

The Effects of the Thai Traditional Medicine of Abdominal Massage on Defecation in Post Lumbar Laminectomy Patients

Prapapin Siripohn, HN, M.Sc.*, Porntita Visavajarn, R.N., M.Sc.*, Ueamphon Suwannatrai, M.Ed.**, Supakij Suwannatrai, M.Sc.**, Peamruetai Butdapan, BATM.**, Monchai Ruangchainikom, M.D.***

*Department of Nursing, Siriraj Hospital, **Center of Applied Thai Traditional Medicine, ***Department of Orthopaedic Surgery, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

ABSTRACT

Objective: This prospective study examined the defecation enhancement effects in post-lumbar laminectomy patients who received Thai traditional medicine of abdominal massage (TTMAM) in combination with standard nursing care, compared with patients receiving only standard nursing care.

Methods: This prospective, randomized, controlled trial was conducted at Siriraj Hospital between 2011 and 2015. Eighty-eight patients with spinal stenosis scheduled for lumbar laminectomy with or without fusion were enrolled. The patients were randomly assigned to two groups: the first group underwent standard nursing care combined with TTMAM (the TTMAM group), and the second group underwent standard nursing care (the non-TTMAM group). The clinical outcomes regarding the first defecation within 3 days after surgery, abdominal distension, and patient satisfaction with defecation care were evaluated.

Results: When comparing the first defecation within 3 days after surgery, no significant differences were found in the number of patients between the two groups. The number of the patients who had their first defecation within 3 days after surgery was higher in the TTMAM group (46.5%) than the non-TTMAM group (27.3%). There was significantly less abdominal distension on the third day after surgery in the TTMAM group than in the non-TTMAM group. Moreover, the mean score of patient satisfaction of the TTMAM group was higher than that of the non-TTMAM group.

Conclusion: Thai traditional medicine of abdominal massage tends to help defecation in post-lumbar laminectomy patients as it relieves abdominal distension and increases satisfaction with defecation care. Therefore, the use of TTMAM with other bowel care methods could provide additional benefit for lumbar laminectomy patients.

Keywords: Thai traditional medicine of abdominal massage; defecation; post lumbar laminectomy patient (Siriraj Med J 2019;71: 214-219)

INTRODUCTION

Lumbar laminectomy is a surgical procedure to enlarge the spinal canal and relieve pressure on the spinal cord or nerve roots caused by spinal stenosis.¹ Constipation is a common problem for many people recovering from back surgery.^{2,3} Phataranavic et al. suggested that 9% of

postoperative orthopedic patients have constipation.⁴ Even though constipation is not life-threatening, the absence of any treatment may cause discomfort, abdominal distention, abdominal pain, and the loss of appetite, with the possibility of fever, vomiting, and delirium.^{5,6,7}

*This study was supported by Siriraj Research Development Fund (Managed by Routine to Research: R2R)

Corresponding author: Monchai Ruangchainikom

E-mail: monchai.ortho@gmail.com

Received 2 March 2018 Revised 18 April 2019 Accepted 22 April 2019

ORCID ID: <http://orcid.org/0000-0003-0525-6390>

<http://dx.doi.org/10.33192/Smj.2019.33>

The use of the common constipation treatments (stool softeners, laxatives, and enemas) sometimes leads to harmful side-effects like abdominal distention, nausea, fluid and electrolyte loss, and defecation-reflex loss, particularly with patients with chronic diseases.⁸ There have been studies on constipation prevention programs that have utilized high fiber foods and the drinking of water.^{9,10} However, such programs require careful administration in the case of elderly patients with heart, lung, or kidney diseases in order to avoid water and electrolyte imbalances.¹¹

The use of complementary approaches like abdominal massage to relieve constipation has been suggested since the 19th century.¹² Several studies on patients with spinal injuries found that abdominal massage reduced the colonic transit time and abdominal distention, increased the frequency of defecation, and improved continence.^{13,14,15}

The Center of Applied Thai Traditional Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University has much experience with the administration of a range of traditional healing approaches. The Thai traditional medicine of abdominal massage (TTMAM) is one of the treatments which is normally administered to patients with constipation, most of whom had improved defecation as a result. However, to our knowledge, there is no data or research available relating to the effects of TTMAM on defecation in post lumbar laminectomy patients. The present study was designed to examine the effects of TTMAM in post lumbar laminectomy patients in terms of defecation.

