

Manipulation Under Anesthesia: Historical Considerations

Chapter Author:

Dr. Robert S. Francis

Clinical Assistant Professor of Family Medicine

Department of Family Medicine
University of Texas Medical Branch at Galveston

Associate Professor of Clinical Sciences

Course Director, Division of Post Graduate Studies
Texas Chiropractic College

Chief, Department of Chiropractic Medicine

Vista Medical Center Hospital



Taylor & Francis Imprint

A CRC Press title

copyrighted

2005

Manual medicine, or therapeutic application of the hands in patient care, is as old as medicine itself. It is found in ancient civilizations and in modern times throughout the world. As early as 6000 years ago in ancient India and by 5000 years ago in the eastern Mediterranean spinal manipulative therapy was utilized in the treatment of various conditions. Appearing simultaneously in Mesopotamia and Egypt the origins of Western medicine were forged by an early class of physician. Ancient Indian and Chinese texts include spinal manipulative therapy for the improvement of posture, locomotion, paralysis, and various disease states. As the art of medicine evolved so too did the theoretical basis for manipulative interventions. It is Greece where medicine was first documented to have become committed to scientific objectivity and where we find definite confirmation of the practice of spinal manipulation. It was the Hippocrates, in his book *On Joints*, who first described techniques of spinal manipulation to treat curvature of the spine and misalignment of the vertebrae.

The influence of Hippocrates was vast and persisted for more than 2000 years. His teachings spread back to the East where manipulation had its origins and where during the Middle Ages manipulation was championed by the influential physicians of the time. At the same time, manipulation spread to the West where the influence was seen with a myriad imminent physicians such as Ambroise Paré, Friar Thomas Moulton who published *The Compleat Bone-Setter* and Johannis Scultetus who describes Hippocratic methods of manipulation in his *The Surgeons Store-House*. In the mid-nineteenth century, James Paget, MD, one of the most famous surgeons of his time, reported in the *Lancet* that doctors would do well to observe bone-setters and learn from them.

During the late nineteenth century, Daniel David Palmer founded chiropractic and Andrew Taylor Still founded osteopathy. Both disciplines give emphasis to the treatment of musculoskeletal lesions and organic diseases through spinal manipulative therapy. These two eclectic healers fathered the two disciplines most comprehensive of spinal manipulative therapy, chiropractic and osteopathy, both establishing academic institutions and professions that continue today with emphasis on spinal manipulative therapy being more prominent in the chiropractic curriculum. In the past century increasing interest throughout the orthodox health care delivery system has brought about many

interprofessional associations and organizations towards an effort to establish scientific principles and clinical applications of manual medicine.

Manual treatment of spinal disorders is perhaps the well-studied remedy for spine related disorders. Clinical description and controlled studies provide advances in scientific knowledge about manual treatment methods and the disorders to which they are directed. The common factor for all manual methods is that they apply an external load to the spine and its surrounding tissues. Merging of the efforts by basic scientists, engineers and clinical-scientists has resolved some of the underlying scientific ambiguity surrounding these issues. Specifically decisive efforts in biomechanics have emerged to describe and understand their treatment, the spinal disorder for which it is used and the physiological effects of treatment.

Manual treatment of spinal disorders is performed under a variety of descriptions and nomenclature, including massage, mobilization, stretching, muscle "energy" techniques, adjustment and manipulation. Spinal manipulation is the remedy for spine-related disorders that has received the most scientific attention using controlled and cohort studies.

Alliance, coalition and association of the chiropractic physician with basic scientists and engineers has provided opportunities to explore fundamental questions, the answers to which have provided further theoretical basis and clinical efforts to study the nature of the manipulative lesion, define and optimize effects of treatment and set criteria for training.

Manipulation Under Anesthesia (MUA) developed in the early part of the twentieth century as a specialized manipulative procedure that was a natural progression of therapeutically credible spinal manipulative therapy. Spinal manipulative therapy gained recognition during the 1980's by mainstream medicine with supporters such as James Cyriax, MD, John McM. Mennell, M.D., Scott Haldeman, D.C., Ph.D., M.D. and recently many others physicians who hold academic and clinical appointments at medical and chiropractic colleges and with multidisciplinary research and professional organizations supporting spinal manipulative therapy. The National Institutes of Health has provided educational research grants to medical schools across the US specifically designed to incorporate Complimentary and Alternative Medicine (CAM) into medical school curriculum. This author is a member of the Core Curriculum Committee at UTMB Department of Family Medicine charged with the design and development of medical school curriculum that meets the objectives of NIH educational grants regarding CAM curriculum.

