

received ibuprofen 400 mg diluted in 100 mL of 0.9% NaCl plus 10 mL of placebo every 8 hours and paracetamol 1000 mg intravenously every 6 hours. Group 2 (ketorolac-paracetamol) received ketorolac 30 mg diluted in 10 mL of 0.9% NaCl plus 100 mL of placebo every 8 hours and paracetamol 1000 mg intravenously every 6 hours. Medications were administered for the first 24 hours postoperatively.

If pain was not adequately controlled with the assigned regimen (NRS > 4), rescue analgesia in the form of intravenous fentanyl at a dose of 0.5–1 mcg/kg body weight was provided. The total dose of rescue analgesia administered was recorded.

The primary endpoints were pain levels, CT, BT, and IL-6 levels. Pain intensity was assessed using the NRS at 6, 12, and 24 hours postoperatively. CT and BT were measured 2 hours before surgery (preoperative baseline) and at 24 and 48 hours postoperatively. IL-6 levels were measured at 6 and 24 hours post-surgery using the enzyme-linked immunosorbent assay (ELISA) method. Blood samples were collected, and IL-6 concentration was analyzed to evaluate the inflammatory response to the surgical procedure and analgesic interventions.

Data were analyzed using the SPSS version 25.0 statistical software. The normality of the data was assessed using the Shapiro-Wilk test, with a significance level of $p > 0.05$ indicating a normal distribution. For normally distributed data ($p > 0.05$), an independent t-test was used, while for non-normally distributed data ($p \leq 0.05$), the Mann-Whitney U test was applied to compare NRS scores, CT, BT, and IL-6 levels before and after intervention within each group. A P value of < 0.05 was considered statistically significant.

Results

This study included a total of 40 participants who were randomly divided into two groups. The baseline characteristics of the two groups (age, body weight, height, BMI, duration of surgery, and blood loss) showed no significant differences ($p > 0.05$), indicating that the groups were homogeneous. Detailed characteristics are presented in Table 1.

1. Pain Levels

Pain levels were assessed using the NRS at rest and during movement at 6, 12, 24, and 48 hours postoperatively. No significant differences were observed in the mean NRS scores at rest or during movement between Group 1 and Group 2 at any of the measurement time points ($p > 0.05$). The comparative results are presented in Table 2.

2. Coagulation Profile

As shown in Table 3, there were no significant differences in CT values within either Group 1 or Group 2 across the measurement time points ($p > 0.05$). For BT, Group 1 also did not exhibit significant changes. However, in Group 2, significant differences in BT values were observed between 2 hours preoperatively and 24 hours postoperatively, between 2 hours preoperatively and 48 hours postoperatively, and between 24 and 48 hours postoperatively ($p < 0.05$).

As presented in Table 4, the comparison of changes (Δ) in CT between 2 hours preoperatively and 24 hours postoperatively did not differ significantly between the two groups ($p > 0.05$). At 48 hours

Tab. 1. Characteristics of research subjects

Characteristics	Group 1 (n = 20)	Group 2 (n = 20)	p-value
	Mean $\pm$ SD	Mean $\pm$ SD	
Age (year)	40.30 $\pm$ 7.39	41.50 $\pm$ 10.29	0.674 ^a
Body weight (kg)	64.10 $\pm$ 8.54	61.55 $\pm$ 5.67	0.273 ^a
Height (m)	154.30 $\pm$ 4.41	155.80 $\pm$ 2.95	0.183 ^b
Body Mass Index (kg/m ²)	26.98 $\pm$ 4.18	25.35 $\pm$ 2.66	0.157 ^b
Operation duration (minutes)	133.50 $\pm$ 32.97	111.00 $\pm$ 33.86	0.102 ^b
Bleeding (mL)	305.00 $\pm$ 122.36	302.50 $\pm$ 106.96	0.925 ^b

^aIndependent sample t test, ^bMann-Whitney test; p value < 0.05 is significant.

Tab. 2. Comparison of NRS at rest and NRS during movement between groups

Time	Group 1 (n = 20)	Group 2 (n = 20)	p-value
	Mean $\pm$ SD	Mean $\pm$ SD	
NRS at rest			
6 hours post-surgery	2.60 $\pm$ 0.50	2.95 $\pm$ 0.76	0.183
12 hours post-surgery	1.60 $\pm$ 0.50	2.10 $\pm$ 0.97	0.134
24 hours post-surgery	1.25 $\pm$ 0.44	1.60 $\pm$ 0.59	0.091
48 hours post-surgery	0.00 $\pm$ 0.00	0.10 $\pm$ 0.31	0.602
NRS upon movement			
6 hours post-surgery	3.60 $\pm$ 0.50	3.55 $\pm$ 0.51	0.752
12 hours post-surgery	3.00 $\pm$ 0.86	2.70 $\pm$ 0.72	0.349
24 hours post-surgery	2.35 $\pm$ 0.49	2.45 $\pm$ 0.51	0.524
48 hours post-surgery	1.10 $\pm$ 0.31	1.00 $\pm$ 0.00	0.152

Mann-Whitney test, p value < 0.05 is significant.

Tab. 3. Comparison of CT and BT between study times

Time	Group 1 (n = 20)	p-value	Group 2 (n = 20)	p-value
	Mean ± SD		Mean ± SD	
CT (minutes) ^a				
2 hours preoperatively	7.67 ± 0.36	1.000	7.62 ± 0.36	0.772
24 hours post-surgery	7.67 ± 0.36		7.67 ± 0.38	
2 hours preoperative	7.67 ± 0.36	0.104	7.62 ± 0.36	0.209
48 hours post-surgery	7.72 ± 0.34		7.76 ± 0.36	
24 hours post-surgery	7.67 ± 0.36	0.104	7.67 ± 0.38	0.056
48 hours post-surgery	7.72 ± 0.34		7.76 ± 0.36	
BT (minutes) ^b				
2 hours preoperatively	3.42 ± 0.20	0.317	3.36 ± 0.17	0.046
24 hours post-surgery	3.45 ± 0.24		3.46 ± 0.22	
2 hours preoperative	3.42 ± 0.20	0.074	3.36 ± 0.17	0.002
48 hours post-surgery	3.48 ± 0.22		3.60 ± 0.26	
24 hours post-surgery	3.45 ± 0.24	0.336	3.46 ± 0.22	0.044
48 hours post-surgery	3.48 ± 0.22		3.60 ± 0.26	

^aPaired t test, ^bWilcoxon test, p value < 0.05 is significant.