

A comparative study on the effects of transcendental meditation on perioperative haemodynamic parameters, pain and fetomaternal outcome on patients undergoing elective caesarian section under spinal anaesthesia

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Abstract

Objective: To study and compare the effects of transcendental meditation (TM) on patients undergoing elective caesarian section under spinal anaesthesia in terms of perioperative haemodynamic parameters, pain and feto-maternal outcome. **Materials and methods:** This was a prospective comparative study, conducted in our hospital on 50 ASA (American Society of Anaesthesiologists) grade I or II patients, aged 20-35 years, with gestation period ≥ 37 weeks, scheduled for elective caesarian section under spinal anaesthesia, fulfilling inclusion and exclusion criteria. The patients were divided into 2 groups of 25 each- Group A (TM therapy) and Group B (no therapy). Group A patients were explained about the procedure on the first antenatal visit and were sent the required videos on their smart phones, and feedback was subsequently taken on next visit. While next 25 patients were simply enrolled in the study as group B. Patients of both groups were then analyzed on the various parameters of feto-maternal outcome. **Results:** The commonest indication of elective CS was history of previous LSCS (40% and 48% respectively in group A and B). There was significant reduction in perioperative maternal complications in group A (TM group) as compared to the group B. There was no maternal mortality or neonatal mortality in either group. The pulse rate, respiratory rate and VAS score were also significantly favorable in Group A. **Conclusions:** TM therapy was highly successful in maintaining hemodynamic parameters and providing a good feto-maternal outcome in the study group as compared to the control group. There was also a significant reduction in the morbidity in the study group. TM therapy has the advantages of being pragmatic, simple and inexpensive along with the ease of applicability.

Keywords: caesarean, section, medication.

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Introduction

The caesarean section (CS) is considered to be the most common surgery performed by an obstetrician. Although obstetrician is considered to be well versed in this basic surgery, it may turn up into a most challenging one as well. Transcendental meditation (TM) is considered to be based on 40 branches of Vedic literature including Ayurveda. It has been a prophylactic time tested approach in the natural system of health care[1]. Any preoperative stress or anxiety can be manifested in the form of deranged perioperative haemodynamic parameters as well as lengthen the hospital stay[2]. The haemodynamic effects of this fear can present as hypertension, tachycardia leading to increased hospital stay due to delayed wound healing or increased risk of infection. CS is also known to be associated with perils of post partum blues and depression[3]. Music is also very soothing for everyone. It can lessen the anxiety levels by controlling the autonomic nervous system. This makes the patient more comfortable in a new, unfamiliar environment like

hospital[4]. Music may be classified as natural, instrumental or vocal. Natural includes sounds of nature while vocal may be live or recorded. This therapy may be a combination of all three or either[5]. TM, being an alternate therapy like music therapy, cannot be considered as a primary treatment rather it enhances the human awareness to its highest level. To get a clear picture one needs to understand the Vedic perspective[6,7]. So this comparative study was conducted to evaluate the effects of alternate therapy like TM on perioperative haemodynamic changes, pain and feto-maternal outcome in patients undergoing elective CS.

Materials & Methods

The present study was a prospective study carried out in the Department of Obstetrics & Gynaecology, Ananta Institute of medical sciences & research centre, Rajsamand for a period of six months from August 2019 to January 2020.

Setting: Tertiary care

Type of study: Prospective comparative study.

Participants: In our study, first 50 booked patients with the given inclusion criteria to be taken for term elective CS were included. These patients were divided into two groups of 25 patients each. The participants of the first group (Group A) were previously (antenatally) trained for TM therapy by the similar recorded videos of trained instructors. The videos were shared on WhatsApp numbers of respective patients. The second group (Group B) was not exposed to any such training programme.

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Type of participants: All 50 patients were evaluated in terms of their perioperative haemodynamic parameters, pain and foeto-maternal outcome. All the patients/attendants included in the study gave written informed consent for undertaking this training/being a part of this study. It was ensured that their personal details including obstetric history would remain confidential.

