

CHAPTER IV

RESULTS

4.1 DEMOGRAPHIC AND BASELINE DATA

A total of 64 patients who underwent surgery for grade 3 or grade 4 hemorrhoids and satisfied the eligibility criteria for this study were randomized to receive either spinal anesthesia (SA group, n= 32) or local perianal block (LA group, n=32). Mean (SD) age was 40.4(10.7) years in the SA group and 41.6(9.4) years in LA group. There were equal numbers of male and female in both groups. There were 17(53.1%) males and 15(46.9%) females. The two groups were similar in demographics and clinical variables. Patients were nearly evenly distributed between SA group and LA group in terms of severity of hemorrhoids. The main presenting symptom was described in Table 1.

Table 1. Clinical information of the subjects

	Number or Mean \pm SD	
	SA (n=32)	LA (n=32)
Age	40.4 \pm 10.8	41.6 \pm 9.4
Gender (Male: Female)	17:15 (53.1:46.9)	17:15 (53.1:46.9)
Severity of hemorrhoids*		
Third degree	39	33
Fourth degree	32	30
Main presenting symptom		
Bleeding	11	12
Mass	21	18
Pain	0	2

SA: Spinal anesthesia with 0.5% Bupivacaine

LA: Perianal nerve block by infiltration with 0.25% Bupivacaine

*: Patient had more than one hemorrhoidal cushion

4.2 PAIN ASSESSMENT DURING THE PROCEDURE OF LOCAL PERIANAL BLOCK

Table 2. The degree of pain graded by patients during the procedure of local perianal block

	Level of pain				
	None	Mild	Moderate	Severe	Unbearable
Analgesic injection	1	30	1	0	0
Insertion of anoscope	4	26	2	0	0
Surgery	16	13	2	0	0

The patients' pain levels during local anesthetic infiltration, proctoscopy, and surgery were presented in table 2. There were 31 patients with mild or no pain on injection of local anesthetic, only 2 patients underwent proctoscopy with complaint of moderately pain and 30 patients tolerated surgery with mild or no pain. No patient required conversion to spinal anesthesia.

4.3 PERIOPERATIVE AND POSTOPERATIVE SUMMARY

Table 3. Comparison of perioperative and postoperative summary between local and spinal anesthesia

	Number or Mean \pm SD		<i>p</i> -value
	SA (n=32)	LA (n=32)	
Success rate (%)	100	100	1
Operative blood loss (ml)	72.1 \pm 44.2	62.5 \pm 41.5	0.35(b)
Actual time of surgery (min)	37.2 \pm 13.7	36.5 \pm 16.3	0.93(a)
Duration of analgesic effect (min): median (95% CI)	304 (252.1-355.8)	210 (134.4-285.6)	0.03(c)*
Number of analgesic pill	5.2 \pm 2.58	4.7 \pm 3.1	0.46(b)
Number of patients who required			
1 injection	11	8	0.03(a)*
2 injections	6	2	
3 injections	1	1	
> 3 injections	1	0	
Required analgesic injection	19 (59.4%)	10 (34.5%)	0.04(d)*
Intravenous fluid (ml)	1139 \pm 283.3	754.7 \pm 302.5	<0.01(b)*
Total Cost (baht)	7145.4	6586.3	0.43(b)

SA: Spinal anesthesia with 0.5% Bupivacaine, LA: Perianal nerve block by infiltration with 0.25% Bupivacaine, (a): Mann-Whitney test, (b): Independent *t* test, (c): Kaplan-Meier survival curve, Tarone-Ware test, (d): Pearson Chi-square.