MATERIALS AND METHODS

This single-center, prospective, randomized, controlled trial was conducted during the 2011 to 2015 study period. The Siriraj Institutional Review Board (SIRB), Faculty of Medicine Siriraj Hospital, Mahidol University, approved the study protocol (Si. 095/2011). The enrolled subjects were spinal stenosis patients who were scheduled to undergo a decompressive laminectomy with or without fusion. Patients were excluded if they had any of the following conditions: abdominal aortic aneurysm; aortic dissection; palpable pulsatile intra-abdominal mass; previous abdominal surgery; preexisting medical diseases which could interfere with defecation, such as hypothyroidism, delirium, and stroke; or the need to be placed in the ICU post-operatively.

Patients were randomized into two groups (44 patients per group) using simple randomization. The control group (non-TTMAM) consisted of patients who received standard nursing care only. The intervention

group (the TTMAM group) was comprised of patients who were provided with the TTMAM in addition to standard nursing care. After being provided with verbal and written information regarding the procedure, 88 patients were accepted to participate in this study. Written informed consent was obtained from all 88 participants.

Postoperatively, the non-TTMAM group received standard nursing care. This consisted of a deep breathing exercise every 4 hours, and at least 100 times per day; turning the patients every 2 hours; an ankle pumping exercise at least 100 times per day; and the drinking of at least 1,000 cc of water per day.

By comparison, the TTMAM group received standard nursing care combined with the TTMAM on Days 1 to 3 postoperatively; twenty minutes of the TTMAM was performed two hours after dinner. The TTMAM was conducted by certified, applied-Thai traditional medicine therapists from the Center of Applied Thai Traditional Medicine, Faculty of Medicine Siriraj Hospital. The TTMAM maneuver is described in Fig 1.

The clinical outcomes that were evaluated comprised the first defecation within 3 days after surgery and the abdominal symptoms after surgery. The latter were assessed daily using the abdominal distention evaluation form (modified from Wattanawetch¹⁶); belching, flatus excretion, the perception of fullness, bowel sounds, and increases in abdominal girth were examined. Patient satisfaction was evaluated by the level of satisfaction with defecation care, which was determined by questionnaires administered on the fourth day after surgery.

Statistical analysis

All statistical analyses were performed using SPSS Statistics for Windows, version 18. A chi-square test was used to compare the number of participants in the two groups who first defecated within 3 days after surgery, and the degree of abdominal distention experienced by the experimental and control groups. An independent t-test was used to compare the level of satisfaction with the defecation care reported by patients in the two groups. A p-value of 0.05 or less was considered statistically significant.

RESULTS

The forty-four patients in the TTMAM group consisted of thirty females and fourteen males, with an average age of 62.8 years. The forty-four patients in the non-TTMAM group, comprised of thirty-five females and nine males, had an average age of 63.8 years. The demographic data are shown in Table 1. All patients