Inclusion Criteria

All the 50 patients included had the following criteria:

- All these patients were booked at the institute.
- All the patients had one or the other recurrent indications of CS like H/O previous one or more CS, previous Myomectomy, Cephalopelvic disproportion(CPD), Placenta praevia, Uterine anomaly leading to malpresentations, Recurrent pregnancy loss (RPL) (Sequence of three or more consecutive spontaneous abortion <20 weeks), Bad obstetric history (BOH) (history of previous obstetric disaster which has possibilities to affect the present pregnancy),
- Term pregnancies with gestation >= 37 weeks.
- Patients of reproductive age group of 20-35 years.
- Patients with BMI 18.5 -25 kg/m²
- Patients/ Attendants with smart phone for having video access.
- Patients with American Society of Anaesthesiologists (ASA) physical status I-II.

OUTCOME was studied in terms of

- A. Haemodynamic parameters ie pulse, respiratory rate, SpO₂, Systolic blood pressure(SBP), Diastolic blood pressure (DBP), Mean arterial pressure (MAP) were measured preoperatively, intraoperatively and postoperatively in both groups.
- B. VAS score was measured on a horizontal scale of 1-10 with patients explained about its grading (0 being nil and 10 being worst pain)

Complications were divided into :

- Preoperative a) Multiple i.v access attempts (>one)
- b) Multiple attempts of subarachnoid block (>one)
- Intraoperative a) Blood transfusion.
- b) PPH
- c) Obstetric hysterectomy
- Postoperative EARLY
- a) Blood transfusion
- b) Wound gaping
- c) Paralytic ileus
- d) ICU (intensive care unit) stay (if applicable)
- e) NICU (neonatal intensive care unit) stay(if applicable)
- f) Hospital stay >5 days
- g) Maternal mortality
- h) Neonatal mortality
- DELAYED
- a) Spinal headache
- b) Deep vein thrombosis (DVT)
- c) Puerperal sepsis
- d) Subinvolution
- e) Postpartum depression/psychosis
- f) Bladder/bowel injuries

- g) Scar complications

Exclusion Criteria

- Pregnancies with gestation < 37 weeks of gestation.
- Patients undergoing emergency CS.
- Unbooked cases with uneventful pregnancy and normal delivery.
- Cases who refused to give consent for being a part of the study.
- Cases who refused to train for TM.
- Patients with comorbidities like hypertensive disease of pregnancy, heart diseases, chronic anaemia, overt diabetes or GDM.
- Patients with age <20 / > 35 years.
- Underweight pts with BMI<18.5 kg/m², overweight patients with BMI>25 kg/m²
- Pregnancies with risk factors for PPH like anaemia, overdistention (twins ,polyhydramnios), coagulopathies.
- Patients with H/O Psychiatric illness like depression/mood disorders.
- Rh negative pregnancies.
- Patients on anticoagulants /h/o DVT.
- Patients with H/O migraine ,epilepsy, asthma.

Methodology

Transcendental Meditation-The pioneer of this technique was Maharishi Mahesh yogi who was a brilliant Vedic scholar .It is a simple meditation performed for 20 minutes a day as per patient’s comfort preferably in morning hours. It is taught by particularly trained instructors and no specific lifestyle changes are required. It may lead to modifications in lifestyles but can go hand in hand with the usual medications[8].This effortless technique does not require any mind control /conceptualization. It causes a significant reduction of mental and bodily burdens while experiencing a state of “transcendental consciousness” .It is very different from sleep, day-dreaming and awake state[9,10].On the first antenatal visit, first 25 patients (with inclusive criteria) were sensitized about this procedure. Those giving consent for participation were enrolled for the study as group A. While next 25 patients (with inclusive criteria) were enrolled in the study as group B after taking consent.Group A patients were sent the required videos on their smart phones. In subsequent visits follow up/feedback of procedure was taken. It was ensured that drop outs were replaced by eligible , willing patients so that group size remains same.Patients of both groups were then analyzed on the various parameters of foeto-maternal outcome.

