

Awareness of procedure specific pain management (PROSPECT) in pain management after total hip arthroplasty surgery among anesthesiology and reanimation physicians survey study

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ABSTRACT

Aims: Procedure-specific pain management (PROSPECT) provides clinicians with evidence-based recommendations for postoperative pain management. We aimed to evaluate Anesthesiology and Reanimation physicians' preferences for analgesia management after total hip arthroplasty (THA) surgery.

Methods: A questionnaire consisting of 19 questions including demographic data, analgesia methods used for THA surgery and whether PROSPECT recommendations were followed was prepared. This questionnaire was sent to the participants via e-mail.

Results: A total of 199 participants responded to the survey. 43.8% of the participants reported following PROSPECT recommendations. Only 6.5% of the participants did not prefer opioids for analgesia after THA surgery, while 14.1% reported that they routinely used opioids and the rest preferred them in combination with other techniques.

Conclusion: Since THA surgery is mostly performed in the elderly population with comorbid diseases, there is no consensus among anesthesiology and reanimation physicians about postoperative analgesia methods. We think that postoperative pain management trainings in THA surgery should be increased and PROSPECT recommendations should be disseminated in these trainings.

Keywords: Anesthesiology and reanimation, survey, PROSPECT, total hip arthroplasty, pain management

INTRODUCTION

The procedure-specific pain management (PROSPECT) working group is a global collaboration of surgeons and anesthesiologists formulating surgical procedure-specific recommendations for pain management after common operations.¹ PROSPECT recommendations are based on a procedure-specific systematic literature review of randomized controlled trials and systematic reviews. The methodology reports true clinical efficacy, balancing the invasiveness of analgesic interventions and the level of postoperative pain against efficacy and side effects, while setting general recommendations. In addition, attention is paid to early rehabilitation and mobilization.²

Total hip arthroplasty (THA) surgery is a common surgical procedure aimed at improving mobility and quality of life, especially in elderly patients.³ The choice of postoperative analgesia is important because the patient group is especially elderly patients with comorbid diseases. Adequate analgesia with minimal side effects provides early postoperative mobility, optimal functional recovery, and reduced postoperative morbidity.^{4,5} Despite being a common surgical procedure, there is no "gold standard" in the literature for

the control of postoperative pain after THA surgery, and there is high variability in perioperative anesthetic and analgesic management.⁶ This creates variability in clinicians' postoperative analgesia preferences.

The PROSPECT recommendations for pain management after THA surgery were first published in 2005 and then updated periodically with new evidence and the final guideline was published in 2021. In line with these updates, recommendations for analgesic interventions in pain management after THA surgery are listed in **Table 1** and non-recommended interventions are listed in **Table 2**.⁷

The aim of this study was to evaluate Anesthesiology and Reanimation physicians' pain management practices after THA and their awareness of PROSPECT recommendations during these practices.

METHODS

The study was approved by the Giresun Training and Research Hospital Ethics Committee (Date: 19.03.2025, Decision No: 19.03.2025/05). All procedures were carried out in accordance with the ethical rules and the principles

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Table 1. General recommendations for pain management in patients undergoing total hip arthroplasty

Before and during surgery
Preoperative exercise and education (grade A)
General or spinal anesthesia (grade A)
Paracetamol (grade A)
Non-steroidal anti-inflammatory drugs or cyclo-oxygenase-2 selective inhibitors (grade A)
Dexamethasone 8-10 mg i.v. (grade A)
Single shot fascia iliaca block or local infiltration analgesia (LIA) (grade D)
Intrathecal morphine 0.1 mg is acceptable if the patient received spinal anesthesia during surgery (grade D)
After surgery
Paracetamol (grade A)
Non-steroidal anti-inflammatory drugs or cyclo-oxygenase-2 selective inhibitors (grade A)
Rescue opioid (grade D)

of the Declaration of Helsinki. The study was a descriptive type study and data were collected with a questionnaire form created in electronic environment (Google forms). In order to reach the anesthesiology and reanimation physicians in Türkiye, the questionnaire form was sent to the members of the Turkish Society of Anesthesiology and Reanimation (TARD) via e-mail twice and dissemination was ensured. The questions were directed to the participants between 01.04.2025-01.06.2025. Detailed information about the purpose and nature of the questionnaire for the participants was stated in the introduction part of the questionnaire. The first 5 questions included demographic data and the next 13

questions included pain management data after THA surgery. The questionnaire form was administered online to actively working anesthesiology and reanimation physicians with the help of digital media. Within the specified date range, 199 participants responded to the questionnaire and the data of the participants who completed the questionnaire form completely were analyzed.