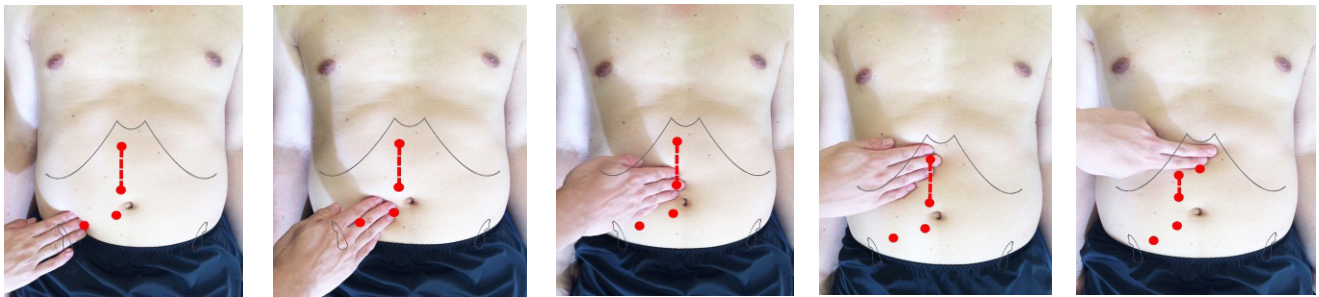


Fig 1A split motion

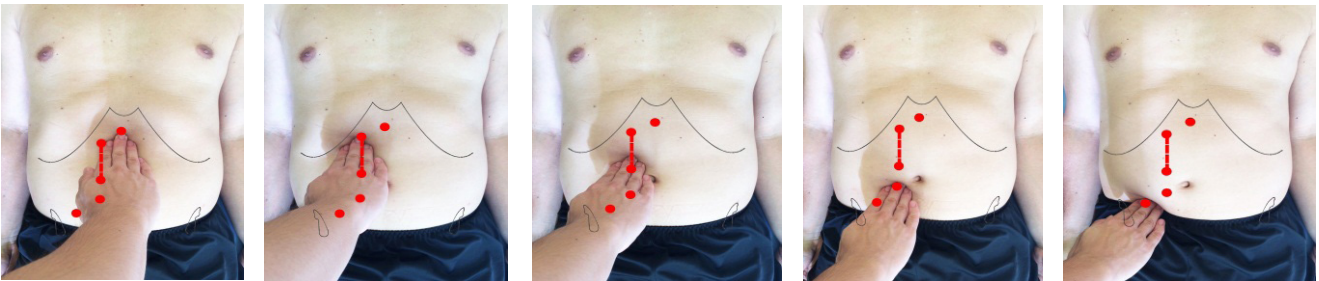


Fig 1B pressing motion



Fig 1C scooping motion

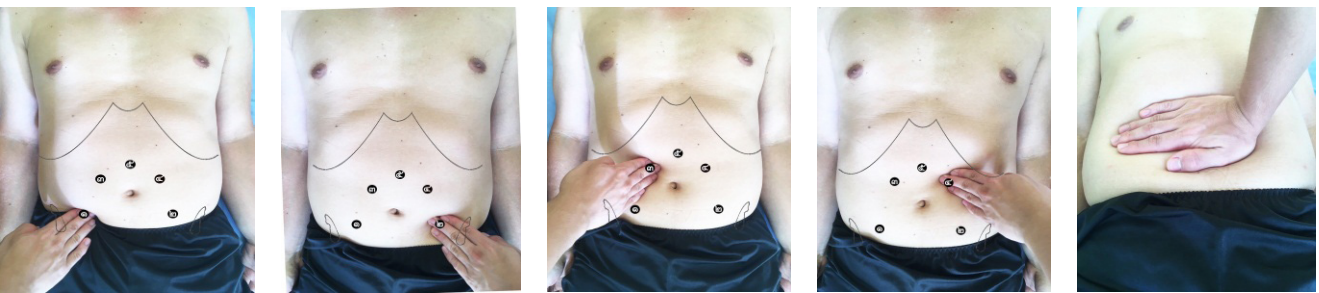


Fig 1D massage important abdominal points

Fig 1. The Thai traditional medicine abdominal massage maneuver. The subject is placed in a supine position. The massage therapist stands beside the subject and uses the thumb, finger tips and hand to massage along the muscles via 4 motions; the split motion (1A); the pressing motion (1B); the scooping motion (1C); and the soft massage of 5 important abdominal points, to about 70% of the maximum weight (1D).

completed the study protocol. There were no statistically significant differences between the two groups, and no complications were found in either group.

When comparing the number of patients with a first defecation within 3 days after surgery, no significant differences were found in the figures for the two groups. However, the number was higher for the TTMAM group (n = 20, 46.5%) than for the non-TTMAM group (n = 12, 27.3%; p = 0.063).

On the other hand, there was a significant difference between the intervention and control groups in terms of the degree of abdominal distention and abdominal discomfort on the third day after surgery (Table 2). In addition, there was a statistically significant difference in the mean scores for satisfaction with the defecation care reported by the patients in the two groups (Table 3).

TABLE 1. Baseline characteristics of 88 patients with spinal stenosis who randomly received standard nursing care (non-TTMAM group) versus TTMAM in addition to standard nursing care (TTMAM group).

	Non-TTMAM Group (n = 44)	TTMAM Group (n = 44)
Gender (male: female)	9:35 (20.5%:79.5%)	14:30 (31.8%:68.2%)
Age (years)	63.8	62.8
Laminectomy	14(31.8%)	24(54.5%)
Laminectomy with fusion	30(68.2%)	20(45.5%)
Volumes of drinking water		
1 st day after surgery (mL)	1278.6±470.2	1254.3±504.3
2 nd day after surgery (mL)	1351.6±496.3	1277.1±462.6
3 rd day after surgery (mL)	1305.4±475.3	1381.1±496.0
Morphine	34(77.2%)	30(68.2%)

Abbreviation: TTMAM = Thai traditional medicine of abdominal massage

TABLE 2. Comparison of the number and percentage of patients with abdominal distention and of the level of abdominal distention on the 3rd day after surgery in the control and experimental groups.