While Dean of Clinical Sciences and serving as Director of Hospital Rotations at Texas Chiropractic College, the author developed the first program designed to integrate chiropractic students into the medical community through hospital and private medical service rotations in the disciplines of orthopedic surgery, neurosurgery, internal medicine, family medicine, pain management, anesthesiology, and radiology. This interaction of chiropractic interns, chiropractors and medical physicians effectively bridged the historical chasm of communication that has existed between the different healthcare communities.

As a result of this increased communication between the medical and chiropractic communities, chiropractors were offered and credentialed medical staff hospital privileges and began to co-manage patients with medical physicians. This author was initially proctored by board certified orthopedic surgeons in MUA and subsequently developed the first certification course in MUA for chiropractors in the mid-1980's, while Dean of Clinical Sciences at Texas Chiropractic College. Subsequent to the first academic program at Texas Chiropractic College, other colleges followed suit making MUA training programs available to chiropractors across the country.

The ensuing years saw a variety of educational programs and standards for MUA taught by proprietary organizations not affiliated with CCE (Council on Chiropractic Education) accredited institutions. Specific standards and protocol for the MUA procedures has been developed by academic institutions and national and international organizations towards an effort to recognize training programs and clinical outcomes that establish a safe and effective means of implementing this procedure across the country in appropriate hospital and ambulatory surgical settings.

The first national organization, the National Academy of MUA Physicians, was developed in 1995 towards an effort to solidify national standards and protocol for MUA procedures.

Most recently the multidisciplinary European MUA community organized the International MUA Academy of Physicians to provide an avenue for the dissemination of valid and authoritative database of current research and new scientific developments in the field of Manipulation Under Anesthesia for physicians dealing with chronic difficult cases. It is through efforts to develop evidence-based principles for MUA clinical application and practice that these organizations have promulgated effective and consistent standards and protocols for MUA.

These organizations make available to the practicing MUA community of physicians continuing education, national and international conferences designed to accomplish, implement, fulfill and discharge the purpose and intent of this mission. The objectives of these continuing education conferences are to present by an authoritative and interdisciplinary faculty state of the art review of the present knowledge in the field of non-operative care, interventional diagnostic and therapeutic procedures and other relevant treatment modalities affecting the spine. MUA has been utilized in manual medicine for over 60 years. Increased participation of chiropractors on hospital medical staffs and with medical physicians has made both the facilities and training more available for performing and credentialing this procedure.

Multiple prospective and retrospective clinical studies have been performed evaluating MUA in chronic unresolved back pain, acute and chronic disc herniations, cervicogenic cephalgia, and many other neuromusculoskeletal conditions with attendant articular dyskinesia.

Robert Mensor, M.D. orthopedic surgeon, compared the outcomes MUA and laminectomy in patients with lumbar intervertebral disc lesions and found that 83% of MUA patients had good to excellent results while only 51% of the surgical patients reported the same outcome.

Donald Chrisman, M.D. orthopedic surgeon, reported that 51% of patients with unequivocal disc lesions and unrelieved symptoms after conservative care had been rendered reported good to excellent results post MUA at three years follow up.

Bradford & Siehl reported on 723 MUA patients, the largest clinical trial conducted on MUA procedures, that 71% had good results, and that 25% had fair results and 4% ultimately required surgical intervention.

Krunhansl and Nowacek reported on 171 patients who experienced constant intractable pain, of durations from several months to 18 years, and who underwent MUA. All patients had failed at previous conservative interventions. Results reported that post MUA, 25% had no pain at all and were "cured", 50% were "much improved" with pain markedly reduced and ADLs essentially unaffected, 20% were "better but" pain continued to interfere with activities and finally 5% had minimal or no relief.

West et al reported in a 1998 study of 177 patients that 68.6% of patients out of work returned to unrestricted work activities after a series of three consecutive MUA procedures at 6 months post MUA, that 58.4% of the MUA patients receiving medications prior to the procedure required no prescription medication post procedure and finally that 60.1% of patients with lumbar pain resolved post MUA series of procedures.

In 2002 Palmieri et al demonstrated clinical efficacy of MUA performed in a series of three consecutive procedures. The average Numeric Pain Scale scores in the MUA group decreased by 50%, and the average Roland-Morris Questionnaire scores decreased by 51% compared to controlled group.

Samuel Turek, M.D., orthopedic surgeon, reports in his textbook, *Principles and Applications of Orthopedics*, that "good to excellent results" can be expected with lumbar herniated nucleus pulposus with manipulation under anesthesia.

In addition the extant literature, there are currently ongoing prospective clinical trials with appropriate outcome instruments assessing the clinical and fiscal efficacy of MUA in a selected patient population.

The medical literature is replete with case studies and literature reviews on MUA, in addition to clinical trials, all of which report positive clinical outcomes. Further research is ongoing. It is important to note that to date there has been no clinical trial that demonstrates MUA to be ineffective in an appropriately selected patient population.

