

Preoperative practice of surgical position reduces postoperative pain and discomfort in patients receiving kidney surgeries: a nonrandomized pilot study

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Objective: Prolonged maintenance of surgical position often results in postoperative pain and discomfort in patients. The present study aimed to investigate the effect of preoperative practice of surgical position on postoperative pain and general comfort in patients receiving kidney surgeries.

Methods: For this nonrandomized pilot study, 74 patients receiving kidney surgeries were selected using the probability sampling method. Patients from ward 1 were assigned to the practice group (n=35), and those from ward 2 were assigned to the control group (n=39). The practice group were instructed to practice the surgical position for 3 days prior to the surgery. Postoperative pain and comfort were surveyed using two questionnaires for 3 days, respectively. The postoperative pain scores were compared using the Student's *t*-test.

Results: The two groups did not differ significantly in wound pain on postoperative days 1–3 ($P > 0.05$). However, the practice group showed significantly reduced low back pain and contralateral shoulder pain than the control group for 3 postoperative days ($P < 0.05$). The physical domain score was significantly higher in the practice group than in the control group ($P < 0.01$).

Conclusion: Preoperative practice of surgical position can effectively reduce postoperative low back pain and contralateral shoulder pain in patients receiving kidney surgeries and improve the physical comfort.

Keywords: surgical position, kidney surgery, postoperative pain, comfort, low back pain, physical comfort

Introduction

A specific surgical position of the patient is often required to expose the operative site. It has been reported that the supine and the lithotomy positions are associated with postoperative low back pain.¹ The kidney position is used for kidney surgeries, in which the patient's abdomen is placed over a lift in the operating table that bends the body to allow access to the retroperitoneal space. However, the kidney position is associated with postoperative peripheral nerve, muscle, and skin injuries. These injuries can result in low back pain, shoulder pain, and general discomfort.

The specific relationships between the surgical position and postoperative low back pain and discomfort are not clear. It might be caused by the additional body strain exerted by the surgical position during operation. The hypothesis of the present study was that preoperative practice of surgical position may help reduce postoperative low back pain. The present study was designed to investigate the effect of preoperative

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practice of surgical position on postoperative low back pain, shoulder pain, and general comfort in patients receiving kidney surgeries.

Methods

Study design

This is a nonrandomized pilot study.

Ethics approval

The present study was approved by the Institutional Review Board of Beijing Chao-Yang Hospital. All participants provided written informed consent to take part in this study.

Patients

From March 2015 to October 2015, 74 patients receiving kidney surgeries were selected using the probability sampling method (Figure 1). The inclusion criteria were: 1) kidney surgery with the 90° kidney position and 2) good consciousness and intelligence. Patients who refused to participate and those with the following conditions were excluded: 1) mental disorders, 2) diseases of the major organs, 3) vascular diseases of the extremities, and 4) limb deformities.

Patients from ward 1 (n=39) were assigned to the practice group and were instructed to practice the surgical position for 3 days. Patients from ward 2 (n=35) were assigned to the control group.

Practice of the surgical position

Patients of the practice group were instructed to practice the surgical position for 3 days prior to the surgery, twice daily in the morning and in the afternoon, each for 30 min. Patients

were shown a diagram of the kidney position (Figure 2). They were instructed to take the 90° lateral position with the ipsilateral side upward. The two arms were straight forward. A 55×35×10–15 cm cushion was placed under the waist near the 11th and 12th ribs. The upper leg was straight, and the lower leg was bent. All patients received laparoscopic surgery under general anesthesia with propofol and remifentanyl.

Survey of postoperative pain and comfort

Postoperative pain and comfort were investigated using the Wong-Baker FACES Pain Rating Scale and a Chinese version of the shortened General Comfort Questionnaire.² The questionnaires were administered for 3 days postoperatively.

Statistical analysis

Categorical data were presented as frequencies or percentages. Continuous data were presented as mean ± SD. Comparisons were made using the Chi-square test or the Student's *t*-test. All statistical analyses were carried out using the SPSS 19.0 (SPSS, Chicago, IL, USA). *P* > 0.05 was considered statistically significant.

Results

General information of the patients

A total of 74 patients were included in the present study. There were 37 males and 37 females with a mean age of 47.5±5.8 years (range, 37–68 years). All surgeries were performed under general anesthesia. The practice and the control groups showed no significant difference in gender, age, body mass index, and preoperative diagnosis (Table 1).