	Non-TTMAM Group (n = 44)	TTMAM Group (n = 44)	P-value
Belching / 4 hours			0.70
No belching	12 (27.3%)	16 (36.4%)	
1-10 times	30 (68.1%)	27 (61.3%)	
> 11 times	2 (4.5%)	1 (2.3%)	
Flatus excretion			0.92
No flatus excretion	1 (2.3%)	1 (2.3%)	
1-6 times	34 (77.3%)	33 (75.0%)	
≥ 7 times	9 (20.5%)	10 (22.7%)	
Perception of fullness			0.04*
Severe	1 (2.3%)	1 (2.3%)	
Moderate	29 (65.9%)	16 (36.4%)	
Mild	14 (31.8%)	27 (61.4%)	
Bowel sounds			0.66
< 3 times / minute	7 (15.9%)	5 (11.4%)	
> 3 times / minute	37 (84.1%)	39 (88.6%)	
Increased abdominal girth			0.41
> 3.9 centimeters	16 (36.4%)	11 (25.0%)	
< 3.9 centimeters	28 (63.6%)	33 (75.1%)	
Degree of abdominal distention			0.01*
Mild	10 (22.7%)	21 (47.7%)	
Moderate	34 (77.3%)	21 (47.7%)	
Severe	0 (0.0%)	2 (4.5%)	

* = statistical significance level of ≤ 0.05

Abbreviation: TTMAM = Thai traditional medicine of abdominal massage

TABLE 3. Comparison of the mean scores for patient satisfaction with defecation care for the non-TTMAM and TTMAM groups.

	Non-TTMAM Group (n = 44)	TTMAM Group (n = 44)	P-value
Satisfaction score	2.34 ± 1.92	4.09 ± .86	< 0.001***

*** = statistical significance level of ≤ 0.001

Abbreviation: TTMAM = Thai traditional medicine of abdominal massage

DISCUSSION

This study found that constipation, defined as a first defecation later than 3 days after surgery, is a common problem among lumbar laminectomy patients (72.7% in the standard nursing care, or non-TTMAM, group). Pain after surgery encourages patients to remain in bed after surgery, which causes the sympathetic nervous system to become dominant. In turn, this inhibits the bowel functions, slows bowel movements, affects digestion, causes poor absorption, and promotes abdominal distention and constipation.⁶ Moreover, pain after surgery is often treated with opioids, such as morphine, thereby reducing the patient's bowel movements.³

The results of the present study on the number of defecations within the first 3 days after surgery found that there was no statistically significant difference between the group that received the TTMAM and the group that received standard bowel care. Even though previous studies have reported that the use of the TTMAM has enhanced defecation, most of those studies were done on spinal injury patients who had chronic constipation.^{13,14} On the other hand, the patients in the present study were in a different situation because of their recent spinal surgery; they had limited mobility and acute pain, which led to an acute change in the habit of constipation rather than to the chronic constipation reported in the aforementioned studies that had enrolled chronic spinal cord injury patients.

With regard to abdominal distention on the third day after surgery, the present study demonstrated that the group that had received TTMAM had less severe abdominal distention than the group that had only been treated with standard nursing care, with statistical significance. This finding is in line with a study on the effects of abdominal massage on the gastrointestinal function in patients with spinal injuries¹³; it found that abdominal massage improved bowel movements, reduced

the colonic transit time, and reduced abdominal distention, as massaging increases pressure in the abdomen. Massaging also stimulates the somato-autonomic reflexes, which in turn reduce the colonic transit time.¹⁴ Furthermore, abdominal massage stimulates the parasympathetic system, which is responsible for the stomach and the intestinal functions, thereby reducing abdominal distention.¹⁷

The analysis of the level of patient satisfaction with defecation care revealed that the group receiving the TTMAM were more satisfied than the group given standard nursing care, with statistical significance. An earlier study of the effects of Swedish abdominal massage on constipation found that patients felt satisfied and safe while the massage was being given.¹⁸ Another study on the effects of the TTMAM together with a soap rectal suppository on spinal injury patients determined that none rejected the massage, they felt relaxed during the abdominal massage, and there were no feelings of distention or discomfort.¹⁵ After the TTMAM, those subjects were able to pass flatus for longer durations, had less abdominal distention and no nausea, and were able to defecate more easily. These findings can be explained by the fact that abdominal massage is a type of touch that is meaningful and stimulates a profound feeling. Massage inhibits the hypothalamic function, which works with the autonomic system to stimulate the secretion of norepinephrine and acetylcholine in the sympathetic and parasympathetic systems. Norepinephrine has a positive effect on a person's mood. In addition, massage reduces the function of the sympathetic system and stimulates the parasympathetic system, which causes relaxation.^{18,19}

The limitations of this study are related to uncontrollable factors, such as the amount of high-fiber food eaten, the degree of patient mobility, and the level of stress arising from the surgery. Bowel movements and abdominal pressure were not measured. Moreover, the volume and consistency of the feces were not evaluated.