Survey Form;

Section 1 questions:

1. Age: a) 20-30 b) 31-40 c) 41-50 d) 51-60 e) over 60
2. Sex: a) Female b) Male
3. Title: a) Research Assistant b) Specialist Physician c) Assistant Professor d) Associate Professor e) Professor
4. Professional experience: a) 0-10 b) 11-20 c) 20 and above
5. Active organization: a) University Hospital b) Ministry of Health Training and Research Hospital c) State Hospital d) Private Hospital

Section 2 questions:

1. Do you recommend providing education about exercise and surgery during the preoperative period for pain control after total hip arthroplasty surgery?
a) Yes b) No
2. What is the method you most frequently use for pain control after total hip arthroplasty surgery?
a) General anesthesia b) Spinal anesthesia

Table 2. Analgesic interventions not recommended for pain management in patients undergoing total hip arthroplasty

	Intervention	Reason not to recommend
Before or during surgery	Carbohydrate loading	Limited procedure-specific evidence
	Day treatment	Limited procedure-specific evidence
	COX-2-selective inhibitor before or after incision	Limited procedure-specific evidence
	Gabapentinoids	Inconsistent evidence for single doses. Procedure-specific evidence for multiple perioperative doses, but extra side effects
	Ketamine	Limited procedure-specific evidence
	Lateral femoral cutaneous block	Limited procedure-specific evidence
	Anterior quadratus lumborum block	Limited procedure-specific evidence
	Femoral nerve block	Procedure-specific evidence, but side effects
	Lumbar plexus block	Procedure-specific evidence, but side effects
	LIA (local infiltration analgesia) is used in addition to local anesthetic drugs	Inconsistent procedure-specific evidence
	LIA infusion or repeated injections	Inconsistent procedure-specific evidence
	Epidural analgesia	Procedure-specific evidence, but side effects
	Tranexamic acid	Lack of procedure-specific evidence
After surgery	Partial load execution	Lack of procedure-specific evidence
	Topical fibrin glue	Lack of procedure-specific evidence
	TENS (transcutaneous electrical nerve stimulation)	Limited procedure-specific evidence
Surgical technique	Anterior approach and posterolateral approach	Inconsistent procedure-specific evidence
	Minimally invasive and traditional incision	Inconsistent procedure-specific evidence, increased risks

COX-2: Cyclooxygenase, LIA: Local infiltration analgesia, TENS: Transcutaneous Electrical Nerve Stimulation

3. Do you use intravenous paracetamol before or during surgery for pain control after total hip arthroplasty surgery?

a) Yes b) No

4. Do you use NSAIDs or COX-2 selective inhibitors preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?

a) Yes b) No

5. Do you use a single dose of intravenous dexamethasone before or during surgery for pain control after total hip arthroplasty surgery?

a) Yes b) No

6. Do you add an intrathecal long-acting opioid (morphine 0.1 mg) to spinal anesthesia for pain control in patients who have undergone total hip arthroplasty surgery?

a) Yes b) No

7. Do you prefer patient-controlled epidural analgesia for pain control after total hip arthroplasty surgery?

a) Yes b) No

8. Do you use peripheral nerve blocks for pain control after total hip arthroplasty surgery? If so, what is your most preferred peripheral block? (You may select more than one option)

a) I do not use them

b) Femoral nerve block

c) Lumbar plexus block

d) Psoas compartment block

e) Fascia iliaca block

f) Lateral femoral cutaneous nerve block

g) Anterior quadratus lumborum block

h) Pericapsular nerve block (PENG)

9. Do you use local infiltration analgesia for pain control after total hip arthroplasty surgery?

a) Yes b) No

10. What type of intravenous analgesic do you most frequently administer in the postoperative period for pain control after total hip arthroplasty surgery?

a) Paracetamol

b) NSAID

c) Tramadol

d) Fentanyl

e) Pethidine

11. What is your frequency of opioid use in the postoperative period for pain control after total hip arthroplasty surgery?

a) I use it routinely

b) I use it in combination with regional techniques

c) I use it in combination with paracetamol/NSAIDs

d) I use it when I cannot provide adequate analgesia with other methods

e) I do not use opioids

12. Do you recommend analgesic adjuvants (such as tranexamic acid, partial weight-bearing walking, and TENS) for pain control in the postoperative period following total hip arthroplasty surgery?

a) Yes b) No

13. Do you follow the PROSPECT recommendations?

a) Yes b) No

Statistical Analysis

Statistical evaluation of the data was performed using the IBM Statistical Package for the Social Sciences (SPSS) 22.0 (Version 22.0. Armonk, NY: IBM Corp.) package program. Descriptive statistics of categorical variables were given as frequency and percentage.

RESULTS

A total of 199 anesthesiology and reanimation physicians participated in our survey. The demographic data of the participants (sex, age ranges, title, years of professional experience and active institution) are summarized in **Table 3**.