*: Statistical significant

All LA patients had a successful block for surgery within ten minutes after administering the anesthesia. There was no difference in amount of blood loss and duration of surgery between the two groups

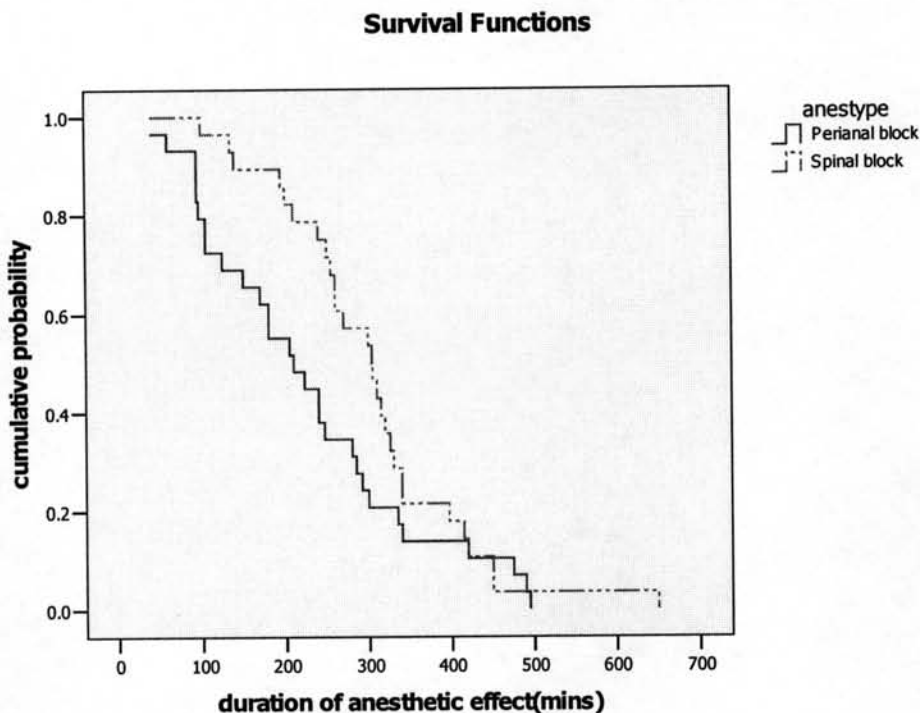


Figure 3. Survival curves show duration of anesthetic effect in each group.

4.4 DURATION OF ANESTHESIA

Spinal anesthesia had a longer duration of analgesic effect than local perianal block (SA: 304(252.1-355.8) minutes and LA: 210(134.4-285.6) minutes; $P=0.028$).

4.5 POSTOPERATIVE PAIN ASSESSMENTS

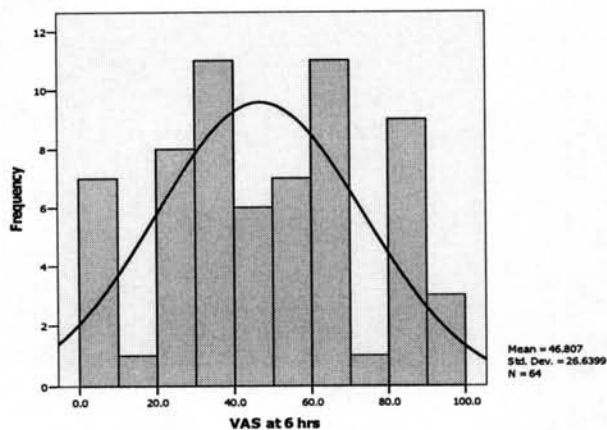


Figure 4. Histogram demonstrates a normal distribution of VAS at 6 hrs

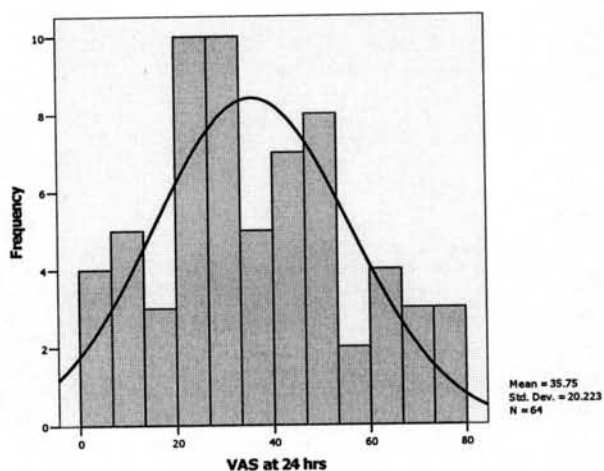


Figure 5. Histogram demonstrates a normal distribution of VAS at 24 hrs

Table 4. Postoperative pain

Pain scale (VAS) (mean \pm SD)	Type of anesthesia		<i>p</i> -Value
	LA	SA	
6 hours	41.7 \pm 23.5	51.9 \pm 28.9	0.13(b)
24 hours	33.9 \pm 21.2	37.6 \pm 19.3	0.47(b)