CONCLUSION

The Thai traditional medicine of abdominal massage tends to help post-laminectomy patients to defecate. Furthermore, this procedure reduces abdominal distention and increases patient satisfaction. It should therefore be employed with other defecation stimulation methods.

REFERENCES

1. Chiengthong K, Bunmaprasert T. Degenerative disease of the spine. Chiang Mai: Faculty of Medicine, Chiang Mai University; 2007. (In Thai)
2. Pamela E. Verkuilen. Preventing Constipation After Back Surgery. (Internet). 2007 (Cited 2017 July 22). Available from: <http://www.spine-health.com/treatment>.
3. Cassinelli EH, Eubanks J, Vogt M, Furey C, Yoo J, Bohlman HH. Risk factors for the development of perioperative complications in elderly patients undergoing lumbar decompression and arthrodesis for spinal stenosis. *Spine J*. 2007;32:230-35.
4. Phataranavic P, Okmaen R, Kuntisomboon S. A study of symptom disturbances and postoperative complications in orthopaedic patients. *Journal of Orthopaedic Nursing*. 2005;10: 85-99. (In Thai.)
5. Eberhardie C. Constipation: Identifying the problem. *Nurs Older People*. 2003;15:22-6.
6. Khumtaveeporn P. Pathophysiology of movement. In: Unnapirak L, editor. *Pathophysiology in nursing*. 8th ed. Bangkok: Boonsiri; 2009. p.170-98. (In Thai)
7. Norton C. Constipation in older patients: Effects on quality of life. *Br J Nurs*. 2006; 15:188-92.
8. Tack J, Muller-Lissner S. Review Treatment of Chronic Constipation: current Pharmacologic approaches and future direction. *Clin Gastroenterol Hepato*. 2009;7:502-8.
9. Stumm RE, Thomas MS, Coombes J, Greenhill J, Hay J. Managing Constipation in Elderly orthopaedic patients using either pear juice or a high fiber supplement. *Aust J Nutr Diet*. 2001;58: 181-5.
10. Monmai P. The effectiveness of a constipation prevention program for hospitalized elderly with hip surgery [master's thesis]. Bangkok: Mahidol University; 2009.p.154 (In Thai)
11. Hinrichs M, Huseboe J. Research-based protocol management of constipation. *J Geronto Nurs*. 2001;27:17-28.
12. Thai massage restoration project. The manual of Thai massage in primary health care. Bangkok: Ruenkaew; 1992. (In Thai)
13. Lämås K, Lindholm L, Stenlund H, Engström B, Jacobsson C. Effects of abdominal massage in management of constipation—A randomized controlled trial. *Int J Nurs Stud*. 2009;46:759-67.
14. Ayas S, Leblebici B, Sozay S, Bayramoglu M, Niron EA. The effect of abdominal massage on bowel function in patients with spinal cord injury. *Am J Phys Med Rehabil*. 2006;85:951-5.
15. Vatthakavarn P. Effectiveness of abdominal massage combined with soap rectal suppository on stimulating bowel movement in spinal cord injury patients [master's thesis]. Khon Kaen: Khon Kaen University; 2002.p.75 (In Thai)
16. Wattanawech T. The influence of selected factors and self-care behavior on abdominal distention in patients with abdominal surgery (master's thesis). Bangkok: Mahidol University; 2002. p.124 (In Thai)
17. Diego MA, Field T. Moderate pressure massage elicits a parasympathetic nervous system response. *Int J Neurosci*. 2009;119:630-8.
18. Lamas K, Graneheim UH, Jacobsson C. Experiences of abdominal massage for constipation. *J Clin Nurs*; 2012;21:757-65.
19. Boonsawat W. Effects of Thai traditional massage on pain reduction in cancer patients [master's thesis]. Songkla: Prince of Songkla University; 2005.p.173 (In Thai)