Table 3. Demographic data

n=199		n (%)
Sex	Female	113 (56.7%)
	Male	86 (43.2%)
Age(years)	20-30	17 (8.5%)
	31-40	89 (44.7%)
	41-50	59 (29.6%)
	51-60	29 (14.6%)
	Over 60 years old	5 (2.5%)
Title	Research Assistant	118 (59.3%)
	Specialist Physician	38 (19.1%)
	Assistant Professor	13 (6.5%)
	Associate Professor	19 (9.5%)
	Professor Doctor	11(5.5%)
Professional experience (years)	0 to 10	92 (46.2%)
	11 to 20	55 (27.6%)
	20 and above	52 (26.1%)
Active organization	University Hospital	48 (24.1%)
	Ministry of Health Training and Research Hospital	32 (16.1%)
	State Hospital	79 (39.7%)
	Private Hospital	40 (20.1%)
Categorized as *n and % columns		

The general responses to the questions determined for PROSPECT recommendations are shown in **Table 4**. It was observed that 43.2% (n=86) of the participants followed

PROSPECT recommendations for pain control after THA surgery. It was observed that 74.4% of the physicians who participated in our survey recommended preoperative exercise and training. 92.9% (n=185) of the participants preferred spinal anesthesia for pain control after THA surgery, while only 7.1% (n=14) preferred general anesthesia. For pain control after THA surgery, 73.3% of the participants used paracetamol, 64.8% used NSAIDs or COX2 selective inhibitors, and 26.1% used a single dose of intravenous dexamethasone before and during surgery. The most preferred analgesic drug in the postoperative period was tramadol with 49.2% (**Figure 1**). In addition to spinal anesthesia, 33.7% of the participants used an intrathecal long-acting opioid (morphine 0.1 mg), 72.9% preferred patient-controlled epidural analgesia, and 18.6% preferred local infiltration analgesia (LIA). Only 7.1% of the participants recommended analgesic adjuvants (such as tranexemic acid, partial load walking and TENS) for pain control after THA surgery in the postoperative period.

While 49.2% of the participants did not prefer peripheral nerve block for pain control after THA surgery, the most preferred block among those who did was pericapsular nerve block (PENG) with a rate of 34.6% (**Figure 2**). Among the participants who were able to choose more than one option in their peripheral nerve block preferences, 27.6% were

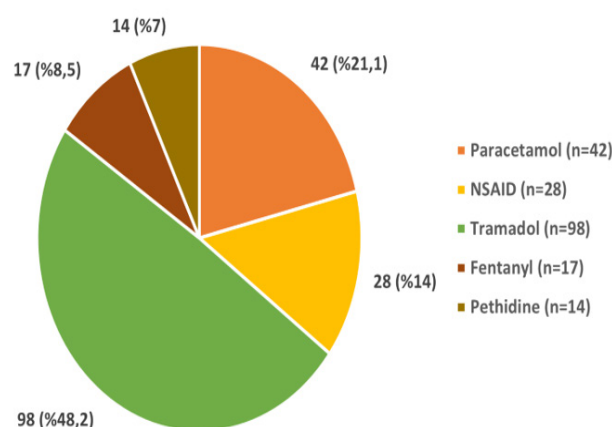


Figure 1. The most commonly administered intravenous analgesic drug in the postoperative period for pain control after total hip arthroplasty surgery
NSAID: Non-steroidal anti-inflammatory drug

Fascia iliaca block (FIB) and 16.5% were Femoral nerve block (FNB), Lateral femoral cutaneous nerve block (LFCNB) was performed in 13%, lumbar plexus block (LPB) in 4.5%, psoas compartment block (PCB) in 4%, and anterior quadratus lumborum block (AQLB) in 3%.

The rates of opioid use in the postoperative period are shown in **Figure 3**. While 93.5% of the participants preferred opioid

Table 4. General responses

n=199		n (%)
Do you recommend giving education about exercise and surgery in the preoperative period for pain control after total hip arthroplasty surgery?	Yes	148 (74.4%)
	No	51 (25.6%)
What is the most common method you use for pain control after total hip arthroplasty surgery?	General anesthesia	14 (7.1%)
	Spinal anesthesia	185 (92.9%)
Do you use intravenous paracetamol preoperatively and intraoperatively for pain control after total hip arthroplasty surgery?	Yes	146 (73.3%)
	No	53 (26.6%)
Do you use NSAIDs or COX2 selective inhibitors preoperatively and intraoperatively for pain control after total hip arthroplasty surgery?	Yes	129 (64.8%)
	No	69 (35.2%)
Do you use single dose intravenous dexamethasone preoperatively and intraoperatively for pain control after total hip arthroplasty surgery?	Yes	52 (26.1%)
	No	147 (73.8%)
Do you add an intrathecal long-acting opioid (morphine 0.1 mg) to spinal anesthesia for pain control after total hip arthroplasty surgery?	Yes	67 (66.3%)
	No	32 (33.7%)
Would you prefer patient-controlled epidural analgesia for pain control after total hip arthroplasty surgery?	Yes	145 (72.9%)
	No	54 (27.1%)
Do you use local infiltration analgesia for pain control after total hip arthroplasty surgery?	Yes	37 (18.6%)
	No	162 (81.4%)
Do you recommend analgesic adjuvants (such as tranexemic acid, partial load walking and TENS) in the postoperative period for pain control after total hip arthroplasty surgery?	Yes	14 (7.1%)
	No	185 (92.9%)
Do you follow PROSPECT recommendations?	Yes	86 (43.2%)
	No	113 (56.7%)