Towards an effort to satisfy all disciplines, I offer here a definition for manipulation that may be universally accepted by all disciplines.

Manipulation consists of accurately determined and specifically directed manual forces to areas of restriction, whether the restriction is in ligaments, muscle or joints; the result of which may be improvement in posture and locomotion, improvement in function elsewhere in the body and the enhancement of the sense of well-being.

Chiropractors constitute the group of physicians who most actively practice MUA. This author has trained and certified MDs, DOs and DCs in the US and in Europe. While in Europe MDs and DCs actively practice spinal manipulative therapy, it nevertheless remains largely the clinical domain of the chiropractor.

Currently MUA certification courses offered through accredited chiropractic college post graduate departments are recognized by malpractice carriers for inclusive coverage. It has been important to regulatory agencies, academic institutions, professional associations and organizations and malpractice carriers to recognize appropriate training programs. Towards that end, specific criteria have been adopted to establish credible certification course offerings. Standards and protocol establishing credible MUA certification training programs are recognized by the National MUA Academy of Physicians and the International Academy of MUA Physicians and are subscribed to by the accredited academic institutions offering post graduate certification in MUA.

Bibliography:

- 1) Haldeman S. The neurophysiology of spinal pain syndromes. In Haldeman S, ed. *Modern Development in the Principles of Chiropractic*. New York: Appelton-Century Crofts; 1980:119-142.
- 2) Wardwell, Walter, *Chiropractic: History and Evolution of a New Profession*. St.Louis, Mo., Mosby Year Book, 1992.
- 3) **Francis R.** 1992 Guidelines for Chiropractic Quality Assurance and Practice Parameters: Proceedings of the Mercy Center Conference, commission member, Aspen Publishers.
- 4) **Francis R.** 1989 Spinal manipulation under general anesthesia: a chiropractic approach in a hospital setting. *ACA J Chiropr* Dec;12:39-41.
- 5) **Francis R,** Beckett RH. 1994 Spinal manipulation under anesthesia. *Adv Chiropr* Mosby Publishers Vol.1:325-40.
- 6) **Francis R.** 1995 Spinal manipulation under anesthesia: a review of chiropractic training programs and protocols. *Am Chiropr* Sep-Oct;27, 37.
- 7) **Francis R.** 1991 Manipulation under anesthesia. *Am Chiropr* Dec;24, 26-7.
- 8) Gordon R, Rogers R, West D, Matthews R and Miller R. 2002 Manipulation under Anesthesia: An Anthology of Past, Present and Future Use. In: *Pain Management, A Practical Guide for Clinicians* 6th Ed. Weiner R, editor, CRC Press, New York.
- 9) Harris, James D. "history and Development of Manipulation and Mobilization." In John V. Basmajian (Ed.) *Manipulation, Traction and Massage*. Baltimore: Williams &Wilkins. 1985.

Manipulation Under Anesthesia (MUA) is an OMT procedure, performed with the added benefit of conscious or general sedation of the patient. It is used to circumvent and overcome the conscious and unconscious defense mechanisms and natural resistance to treatment manifesting in some conditions. Research and publication on the utilization and efficacy of this procedure is limited. Manipulation under anesthesia (MUA) is a noninvasive procedure to treat chronic pain unmanageable by other methods. MUA is designed not only to relieve pain, but also to break up excessive scar tissue. Scar tissue frequently builds up after orthopedic surgery, impeding movement of soft tissue and joints, so MUA is a valuable in re-establishing optimal range of motion. All of this manipulation is done while the patient is sedated using monitorized anesthesia care (MAC). The patient may be under general anesthesia, local anesthesia administered by spinal injections, or may be sedated intravenously. The MUA procedure varies in length depending on the number of areas of the body being treated. The history of anesthesia has a painful background. The 18th century observed numerous medical advances and discoveries. This led to the increased practice of surgery and thus pain. Such processes were arbitrary and often rendered detrimental consequences emphasizing the need of an effective anesthetic agent. History of Surgical Anesthesia. Research on modern techniques to reduce surgical pain began when an English scientist Joseph Priestley (1733-1804) discovered that inhalation of nitrous oxide might relieve pain. Others followed suit and dug up other gases like carbon dioxide which produced similar effects. Spinal manipulation under anesthesia allows physicians to sedate the pain-perceiving nerves that have been irritated to avoid pain during the procedure. Spinal manipulation under anesthesia (MUA), also referred to as medication-assisted manipulation (MAM), involves putting a patient with chronic neck or back pain under anesthesia (and/or other medications) while a doctor manipulates the spine. The hope is that the treatment increases range of motion and decreases pain—but does it work? See Chronic Pain As a Disease: Why Does It Still Hurt? This page discusses the differences between manipulation under anesthesia vs. traditional manipulation, the goals of MUA treatment for spine pain, and what current research indicates about the treatment.