複合保溫措施對手術中經尿道前列腺切除病人熱舒適及體溫之成效

The effect of compound heat preservation strategy on thermal comfort and body temperature of patients undergoing transurethral resection of prostate

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Objective

To examine the effect of providing compound thermal insulation measures on the normal body temperature and good thermal comfort during the operation of patients undergoing TURP. Furthermore, to explore the effects on pain and shivering during the recovery period from anesthesia.

Methods

Adopt an interventional experimental study design. Participants were recruited from a southern hospital. Patients underwent TURP were randomly assigned to the composite insulation (experimental) group (n=50) and the conventional insulation (control) group (n=50) **(Table 1)**. The measurement outcome included personal information and medical variables, ASHRAE thermal evaluation scale, pain evaluation scale, and the bedside shivering assessment scale for data collection. Participants data collected at when patients arrived at the operation registration area and before induction of anesthesia (pre-test, T0), and post-test performance at complete anesthesia (T1), 30 minutes (T2), 60 minutes (T3), 90 minutes after anesthesia minutes (T4), after transfer into the recovery room within 15 minutes (T5), before transferred out the recovery room (T6).

Results

Statistical analysis showed compared with the conventional heat preservation group, the compound heat preservation group can effectively maintain the intraoperative body temperature ≥ 36°C ($p < .05$) **(Figure 1)**. The thermal comfort was significantly higher than that of the conventional heat preservation group when patients entering the recovery room ($p < .05$). The degree of shivering was significantly lower than that of the conventional heat preservation group ($p < .01$), and the pain level was significantly higher than that of the conventional heat preservation group at leaving recovery room ($p < .01$) **(Table 2)**.

Conclusion

Compound insulation measures have significant effects on the body temperature and thermal comfort of patients undergoing transurethral resection of the prostate, and can be used as a reference for clinical care to improve the quality of surgical care.

This study was supported by E-DA Hospital (EDAHT110028)

Table 1 Basic characteristics and homogeneity analysis of research participants

Variable	Conventional insulation group (n=50) n(%) or (*M* ± *SD*)	Composite insulation group (n=49) n(%) or (*M* ± *SD*)	χ^2/t	*p*
Age(year)	72.42 ± 7.52	74.04 ± 7.75	-1.06	.293[b]
BMI(kg/m²)			0.40	.939[a]
< 18.5	3(6)	2(4.1)		
18.5~24.9	21(42)	19(38.8)		
25.0~29.9	2142)	22(44.9)		
> 30	5(10)	6(12.2)		
Hypertension	27(54)	26(53.1)	0.01	.925[a]
Diabetes	13(26)	18(36.7)	1.33	.250[a]
Heart disease	8(16)	13(26.5)	1.64	.200[a]
Preoperative temperature (°C)	36.49 ± 0.46	36.42 ± 0.49	0.51	.497[b]
ASA			0.91	.339[a]
CLASS II	38(76)	33(67.3)		
CLASS III	12(24)	16(32.7)		
Anesthesia			2.96	.085[a]
Sinal	34(68)	25(51)		
Gneral	16(32)	24(49)		
Surgical approach			0.487	.485[a]
B-TURP	18(36)	21(42.9)		
ThuVARP	32(64)	28(57.1)		
Anesthesia time (min)	159.42 ± 52.38	151.61 ± 47.22	0.78	.438[b]
Irrigation volume (c.c.)	29314.00±15404.25	27644.90±13202.10	0.58	.564[b]

Note：[a] Pearson Chi-Square；[b] Independent Student *t* test；
B-TURP = Bipolar Transurethral Resection of Prostate；
ThuVARP=Thulium laser Transurethral Vaporesection of the Prostate

Figure 1 Changes of intraoperative body temperature maintenance in the two groups before and after interventional measures

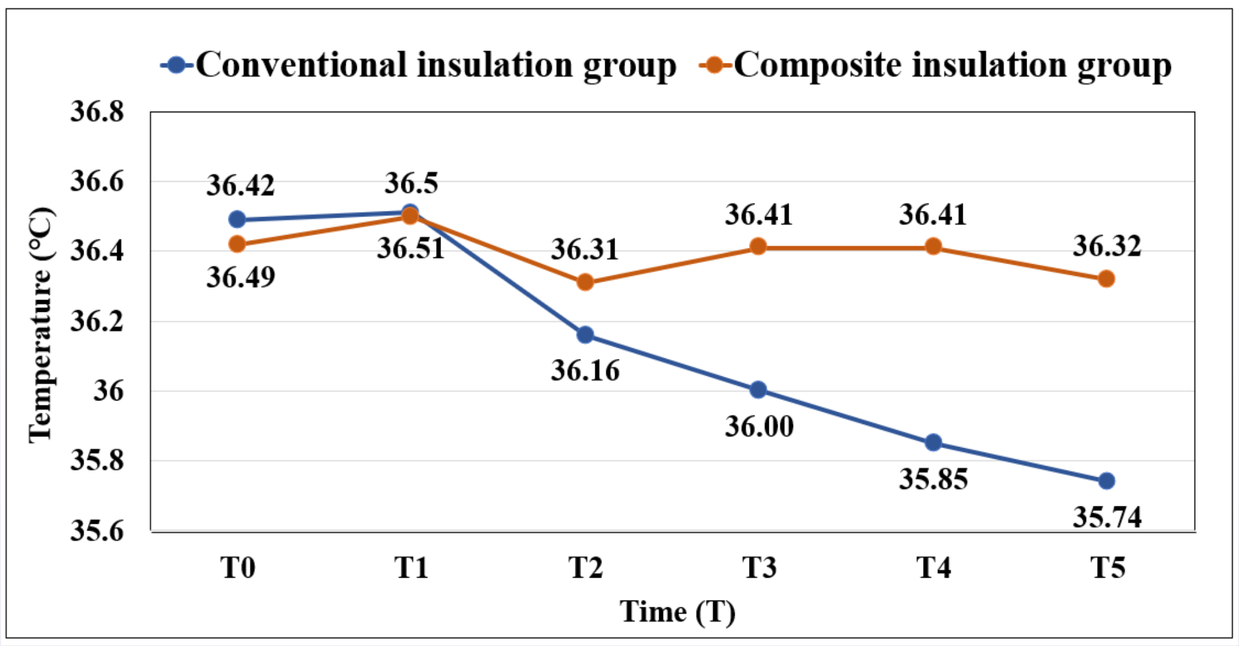

Table 2 Differences in the degree of thermal comfort and pain and shivering between the two groups during recovery from anesthesia

Variable	Conventional insulation (n=50) n(%) or *Mean* ± *SD*	Composite insulation (n=49) n(%) or *Mean* ± *SD*	*p*
(T5)			.016
Comfort	41(82.00)	48(98.00)	
Discomfort	9(18.00)	1(2.00)	
(T6)			.678
Comfort	48(96.00)	46(93.90)	
Discomfort	2(4.00)	3(6.10)	
Pain			
(T5)	0.44 ± 0.76	1.02 ± 1.65	.048
(T6)	0.48 ± 0.71	1.02 ± 1.28	.003
Shivering			
(T5)	0.26 ± 0.60	0.00 ± 0.00	.002
(T6)	0.04 ± 0.20	0.00 ± 0.00	.159

Note：Assessment tool : ASHRAE Thermal Sensation Evaluation Scale, Numerical Rating Scale, The Bedside Shivering Assessment Scale