Values are mean \pm SD, VAS= Visual Analogue Scale, SA: Spinal anesthesia with 0.5% Bupivacaine, LA: Perianal nerve block by infiltration with 0.25% Bupivacaine

(b): Independent *t* test

There was no significant difference in the degree of pain at 6 hours (SA: 51.9 \pm 28.9 vs. LA: 41.7 \pm 23.5 with VAS; *P* =0.127) and at 24 hours after surgery (SA: 37.6 \pm 19.3 vs. LA: 33.9 \pm 21.2 with VAS; *P* =0.471) between the two groups. Postoperative requirement of analgesic pills were similar in both groups, while the SA patients required more analgesic injections compared to LA patients (*P* =0.044).

The data showed only 11(34.4%) patients with LA required analgesic injections, whereas 19(59.4%) patients with SA needed analgesic injection (*P* =0.04). The LA patients received a total of 15 analgesic injections compared to 31 injections for the SA patients.

4.6 COMPLICATIONS

Table 5 Complications

Types of complication	LA (n=32)	SA (n=32)	p-value
Intraoperative hypotension	0(0%)	5(15.6%)	0.05
Intraoperative nausea/vomiting	0(0%)	1(3.1%)	1.00
Voiding difficulty	9(28.1%)	20(62.5%)	0.01*
Urinary retention	3(9.4%)	10(31.3%)	0.06
Postoperative thrombosis	2(6.3%)	0(0%)	0.22
Dizziness	1(3.4%)	1(3.1%)	1.00
Fainting	2(6.3%)	0(0%)	0.49
Cystitis	0(0%)	1(3.1%)	1.00
Persistent pain at injection site	0(0%)	1(3.1%)	1.00

Values are absolute numbers (percent), SA: Spinal anesthesia with 0.5% Bupivacaine
 LA: Perianal nerve block by infiltration with 0.25% Bupivacaine

*: Significant by Fisher's Exact Test

Five (15.6%) patients in SA experienced hypotension (systolic blood pressure decrease more than 30 % from baseline) during operation and they were treated with intravenous ephedrine. No patient in LA group reported hypotension during operation. In the immediate postoperative period, no any patient reported nausea or vomiting in either group. There was a higher rate of voiding problems in spinal anesthesia than local anesthesia (LA: 9 (28.1%) vs. SA: 20 (62.5 %); $P = 0.011$). The incidence of urinary retention that required catheterization had a tendency to be higher in spinal anesthesia. Only 3 patients (9.4%) in the LA group required urinary catheterization compared with 10 patients (31.3%) in the SA group ($P = 0.06$). Two (6.3%) of LA patients experienced

postoperative thrombosis. One of them underwent surgery for clot evacuation on the day after the initial surgery under spinal anesthesia.

Patients with voiding difficulty (%)

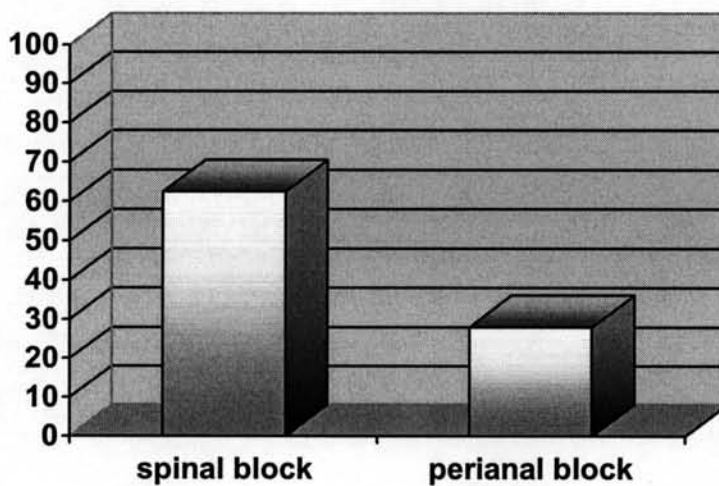


Figure 6. Percentage of patients with voiding difficulty

Patients with urinary retention (%)