Results

50 pregnant females who matched the inclusion criteria during the period of 6 months from August 2019 to January 2020 were included in the present study. They were divided into two groups Group A (TM therapy) and Group B (no therapy) and results were obtained accordingly.The most common recurrent indication of elective CS in both groups was history of previous LSCS(40%,48%) followed by CPD(28%,32%) and recurrent pregnancy loss(RPL) (3%,2%) respectively in group A,B. (Table 1)

Table 1: Indications Of Elective CS

S.No.	Indications	Group A	Group B
1.	Previous LSCS (one /more)	10 (40%)	12(48%)
2.	Previous myomectomy	1(4%)	1(4%)
3.	CPD	7(28%)	8(32%)
4.	Placenta praevia	1(4%)	0
5.	Recurrent malpresentations	1(4%)	1(4%)
6.	RPL	3(12%)	2(8%)
7	BOH	2(8%)	1(4%)
	TOTAL	25	25

In our comparative study, both the groups were analyzed for the foeto-maternal outcome. For this ,the complications were classified into three major categories:preoperative,intraoperative and

postoperative. As shown in table 3 ,there was a significant reduction in maternal complications in group A (TM group) as compared to the group B. Preoperatively, group B patients were a bit nervous, so in 4,

5 patients multiple attempts were taken in getting i.v access and giving subarachnoid block (SAB) respectively. On the other hand, among group A patients with good autonomic control ,only one patient had experienced multiple attempts of SAB.Intraoperatively , in study group only 2 patients who had PPH were transfused blood whereas in the control group 7 patients had PPH who were transfused blood and one of them was hysterectomised. Postoperatively , the complications were further divided into early and delayed. Only 3 patients in group A who had wound gaping stayed for >5 days in the hospital. Other minor complications in this

group were paralytic ileus and NICU stay in one patient each. On the contrary, in control group 5 patients had wound gaping and 15 patients had prolonged hospital stay. Rest details are given in the table 3. Even delayed complications were more in the control group with as many as 9 patients had persistent spinal headache whereas in study group only 2 patients experienced it. Other complications like puerperal sepsis, subinvolution, postpartum depression/psychosis were also more common in group B. There was no maternal mortality or neonatal mortality in either groups. Rest values are shown in table 2

Table 2 : Complications (Fetomaternal Outcome)

S.No.	Complications	Group A	Group B	P value
1.	Preoperative			
	a) Multiple i.v access attempts	0	4	0.118
	b) Multiple attempts of subarachnoid block (>one)	1	5	0.192
2.	Intraoperative			
	a) Blood transfusion.	2	7	0.141
	b) PPH	2	7	0.141
	c) Obstetric hysterectomy	0	1	0.98
3.	Postoperative EARLY			
	a) Blood transfusion	0	1	0.98
	b) Wound gaping	3	5	0.700
	c) Paralytic ileus	1	3	0.602
	d) ICU stay	0	4	0.118
	e) NICU stay of the neonate (if applicable)	1	6	0.103
	f) Prolonged Hospital stay (> 5 days)	3	15	0.001
	g) Maternal mortality	0	0	----
	h) Neonatal mortality	0	0	-----
	DELAYED			
	a) Spinal headache	2	9	0.041
	b) DVT	0	0	----
	c) Puerperal sepsis	0	2	0.470
	d) Subinvolution	1	2	0.987
	e) Postpartum depression/psychosis	0	3	0.234

Table 3: Haemodynamic Parameters & VAS SCORE

Hemodynamic Parameters	Group A	Group B	P value
Mean Pulse rate			
Preoperative	78.68 ±10.22	88.84±12.24	0.003
Intraoperative(after fetal Delivery)	76.84±9.22	92.84±10.24	<0.001
Postoperative	77.64±10.12	91.84±9.24	0.001
Mean SBP			
Preoperative	118.84±9.90	124.20±12.20	0.095
Intraoperative (after fetal Delivery)	108.64±8.80	116.12±10.20	0.008
Postoperative	109±10.0	112.34±9.84	0.240
Mean DBP			
Preoperative	78.20±11.24	84.22±6.68	0.026
Intraoperative (after fetal Delivery)	75.10±8.86	76.18±10	0.688
Postoperative	72.30±10.94	71.20±11.0	0.725
Mean SpO ₂			
Preoperative	99.52±0.08	99.70±0.74	0.233
Intraoperative(after fetal delivery)	99.80±0.34	99.62±0.36	0.075
Postoperative	99.84±0.36	99.86±0.66	0.895
Mean RR			
Preoperative	15.06±0.30	16.28±0.70	<0.001
Intraoperative(after fetal delivery)	15.30±0.52	16.84±0.78	<0.001
Postoperative	14.80±0.46	16.42±0.9	<0.001
VAS			
Pre operative VAS score	4.8±1.80	6.7±2.10	0.001
Post operative VAS score	4.2±0.60	5.4±1.32	<0.001

The haemodynamic parameters viz. mean pulse rate, mean SBP, mean DBP, mean RR, mean SpO₂, VAS score were noted as shown

in table 3. There was a significant change noted in pulse, VAS score, RR in the study group.