NSAID: Non-steroidal anti-inflammatory drug, COX2: Cyclooxygenase, TENS: Transcutaneous Electrical Nerve Stimulation, PROSPECT: Procedure-specific pain management. * n and % categorized as columns

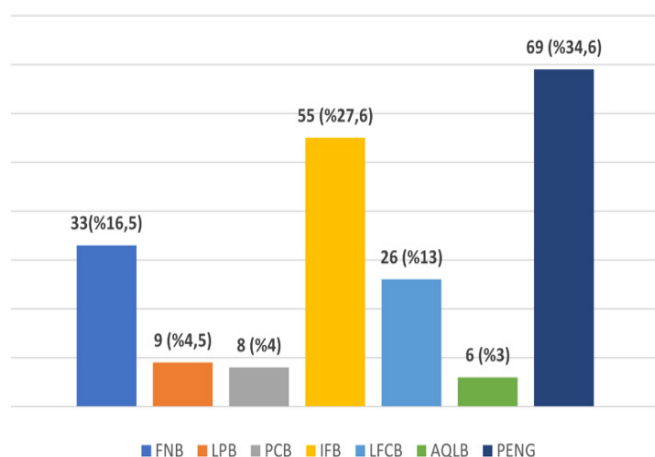


Figure 2. Peripheral nerve blocks preferred for pain control after total hip arthroplasty surgery

FNB: Femoral nerve block, LPB: Lumbar plexus block, PCB: Psoas compartment block, IFB: Iliac fascia block, LFCNB: Lateral femoral cutaneous nerve block, AQLB: Anterior quadratus lumborum block, PENG: Pericapsular nerve block

use in the postoperative period, it was observed that 35.7% of those who used opioids preferred opioids when they could not provide adequate analgesia with other analgesic methods. Of the participants, 24.6% reported using them in combination with paracetamol or NSAIDs, while 19.1% reported using them in combination with regional techniques.

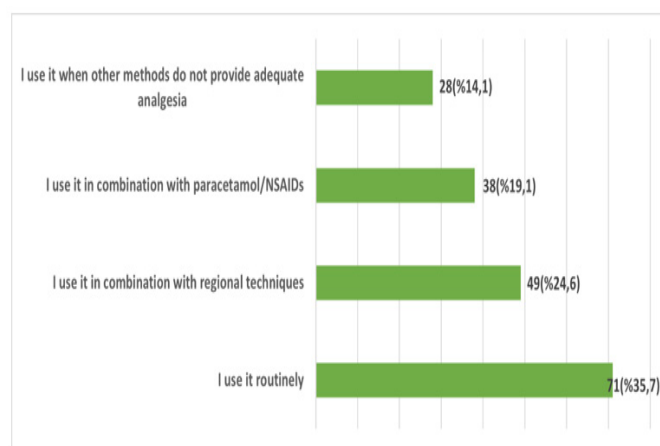


Figure 3. Postoperative opioid use for pain control after total hip arthroplasty surgery

Among the physicians who followed PROSPECT recommendations, 59.3% were research assistants, 19.1% were specialists, 6.5% were assistant professors, 9.5% were associate professors and 5.5% were professors (Table 3). Responses to PROSPECT recommendations according to professional title are summarized in Table 5. Among the physicians who preferred an intrathecal long-acting opioid (morphine 0.1 mg) in addition to spinal anesthesia, 56.7% were research assistants, 20.8% were specialists, 7.4% were assistant professors, 7.4% were associate professors and 7.4% were professors. Among the physicians who applied patient-controlled epidural analgesia after THA surgery, 58.6% were research assistants, 17% were specialists, 8.9% were assistant professors, 8.2% were associate professors and 6.8% were professors. When the preference rate of the most preferred analgesic drug tramadol in the postoperative period was compared according to the

professional title, it was seen that it was preferred by research assistants with 63.9%.

When considering the duration of anesthesiology practice among physicians who follow PROSPECT recommendations, 46.2% had 0-10 years of experience, 27.6% had 10-20 years of experience, and 26.1% had over 20 years of experience (Table 3). Participants' responses to the survey questions based on their anesthetic practice are presented in Table 6. It was observed that 48.5% of physicians who preferred an additional long-acting opioid (morphine 0.1 mg) for spinal anesthesia had 0-10 years of anesthesia experience, 23.5% had 10-20 years, and 27.9% had 20 years or more. Among physicians who administered patient-controlled epidural analgesia after THA surgery, 44.8% had 0-10 years of anesthesia practice, 28.9% had 10-20 years, and 26.2% had 20 years or more. Among the 186 participants who used opioids in the postoperative period, a comparison based on the length of anesthetic practice showed that it was most preferred among physicians with 0-10 years of experience (46.2%).

