Stimulating Interest in Medicine Assisted Manipulation (MAM)/Manipulation Under Anesthesia (MUA) as a Complementary Treatment Modality for Chronic Pain and Opioid Use

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Abstract

The objective of this clinical review is to stimulate interest in medicine assisted manipulation (MAM), also known as manipulation under anesthesia (MUA), by providing evidence from published studies regarding the use of MUA, as well as identifying its benefits and limitations, our group hopes to increase awareness of this technique and contribute to its implementation to assist in overall pain reduction and reduce opioid medication dosing. A retrospective literature review was undertaken to investigate the extent of published information on the topic in order to compile evidence-based data and provide the reader with a summary of both the benefits and the flaws of the technique. We intend for this manuscript to serve as a starting point to stimulate readers' interest into further research and discussion on MUA. We see MUA as a means of providing patients with additional treatment options as well as an opportunity to raise awareness of an uncommon, yet-effective, manipulative technique.

Introduction

There has been mention of MUA since the 1920s. Manipulation of the spine under anesthesia was fairly common in orthodox practices from 1940 to 1965, but gradually fell out of favor because of the increased reliance on advanced surgical techniques. In 1949, Mensor and his colleagues demonstrated a need for MUA in the treatment of lumbar intervertebral disc pain prior to surgical intervention. This study collected data regarding patient pain relief, post-MUA range of motion, and ability to perform straight-leg raises. Results showed that:

- 42% of patients who had MUA fell in the “excellent” category.
- 23% of those who had the laminectomy alone were in this category.

In 1964, a group of allopathic orthopaedic surgeons studied MUA in 39 patients ranging in age from 19 to 62 years with severe lumbar disc syndrome and sciatica, and found that:

- 50% of patients reported significant improvement of their sciatica symptoms within 24 hours.
- Including diminished leg pain
- Improved straight-leg raising capability

This study confirmed Mensor’s views that manipulation can play an important role in the conservative therapy of patients with disc syndrome and supported his assertion that rotary MUA with absolute relaxation offers optimum results and maximum safety.

Complications from general anesthesia and aggressive HVLA procedures led to decreased use of early MUA procedures in favor of surgery. Although orthopaedic surgeons had largely abandoned MUA, its use by chiropractors and osteopathic physicians renewed interest in the 1990s. Most notably, a chiropractor, Robert Gordon DC, went on to train many in the technique and published a textbook on the subject, Manipulation Under Anesthesia: Concepts in Theory and Application, which ignited a movement that promoted this unique treatment as an option for patients who were resistant to outpatient manual techniques. Gordon describes MUA in 7 steps. First, sedation of the patient via Monitored Anesthesia Care. Second, manipulative procedures during which passive range of motion is determined and treatment is performed. Anesthesia is maintained throughout. Third, manipulative procedures during which the physiologist’s skill may lack its usefulness in a specific situation.

MUA is a manipulative therapy identified as successful in treating patients with intracranial dysfunction or refluxatory treatment, such as adhesive capsulitis (gout, bursitis of the shoulder) and tendinitis.

For example, 37 patients who had been diagnosed with frozen shoulder received treatment with MUA. 94% of the subjects were satisfied with the procedure, and three months after beginning treatment 59% (23 shoulders) of the patients reported having no or only mild disability.

Further research is needed to determine the risk to benefit ratio of MUA vs. physical therapy for the correction of movement disorders.

Medical assistance via conscious sedation is a modification of manipulative medicine to provide relief to patients with unresponsive pain. The use of anesthesia is desirable for patients with these conditions due to the severe pain caused by both the condition and treatment technique. Explicit emphasis has also been placed on the qualifications for injuries responsive to MUA. This includes acute and recurrent pain that has not responded to office manipulation, for example, a patient with protrusion of a lumbar intervertebral disc.

The American Academy of Osteopathy defines failure of office treatment as a lack of improvement during treatment with physical therapist, exercise, pain, 6-12 weeks for post-acute phase pain, and greater than 12 weeks in chronic pain.

Addition to this, many may also observe that analgesic medications, anti-inflammatory medications, or muscle relaxants are ineffective. Chronic pain management is not limited to the provision of physical relief. In a cross-sectional study using baseline measures collected within a randomized controlled clinical trial of the effectiveness of Osteopathic Manipulative Treatment (OMT) in patients with chronic lower back pain, Lecocq et al. found that OMT was associated with self-reported depression, severity of somatic dysfunction (p<.006), and severity (p=0.01) and duration (p=0.02) of pain levels.

An article in the journal Osteopathic Family Physician features the personal experiences of Abend and colleagues demonstrating the treatment of chronic pain. Their stance is derived from a combination of modern and traditional perspectives on pain. Their belief is that MUA should be considered as a potential standard of care and its efficacy on post operative pain management.

Table 1. Clinical Outcomes of Manipulation Under Anesthesia (MUA)

<table>
<thead>
<tr>
<th>Reference</th>
<th>Outcome measured</th>
<th>No. of MUA</th>
<th>Outcomes</th>
<th>Length of follow-up (months)</th>
<th>Complication rate</th>
<th>Complications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aznera et al. (2018)</td>
<td>ROM of the MTM</td>
<td>23</td>
<td>TMD</td>
<td>12</td>
<td>3</td>
<td>Back pain</td>
</tr>
<tr>
<td>LOOMA</td>
<td>71</td>
<td>80</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KOs Baum et al. (2018)</td>
<td>KNEE ROM</td>
<td>27</td>
<td>TMD</td>
<td>12</td>
<td>3</td>
<td>Back pain</td>
</tr>
<tr>
<td>R. Peggi et al. (2017)</td>
<td>KNEE ROM</td>
<td>62</td>
<td>Post-MUA</td>
<td>84</td>
<td>12</td>
<td>Joint arthrodesis (1 patient)</td>
</tr>
</tbody>
</table>

The total range of movement of the joint improved following MUA, as compared to baseline (p < 0.001). At subsequent follow up, the total range of movement of the joint was still improved by 22.2.g overall (p < 0.001). Unchanged knee extension from pre-MUA to post-MUA (2.3 ± 2.9 vs. 2.9 ± 0.5), but significant improvement in flexion was achieved (0.6 ± 3.8 to 11.2 ± 1.1, P = 0.01). At 1 year follow-up, 47% had ROM data showing flexion significantly improved compared to pre-MUA (9.3 ± 3.1 to 14 ± 3). The area under the curve ROM was 132 ± 19 degrees. The area under the curve MUA was 132 ± 19 degrees.

Concluding statements

We seek to stimulate interest among practitioners in exploring the benefits and relevance of MUA as well as establish a place for it in the algorithm of formal pain management for both non-surgical and surgical neuromusculoskeletal conditions. Although MUA is still controversial, we wish to demonstrate that MUA deserves serious consideration by all health practitioners as a non-pharmacologic option as indicated by statistical review. Based on the information presented, we suggest experts in the field should provide education on the necessary skills to successfully perform MUA as a way to improve patient outcomes and quality of life post surgery. Because lack of skill is a major contributor to the doubt surrounding acceptance of MUA, the first step would be to train physicians in the essential techniques and increase the amount of evidence-based research needed to scientifically support this technique.

Acknowledgments

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