



# **2021 CAS Annual Meeting**

## **Ambulatory**

(Abstracts)

## Contents

Intrathecal Morphine Does Not Increase Pain in Joint Arthroplasty Surgeries. A Double Blind RCT .....	3
PreWarming to Prevent Perioperative Hypothermia in Short Duration Outpatient Surgery Under General Anesthesia: a Randomized Comparison Study .....	6

## Intrathecal Morphine Does Not Increase Pour in Joint Arthroplasty Surgeries. A Double Blind RCT

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**Introduction:** The changing health economy has driven the need for greater patient throughput, rapid turnover, and shorter hospital stays whilst retaining high quality medical care. Use of intrathecal opioids has become a widely accepted technique for providing effective postoperative pain relief in joint arthroplasty surgeries<sup>1</sup>. However, intrathecal morphine (ITM) has its own adverse effects including urinary retention, and delayed respiratory depression<sup>2</sup>. Post-operative urinary retention (POUR) is one of the main reasons for the delayed discharge following hip and knee arthroplasties. Early removal is important, as a risk of UTI is reported to rise 5% for each day a urinary catheter remains in situ<sup>3</sup>. Avoiding intrathecal morphine would benefit patients by decreasing complications associated with prolonged catheterization such as urinary tract infection and improve cost effectiveness through early discharge of patients<sup>4</sup>. Our aim was to evaluate, whether removing the ITM would facilitate early removal of urinary catheter and earlier discharge from hospital.

**Methods:** Ethics approval was obtained from the local REB. A prospective, double-blind, RCT of 134 patients who are 18 to 85 years old, with BMI 18 to 40 and undergoing elective primary as well as revision knee and hip arthroplasty under regional anesthesia was conducted. Patients were excluded if they had language barrier, prior history of urinary retention or BPH. Intra-operatively, patients received ITM 100 mcg (group A) or saline (group B) in addition to the standard dose of bupivacaine and 15 mcg of fentanyl. None of these patients were catheterized. If they were unable to urinate, an in and out was performed according to preset ultrasound bladder residual volumes. Post-operatively, data collection includes the time of in and out catheterization, Post-op pain, opioids side effects and hospital length of stay.

**Results:** 112 out of 134 patients were recruited, with 99 completing the study, which 66 underwent knee surgery and 33 underwent hip surgery. Both groups; A (ITM) and B (Non-ITM) were similar at baseline. The use of ITM was found to significantly reduce the length of hospital stay at 48 hours post-operatively (with the Difference (95%CI) in the median of -15.3 (-29.9, -0.71) and p-value of 0.04). There was no significant difference in the incidence of opioid side effects, duration of bladder catheterization and requirement for In & Out catheterizations, pain score and patient satisfaction between the two groups.

**Discussion:** The results of our study show that traditional use of ITM in joint arthroplasties significantly reduces hospital length of stay. It does not increase the incidence of opioid side effects, duration of bladder catheterization and requirement for In & Out, patient satisfaction and pain score at rest and movement. The use of ITM in the context of Fast Track Knee and Hip Arthroplasty is still a useful modality.

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Table 1. Baseline characteristics

Characteristics	ITM	Non-ITM
# Patients	48	51
Age, median (IQR)	67 (60, 74)	68 (60, 74)
BMI, mean (SD)	29.8 (4.3)	31.8 (5.4)
Male, %(n)	52.1 (25)	52.9 (27)
ASA, %(n)	52.1 (25)	60.8 (31)
Surgery type (TKA), %(n)	75.0 (36)	58.8 (30)
Highest Bupivacaine, %(n)	37.5 (18)	33.3 (17)
Pain score at rest on screening day, median (IQR)	2.0 (0, 4)	1 (0, 3)
Pain score at movement on screening day, median (IQR)	6 (4, 8)	6 (5, 8)

Table 2(a). Comparison of outcomes

Outcomes	ITM	Non-ITM	Difference (95%CI) *	p-values*
# Patients	48	51	(ITM vs Non-ITM)	
Length of hospital stay (hrs.), Median (IQR)	28 (23.4, 48)	43 (23.2, 68.5)	-15.3 (-29.9, -0.71)	0.04
Satisfaction, median (IQR)	6 (5, 6)	6 (5, 6)	0 (-0.47, 0.47)	0.99
First In&out Catheterization needed (hrs.) %(n)	37.5 (18)	35.3 (18)	2.2 (-16.8, 21.2)	0.81
Second In&out Catheterization needed, %(n)	8.3 (4)	3.9 (2)	4.4 (-5.1, 13.9)	0.36
Catheter duration, (hrs.) %(n/N)	16.7 (3/18)	27.8 (5/18)	-11.1 (-38.0, 15.8)	0.41
VASm24	4.5 (3, 8)	6 (3, 7)	-1.0 (-3.10, 1.10)	0.35
VASm36	6 (5, 8)	6 (5, 7)	0.0 (-1.44, 1.44)	0.99
VASm48	7 (5, 8)	6 (5, 7)	1.0 (-1.32, 3.32)	0.39
VASr24	3 (1, 5)	3 (1, 5)	0.0 (-1.70, 1.70)	0.99
VASr36	4.5 (2, 6)	3 (2, 4)	1.0 (-0.98, 2.98)	0.32
VASr48	4 (3, 6)	2 (1, 3)	2.0 (0.73, 3.27)	0.002

Table 2(b)

Outcomes	ITM	Non-ITM	Difference (95%CI)*	p-values*
# Patients	18	18	(ITM vs Non-ITM)	
Time to first in&out Catheterization (hrs.) median (IQR)	6.48 (4.80, 9.75)	6.03 (5.0, 6.80)	0.33 (-1.69, 2.35)	0.74

