awareness. Its fundamental assertion, like the kindred philosophical systems of Confucianism and Taoism, is that contemplation and reflection on sensory perceptions and ordinary appearances are sufficient to understand the human condition, including health and illness. This assertion is fundamentally different from the biomedical position which gives privileged status to objective technology and quantitative measurements. Ideally, the scientific analysis penetrates beyond the visible "life world" of the patient, revealing an underlying pathophysiologic disruption, independent from human subjectivity (*Hahn, 1982*).

Yin-Yang

Yin and yang are the basic root intuitions of China. They are recognizable in images akin to weather. Yin is associated with cold, darkness, being stationary, passiveness, receptivity,