Discussion

In our study, the recurrent indications of CS are in numerated in table 1. Previous LSCS (40%,48%) was found the most common indication followed by CPD (28%,32%) in both groups respectively. Bad obstetric history (BOH) and recurrent pregnancy loss(RPL) were almost equally contributing . Other less common causes were previous myomectomy, placenta previa and malpresentations due to uterine malformations etc. Another significant point to note in our study was that we had to choose patients with recurrent elective indications so as to make sure that we train the study group to practice TM at least once a day for 20 minutes.As per a similar study performed by Poovathi M et al in 2018 in Tamil Nadu, out of 11 common indications of CS, previous CS with CPD(50%) was commonest . Previous 2 CS (10%) ,fetal distress (20%) and abruption(8%) were among the leading causes. Malpresentation (0.8%) was the rarest causes. In this study, indications were both elective and emergency as trial of scar was given as per ACOG criteria[11].Another study by Thakur et al concluded that commonest indications of elective CS were previous LSCS (78.87%),breach (11.2%) and oligohydramnios(8%) causes of difficult CS .Among rarer ones were placenta praevia(0.57%),transverse lie (0.43%) and maternal request(0.57%)[12].Mylonas et al in 2015 as per German guidelines enlisted the absolute indications of CS as CPD, chorioamnionitis, eclampsia, fetal acidosis, cord prolapse, placenta praevia, malpresentation and rupture uterus[13].As per our study , there was a clear advantage of TM therapy over no intervention. Study group had much lesser complications as compared to control group. Although there were almost no studies on the use of TM therapy on obstetric patients, but there were studies on complications in CS.According to a study by Thakur V et al in 2015 ,the three most common post operative complications seen in patients of elective CS were wound infection(12.78%), need of blood transfusion (5.17%) and wound gaping (4.74%). Other less common ones were secondary PPH (0.57%) and febrile morbidity (1.29%)[12].In a study by Mylonas et al in 2015 , it was observed that intra operative complications consisted of infections, organ injury, anaesthesia risks, requirement of blood transfusion and hysterectomy. There was post operative risk of persistent pain, adhesions and thromboembolic complications[13].Visconti et al in 2019 used the term “difficult caesarean “ and divided it into four categories viz. difficult access to lower uterine segment ,delayed fetal head delivery, organ injury and placental abnormalities[14].After TM therapy , it was found that study group had significant control in hemodynamic parameters like RR,SBP and VAS score.A similar study done by Sarkar D et al in 2015 which evaluated effects of music on hemodynamic parameters concluded that significant change was noted in RR after delivery of the baby and surgery completion .Also effect on pulse rate was significant in study group only after the surgery[15].In another study by Chang et al in 2005 observed that there was no significant difference observed in the hemodynamic parameters and VAS scores in both groups[16].

Conclusion

The present study concluded that TM therapy was highly successful in maintaining hemodynamic parameters and providing a good fetomaternal outcome in the study group as compared to the control group. Although there was no maternal or neonatal mortality in both groups ,there was a significant reduction in the morbidity in the study group. TM therapy has the advantages of being pragmatic, simple, inexpensive along with the ease of applicability (can be performed anywhere and anytime). The patient does not have to make any major lifestyle modifications and can be a disbeliever too.The major limitation of our study is small sample size .The reason behind this was the stringent eligibility criteria of the participants and those with

indications of elective CS. This criteria was required so that study group patients are counselled, trained , followed and rectified for successful implementation of TM therapy at the time of CS. Another limitation is that in the evaluation of fetomaternal outcome, few parameters were considered . This was due to the analysis of those factors only which were encountered during the study observations. The strength of this study was its novel approach utilized for the very first time in obstetrics.Its applicability is diverse and can be used optimally in future for other specialties as well. Its still an unexplored therapy with a lot of potential for patient benefit.

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