Table 3. outcomes

Side-effect	Baseline (at Screening day)		Post surgery period		p-value
	ITM (48)	Non-ITM (51)	ITM (48)	Non-ITM (51)	
Nausea, %(n/N)	0 (0/48)	0 (0/51)	18.75 (9/48)	17.65 (9/51)	0.89
Vomiting, %(n/N)	2.08 (1/48)	0 (0/51)	4.17 (2/48)	0 (0/51)	0.23
Constipation, %(n/N)	6.25 (3/48)	5.88 (3/51)	14.58 (7/48)	7.84 (4/51)	0.29
Difficulty passing urine, %(n/N)	2.08 (1/48)	0 (0/51)	12.5 (6/48)	11.76 (6/51)	0.91
Concentration difficulty, %(n/N)	4.17 (2/48)	0 (0/51)	6.25 (3/48)	7.84 (4/51)	0.99
Drowsiness, %(n/N)	4.17 (2/48)	0 (0/51)	8.33 (4/48)	5.88 (3/51)	0.71
Dizziness, %(n/N)	0 (0/48)	0 (0/51)	22.92 (11/48)	27.45 (14/51)	0.6
Confusion, %(n/N)	0 (0/48)	1.96 (1/51)	6.25 (3/48)	1.96 (1/51)	0.35
Fatigue, %(n/N)	4.17 (2/48)	9.8 (5/51)	25 (12/48)	15.69 (8/51)	0.25
Itchiness, %(n/N)	4.17 (2/48)	5.88 (3/51)	39.58 (19/48)	23.53 (12/51)	0.08
Dry mouth, %(n/N)	12.5 (6/48)	11.76 (6/51)	45.83 (22/48)	47.06 (24/51)	0.9
Headache, %(n/N)	6.25 (3/48)	3.92 (2/51)	10.42 (5/48)	13.73 (7/51)	0.61
Any side-effect, %(n/N)	33.33 (16/48)	29.41 (15/51)	75 (36/48)	68.63 (35/51)	0.48

## PreWarming to Prevent Perioperative Hypothermia in Short Duration Outpatient Surgery Under General Anesthesia: a Randomized Comparison Study

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**Introduction:** Prevention of perioperative hypothermia is a major challenge as hypothermia leads to adverse outcomes such as wound infections, coagulopathy, delayed recovery and cardiac events (1,2). The heat redistribution from central to peripheral compartment is the main mechanism of early heat loss under general anesthesia (GA), and a 30-minutes forced-air prewarming (PW) minimizes this phenomenon (3,4). The actual trend for fast-tracking surgery demands an aggressive perioperative temperature control. Therefore, as intraoperative active warming is limited during short duration outpatient surgeries, it seems pertinent to evaluate the impact of PW. The goal of this study was to evaluate, in short duration outpatient surgeries and compared to standard care, if the use of PW will impact patients' core temperature at the end of surgery.

**Methods:** After ethic approval, 60 adult patients scheduled for outpatient, short surgery (30-120min) under GA were randomized to PW Group (PWG) using a forced-air warming system (Flex gown, BairPaw system, 3M™) for at least 30 minutes preoperatively, or to control group (CG, standard care). CG received passive isolation with warm blankets. Intraoperative forced-air warming blankets (BairHugger, 3M™) were used for both groups. Perioperative temperatures were measured using the SpotOn 3M™ system. The primary outcome was the patients' temperature at the end of the surgery ( $T_{end}$ ). Secondary outcomes included: intraoperative temperature drop from OR entry ( $T_0$ ) to the lowest intraoperative temperature ( $T_{nadir}$ ), incidence of hypothermia ( $< 36^{\circ}C$ ), patient comfort level, length of stay (LOS) in PACU, and incidence of postoperative shivering.

**Results:** 57 patients were analyzed (29 PWG; 28 CG). Demographic data and patients' basal temperature ( $T_{basal}$ ) were similar. The  $T_0$  were comparable between PWG and CG ( $37.1^{\circ}(0.3)$  vs  $36.9^{\circ}(0.4)$  respectively;  $p=0.129$ ). PWG showed a higher  $T_{end}$  compared to CG patients ( $36.7^{\circ}(0.4)$  vs  $36.3^{\circ}(0.4)$ ;  $p<0.001$ ). The temperature drop was less in PWG compared to CG ( $-0.7^{\circ}(0.3)$  vs  $-0.9^{\circ}(0.3)$ ;  $p=0.044$ ). The incidence of intraoperative hypothermia was not different (PWG: 21% vs CG: 43%;  $p=0.072$ ). The patients' comfort level on a 0-10 Likert scale was higher in PWG compared to CG ( $10 [8-10]$  vs  $7.5 [6.25-9]$  respectively;  $p=0.0005$ ). There was no difference in LOS nor in the incidence of shivering in PACU.

**Discussion:** Compared to standard care, a minimum of 30-minutes continuous forced-air PW was effective in maintaining higher core temperature by the end of a short duration outpatient surgery. National Institute for Care and Health Excellence defined as clinically relevant a perioperative difference of  $0.5^{\circ}C$  in core temperature over  $36^{\circ}C$  (5). Thus, the present  $0.4^{\circ}C$  gain, when using PW, is relevant in short surgery, as intraoperative warming is limited. Moreover, PW increases patients' comfort and slightly reduces the incidence of hypothermia.

Not surprisingly, the incidence of shivering and the length of stay in PACU were unchanged for this type of short surgery.

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