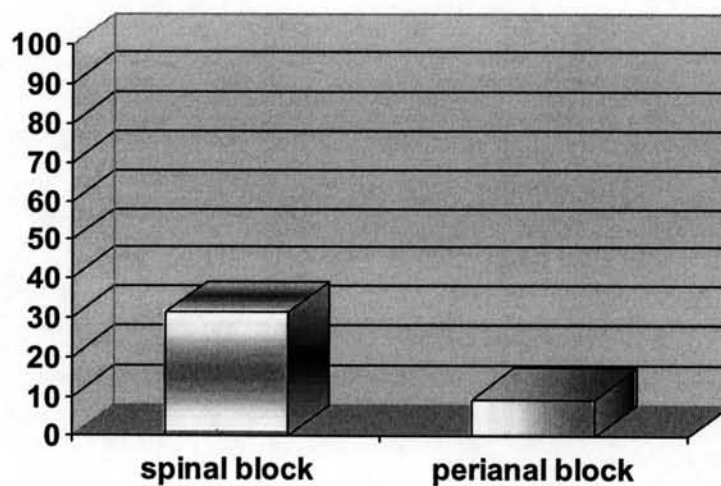


Figure 7. Percentage of patients with urinary retention

4.7 PATIENTS' SATISFACTION

Table 6. Patient satisfaction score for the anesthesia

Type of anesthesia	Local perianal block	Spinal block	P-value
Rating of satisfaction(0-100)	90.19(6.42)	93.13(25.77)	0.46(a)

Values are mean \pm SD

SA: Spinal anesthesia with 0.5% Bupivacaine, LA: Perianal nerve block by infiltration with 0.25% Bupivacaine, (a): Mann-Whitney test

Patients had high satisfaction on both anesthetic methods. Satisfaction score in the LA group was 90.19 compared to 93.13 for the SA group.

4.8 VARIABLES CORRELATED TO POSTOPERATIVE VOIDING PROBLEMS

Table 7 Comparison of patients with and without voiding problems

Clinical variables	Voiding problems		P-value
	No (n=35)	Yes (n=29)	
Age	41.2(11.5)	40.9(8.8)	0.909(b)
Sex(Male/Female)	18/17	16/13	0.806(d)
Type of anesthesia(SA/LA)	12/23	20/9	0.021(d)*
Level of pain(6 hours) mean(SD)	42.5(24.2)	52(28.8)	0.157(b)
Number of excised hemorrhoids mean(SD)			
1 head	6	4	0.272(b)
2 heads	21	14	
3 heads	8	11	
Total volume of intravenous fluid mean(SD)	852.8(333.4)	1060.3(331.7)	0.016(b)*

Values were mean \pm standard deviation or absolute number (percent)

(b): Independent *t* test, (d): Fisher's Exact Test *: Statistical significant

The variables significantly correlated with the occurrence of voiding problems were the method of anesthesia ($P=0.021$) and the total amount of intravenous fluid ($P=0.016$). The degree of pain, number of excised hemorrhoids, age, and sex did not affect the occurrence of postoperative voiding problem.

Table 8. Multiple logistic regression of risk factors for having voiding difficulty after hemorrhoidectomy

	<i>p</i> - value	95%Confidence Interval	Odds Ratio
Volume of IV fluid (ml)	0.22	(0.999-1.003)	1.00
Type of anesthesia: SA	0.02*	(1.28-10.28)	3.70

Type of anesthesia was only significant predictor of voiding complications in multiple logistic regression analysis