When the type of hospital in which the physicians who followed PROSPECT recommendations after THA surgery were actively working was analyzed, it was seen that 24.1% were working in a university hospital, 16.1% in a training and research hospital, 39.7% in a public hospital and 20.1% in a private hospital (Table 3). The responses of the participants to PROSPECT recommendations according to the type of hospital where they were actively working are shown in Table 7. It was observed that 20.8% of the physicians who preferred an intrathecal long-acting opioid (morphine 0.1 mg) in addition to spinal anesthesia worked in a university hospital, 17.9% in a training and research hospital, 35.8% in a public hospital, and 25.3% in a private hospital. It was observed that 23.7% of the physicians who applied patient-controlled epidural analgesia after THA surgery worked in a university hospital, 16.7% in a training and research hospital, 41.2% in a state hospital, and 18.1% in a private hospital. Among the 186 participants who used opioids in the postoperative period, when compared according to the institution where they were actively working, it was seen that 38.7% preferred to use opioids in state hospitals. Among the analgesic drugs preferred in the postoperative period, tramadol was the most preferred by the physicians working in state hospitals with a rate of 44.8%.

DISCUSSION

PROSPECT guideline of the European Society for Regional Anesthesia and Pain Management (ESRA) makes recommendations according to whether the intervention to be performed affects postoperative pain.⁷

A meta-analysis by Moyer et al.⁸ found that preoperative exercise and education were beneficial in reducing postoperative pain and improving functional outcomes after THA surgery. PROSPECT recommends preoperative exercise and education (grade A). In our survey, 74.4% of the respondents recommended preoperative exercise and training.

Table 5. Responses according to title

		What is your professional title? (n (%))				
		Research Assistant	Specialist Doctor	Assistant Professor	Associate Professor	Professor Doctor
Do you recommend education about exercise and surgery in the preoperative period for pain control after total hip arthroplasty surgery?	Yes	83 (56.4%)	27 (18.3%)	11 (7.4%)	17 (11.5%)	9 (6.1%)
	No	35 (68.6%)	11 (21.5%)	2 (3.9%)	2 (3.9%)	1 (1.9%)
What is the most common method you use for pain control after total hip arthroplasty surgery?	General anesthesia	8 (57.1%)	3 (21.4%)	1 (7.1%)	2 (14.2%)	0 (0%)
	Spinal anesthesia	110 (59.4%)	35 (18.9%)	12 (6.4%)	17 (9.1%)	11 (5.9%)
Do you use intravenous paracetamol preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	84 (57.5%)	28 (19.1%)	11 (7.5%)	15 (10.2%)	8 (5.4%)
	No	34 (64.1%)	10 (18.8%)	2 (3.7%)	4 (7.5%)	3 (5.6%)
Do you use NSAIDs or COX2 selective inhibitors preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	74 (56.4%)	26 (19.8%)	10 (7.6%)	11 (8.3%)	10 (7.6%)
	No	44 (64.7%)	12 (17.6%)	3 (4.4%)	8 (11.7%)	1 (1.4%)
Do you use a single dose of intravenous dexamethasone before or during surgery for pain control after total hip arthroplasty?	Yes	28 (53.8%)	12 (23%)	1 (1.9%)	7 (13.4%)	4 (7.6%)
	No	90 (60.1%)	26 (17.6%)	12 (8.1%)	12 (8.1%)	7 (4.7%)
Do you add an intrathecal long-acting opioid (morphine 0.1 mg) to spinal anesthesia for pain control after total hip arthroplasty surgery?	Yes	38 (56.7%)	14 (20.8%)	5 (7.4%)	5 (7.4%)	5 (7.4%)
	No	80 (60.6%)	24 (18.1%)	8 (6%)	14 (10.6%)	6 (4.5%)
Would you prefer patient-controlled epidural analgesia for pain control after total hip arthroplasty surgery?	Yes	85 (58.6%)	25 (17.2%)	13 (8.9%)	12 (8.2%)	10 (6.8%)
	No	33 (61.1%)	13 (24%)	0 (0%)	7 (12.9%)	1 (1.8%)
Do you use local infiltration analgesia for pain control after total hip arthroplasty surgery?	Yes	21 (56.7%)	6 (16.2%)	4 (10.8%)	4 (10.8%)	2 (5.4%)
	No	97 (59.8%)	32 (19.7%)	9 (5.5%)	15 (9.2%)	9 (5.5%)
Do you recommend analgesic adjuvants (such as tranexemic acid, partial load walking and TENS) in the postoperative period for pain control after total hip arthroplasty surgery?	Yes	47 (57.3%)	19 (23.1%)	5 (6%)	6 (7.3%)	5 (6%)
	No	71 (60.6%)	19 (16.2%)	8 (6.8%)	13 (11.1%)	6 (5.1%)
Do you follow PROSPECT recommendations?	Yes	40 (47%)	16 (18.8%)	6 (7%)	14 (16.4%)	9 (10.5%)
	No	78 (69%)	22 (19.4%)	7 (6.1%)	4 (3.5%)	2 (1.7%)

NSAID: Non-steroidal anti-inflammatory drug, COX2: Cyclooxygenase, TENS: Transcutaneous Electrical Nerve Stimulation, PROSPECT: Procedure-specific pain management

Table 6. Responses based on professional experience

		How many years of anesthesiology practice do you have? (including residency) n (%)		
		0 to 10	10 to 20	20 and above
Do you recommend education about exercise and surgery in the preoperative period for pain control after total hip arthroplasty surgery?	Yes	68 (45.9%)	41 (27.7%)	39 (26.3%)
	No	25 (49%)	14 (27.4%)	12 (23.5%)
What is the most common method you use for pain control after total hip arthroplasty surgery?	General anesthesia	7 (43.7%)	3 (18.7%)	6 (37.5%)
	Spinal anesthesia	86 (46.9%)	52 (28.4%)	45 (24.5%)
Do you use intravenous paracetamol preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	68 (46.5%)	44 (30.1%)	34 (23.2%)
	No	25 (47.1%)	11 (20.7%)	17 (32%)
Do you use NSAIDs or COX2 selective inhibitors preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	57 (44.1%)	35 (27.1%)	37 (28.6%)
	No	36 (51.4%)	20 (28.5%)	14 (20%)
Do you use a single dose of intravenous dexamethasone before or during surgery for pain control after total hip arthroplasty?	Yes	27 (49%)	12 (21.8%)	16 (29%)
	No	66 (45.8%)	43 (29.8%)	35 (24.3%)
Do you add an intrathecal long-acting opioid (morphine 0.1 mg) for pain control after total hip arthroplasty surgery in patients under spinal anesthesia?	Yes	33 (48.5%)	16 (23.5%)	19 (27.9%)
	No	60 (45.8%)	39 (29.7%)	32 (24.4%)
Would you prefer patient-controlled epidural analgesia for pain control after total hip arthroplasty surgery?	Yes	65 (44.8%)	42 (28.9%)	38 (26.2%)
	No	28 (51.8%)	13 (24%)	13 (24%)
Do you use local infiltration analgesia for pain control after total hip arthroplasty surgery?	Yes	22 (59.4%)	6 (16.2%)	9 (24.3%)
	No	71 (43.8%)	49 (30.2%)	42 (25.9%)
Do you recommend analgesic adjuvants (such as tranexemic acid, partial load walking and TENS) in the postoperative period for pain control after total hip arthroplasty surgery?	Yes	46 (56%)	17 (20.7%)	19 (23.1%)
	No	47 (40.1%)	38 (32.4%)	32 (27.3%)
Do you follow PROSPECT recommendations?	Yes	44 (51.1%)	18 (20.9%)	24 (27.9%)
	No	49 (43.3%)	37 (32.7%)	27 (23.8%)

NSAID: Non-steroidal anti-inflammatory drug, COX2: Cyclooxygenase, TENS: Transcutaneous Electrical Nerve Stimulation, PROSPECT: Procedure-specific pain management

Table 7. Responses according to the type of hospital worked in

		What is the type of hospital you are actively working in? (n (%))			
		University Hospital	Ministry of Health Training and Research Hospital	State Hospital	Private Hospital
Do you recommend education about exercise and surgery in the preoperative period for pain control after total hip arthroplasty surgery?	Yes	34 (22.8%)	21 (14%)	60 (40.2%)	34 (22.8%)
	No	14 (28%)	11 (22%)	19 (38%)	6 (12%)
What is the most common method you use for pain control after total hip arthroplasty surgery?	General anesthesia	2 (14.2%)	5 (35.7%)	2 (14.2%)	5 (35.7%)
	Spinal anesthesia	46 (24.8%)	27 (14.5%)	77 (41.6%)	35 (18.9%)
Do you use intravenous paracetamol preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	32 (21.6%)	26 (17.5%)	56 (37.8%)	34 (22.9%)
	No	16 (31.3%)	6 (11.7%)	23 (45%)	6 (11.7%)
Do you use NSAIDs or COX2 selective inhibitors preoperatively or intraoperatively for pain control after total hip arthroplasty surgery?	Yes	28 (21.7%)	25 (19.3%)	49 (37.9%)	27 (20.9%)
	No	20 (28%)	7 (10%)	30 (42.8%)	13 (18.5%)
Do you use a single dose of intravenous dexamethasone before or during surgery for pain control after total hip arthroplasty?	Yes	10 (19.2%)	11 (21.1%)	18 (34.6%)	13 (25%)
	No	38 (25.8%)	21 (14.2%)	61 (41.4%)	27 (18.3%)
Do you add an intrathecal long-acting opioid (morphine 0.1 mg) for pain control after total hip arthroplasty surgery in patients under spinal anesthesia?	Yes	14 (20.8%)	12 (17.9%)	24 (35.8%)	17 (25.3%)
	No	34 (25.7%)	20 (15.1%)	55 (41.6%)	23 (17.4%)
Would you prefer patient-controlled epidural analgesia for pain control after total hip arthroplasty surgery?	Yes	34 (23.7%)	24 (16.7%)	59 (41.2%)	26 (18.1%)
	No	14 (25%)	8 (14%)	20 (35.7%)	14 (25%)
Do you use local infiltration analgesia for pain control after total hip arthroplasty surgery?	Yes	8 (21.6%)	11 (29.7%)	12 (32.4%)	6 (16.2%)
	No	40 (24.6%)	21 (12.9%)	67 (41.3%)	34 (20.9%)
Do you recommend analgesic adjuvants (such as tranexemic acid, partial load walking and TENS) in the postoperative period for pain control after total hip arthroplasty surgery?	Yes	13 (15.8%)	15 (18.2%)	34 (41.4%)	20 (24.3%)
	No	35 (29.9%)	17 (14.5%)	45 (38.4%)	20 (17%)
Do you follow PROSPECT recommendations?	Yes	11 (12.7%)	12 (13.9%)	36 (41.8%)	27 (31.3%)
	No	37 (32.7%)	20 (17.6%)	43 (38%)	13 (11.5%)

NSAID: Non-steroidal anti-inflammatory drug, COX2: Cyclooxygenase, TENS: Transcutaneous Electrical Nerve Stimulation, PROSPECT: Procedure-specific pain management

When we look at our survey results, it is seen that spinal anesthesia is the preferred anesthesia method for pain control after THA surgery with a rate of 92.9%. We think that the reason for this high preference is to avoid the side effects of general anesthesia such as nausea-vomiting and agitation rather than postoperative pain control. Although spinal anesthesia has been reported to favorably affect other postoperative outcomes compared with general anesthesia, there is insufficient evidence to support one anesthesia technique over the other in terms of postoperative analgesic benefits.⁹ Therefore, both are among the PROSPECT recommendations for pain control after THA surgery (grade A).

In the literature, there are studies reporting that the use of iv paracetamol reduces opioid consumption after THA surgery.^{10,11} Westrich et al.¹² found no difference in postoperative pain outcomes in their study comparing iv and oral paracetamol administration. In two separate studies comparing the combination of paracetamol with both ibuprofen¹³ and parecoxib¹⁴ with the use of these drugs alone, it was reported that the combined use did not result in clinically significant improvement. According to these studies, paracetamol has a limited effect when used in combination with COX-2 selective inhibitors or NSAIDs, but is generally recommended as part of basic postoperative analgesia due to its minor side effects.

There are studies showing that NSAID administration reduces postoperative pain. Gombotz et al.¹⁵ reported that regular

postoperative iv infusions of diclofenac and orphenadrine reduced postoperative opioid patient-controlled analgesia (PCA) consumption. McQuay et al.¹⁶ showed that the combination of 25 mg oral dextketoprofen and 75 mg tramadol was superior for postoperative pain control in a study comparing the use of both drugs alone.

In one of the two studies on the effects of preoperative COX-2 selective inhibitors in reducing postoperative pain, oral etoricoxib¹⁷ was administered 2 hours before surgery and iv parecoxib or oral celecoxib¹⁸ was administered 1 hour before surgery. It was found to be associated with significantly lower postoperative pain scores and morphine consumption in those who received COX-2 selective inhibitors compared to placebo.

The PROSPECT guideline recommends the use of paracetamol, NSAIDs and COX-2 selective inhibitors in all perioperative periods for pain control after THA surgery (grade A). In our survey, the majority of participants used paracetamol, NSAIDs and COX-2 selective inhibitors preoperatively and intraoperatively.

There are many studies showing the benefit of glucocorticoids among non-opioid adjunctive analgesics for postoperative pain control. Perioperative 125 mg methylprednisolone reduced 24-hour pain scores compared with placebo.¹⁹ Backes et al.²⁰ showed that perioperative 10 mg dexamethasone reduced mean visual pain scores (VAS), reduced opioid consumption in the first 24 hours, provided early mobilization and shorter

hospital stay. For pain control after THA surgery, a single dose of iv dexamethasone preoperatively or intraoperatively is recommended by PROSPECT (grade A). Other non-opioid adjunctive analgesics such as pregabalin and ketamine are not recommended due to lack of sufficient evidence. In our survey, the rate of single dose iv dexamethasone use was low at 26.1%. We think that this is due to the insufficient rate of follow-up of PROSPECT recommendations.

There was no consensus among PROSPECT members regarding the use of intrathecal morphine as an adjunct to spinal anesthesia (grade D). This is because some studies²¹ reported analgesia for at least 24 hours postoperatively and limited side effects at small doses (≤ 0.1 mg morphine), while others²² reported pruritus and postoperative nausea and vomiting, which may delay walking and oral intake and affect patient satisfaction.

According to PROSPECT, epidural analgesia is effective but not recommended for lower extremity surgery due to well-known side effects such as limb weakness, bladder dysfunction and delayed mobilization.²³ Our survey results showed that the majority of participants (72.9%) preferred patient-controlled epidural analgesia for pain control after THA surgery.

The International Consensus on Anaesthesia-Related Outcomes after Surgery (ICAROS) group recommends peripheral nerve blocks in THA to reduce respiratory failure, cognitive dysfunction, cardiac complications, surgical site infections, blood transfusions, thromboembolism, and intensive care unit admissions, and they also note that nerve blocks show stronger effects when combined with general anesthesia compared to neuraxial anesthesia.²⁴ However, new fascial plane blocks such as the PENG block were not included in the analysis. In the PROSPECT guideline, only certain blocks are mentioned and not recommended due to limited procedure-specific evidence or side effects such as delayed mobilization and motor block. The majority of the respondents in our survey practiced the PENG block, which is the most recent block among peripheral blocks. More studies are needed to include peripheral blocks in PROSPECT recommendations.

In a meta-analysis comparing LIA with epidural, Yan et al.²⁵ found no significant difference between the groups in terms of pain with movement 48-72 hours after surgery, but found less pain at 24 hours in the epidural group. In a large meta-analysis²⁶ including 35 randomized controlled trials and 2296 patients, LIA, peripheral nerve block and placebo were compared. The LIA group had lower postoperative pain scores and opioid consumption at 24 hours postoperatively compared to placebo. Single injection LIA, previously not recommended, is now included in the latest PROSPECT recommendations based on supporting studies and is reported to have analgesic effect with no side effects (grade D). The results of our survey showed that the use of LIAs for pain control after THA surgery was low (18.6%) among respondents. Again, we think that this is due to the fact that PROSPECT recommendations are not being followed sufficiently.

PROSPECT recommendations for postoperative interventions include only the use of rescue opioids (grade D). Other

postoperative interventions such as tranexemic acid, partial load walking and the use of TENS are not recommended by PROSPECT due to insufficient evidence. Musclow et al.²⁷ compared a PCA regimen of paracetamol/NSAIDs/morphine to placebo by adding 30 mg of oral modified-release morphine every 12 hours. Modified-release morphine was not proven to be effective on pain scores and was even associated with significantly more opioid-related side effects. Among the physicians who participated in our survey, routine opioid use in the postoperative period for pain control after THA surgery was 14%, and 35.6% of opioid users used opioids when other analgesic methods failed to provide adequate analgesia. Although postoperative opioid use by PROSPECT is in the low recommendation group, it is seen that tramadol is the most commonly used agent used by the participants in our survey.

In the most recent literature update in 2021, some recommendations for pain management after THA surgery were changed.⁷ For example, previously recommended approaches such as FNB, LPB and epidural analgesia are no longer recommended due to the availability of evidence supporting better and safer alternatives such as FIB and LIA. LIA and dexamethasone were previously not recommended due to inconsistent evidence, but in the latest update, single injection LIA and 8-10 mg iv dexamethasone are now recommended based on supporting studies.

In our survey, 43.2% of the participants followed PROSPECT recommendations for pain management after THA surgery. While this situation is not very different when the hospitals worked in are taken into account, it is seen that the rate of following the recommendations increases as the academic career increases among the respondents.

Limitations

The limitation of this study is that the questionnaire was sent via e-mail only to Anesthesiology and Reanimation physicians who are members of TARD. If there is a chance to reach non-member physicians, a survey with a wider participation can be created.

CONCLUSION

Since THA surgery is mostly performed in the elderly population with comorbid diseases, there is no consensus among Anesthesiology and Reanimation physicians about postoperative analgesia methods. There has been a recent increase in peripheral block applications in these patients due to anticoagulant use. Despite their side effects, opioids are still widely preferred. We think that postoperative pain management trainings in THA surgery should be increased and PROSPECT recommendations should be disseminated in these trainings.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was approved by the Giresun Training and Research Hospital Ethics Committee (Date: 19.03.2025, Decision No: 19.03.2025/05).

Informed Consent

All patients signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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