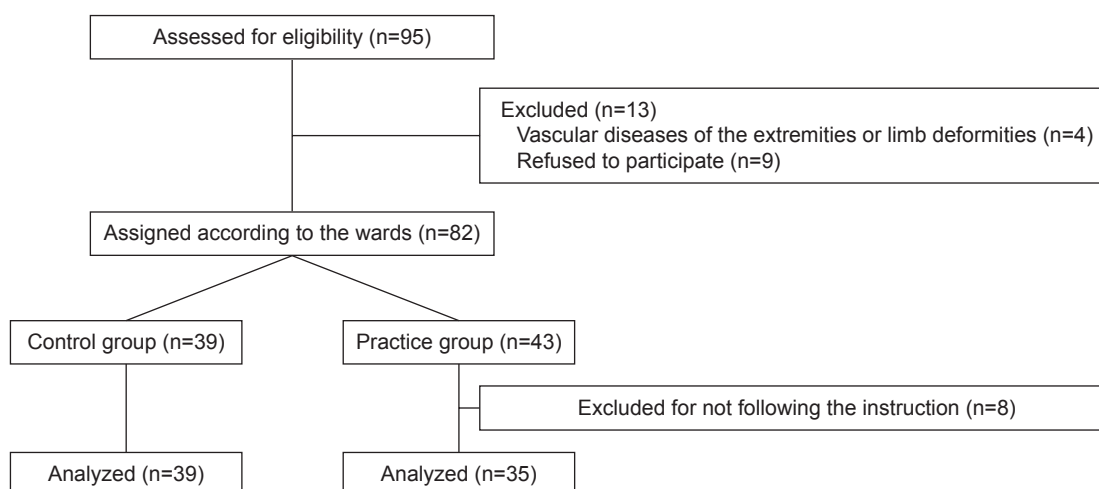


Figure 1 Flowchart of patient selection.

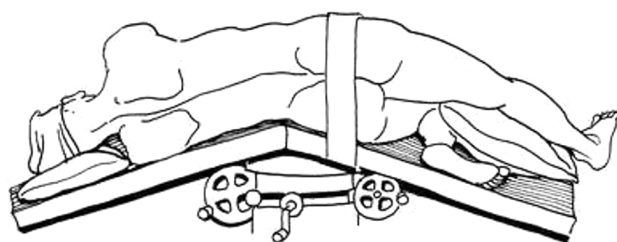


Figure 2 Diagram of the kidney position.

Postoperative pain

The two groups did not differ significantly in wound pain on postoperative days 1–3 ($P > 0.05$). However, the practice group showed significantly reduced low back pain and contralateral shoulder pain than the control group for 3 postoperative days (all $P < 0.05$, Table 2).

Postoperative comfort

On postoperative days 1–3, there was no significant difference in the general comfort between the two groups ($P > 0.05$). In the four domains of the shortened General Comfort Questionnaire, the physical domain score was significantly higher in the practice group than in the control group (Table 3). However, the scores of the other three domains (psychospiritual, sociocultural, and environmental) were not significantly different between the two groups.

Safety

No practice-related injury or complication was noticed during the present study.

Table 1 Basic information of the practice and the control groups

	Practice group (n=35)	Control group (n=39)	P-value
Male, n (%)	17 (48.6)	20 (51.3)	0.18
Age (years)	40.6±3.9	42.3±4.2	0.56
BMI	24.1±2.9	23.5±3.2	0.76
Preoperative diagnosis, n			0.55
Renal cyst	9	11	
Renal tumor	22	21	
Renal tuberculosis	0	1	
Adrenal tumor	4	6	
Operation time (min)	174±72	126±24	0.87
Postoperative analgesia, n			0.64
PCEA	1	2	
PCIA	34	36	
None	0	1	

Note: Data presented as mean±SD unless otherwise specified.

Abbreviations: BMI, body mass index; PCEA, patient-controlled epidural analgesia; PCIA, patient-controlled intravenous analgesia.

Table 2 Scores of postoperative pain

Time	Practice group (n=35)	Control group (n=39)	P-value
Postoperative day 1			
Wound pain	1.60±0.821	1.76±1.023	0.57
Low back pain	0.40±0.598	1.66±0.974	< 0.0001
Contralateral shoulder pain	0.10±0.308	0.52±0.949	0.03
Postoperative day 2			
Wound pain	2.76±0.612	2.88±0.031	0.87
Low back pain	0.90±0.598	2.21±0.974	< 0.0001
Contralateral shoulder pain	0.86±0.308	1.77±0.099	0.02
Postoperative day 3			
Wound pain	1.76±0.612	2.01±0.031	0.12
Low back pain	0.30±0.598	2.01±0.784	< 0.0001
Contralateral shoulder pain	0.12±0.091	1.45±0.099	0.01

Notes: Data are scores of the Wong-Baker FACES Pain Rating Scale. Higher score indicates more pain. Data presented as mean±SD.

Discussion

The present study found that preoperative practice of the surgical position significantly reduced postoperative low back pain and contralateral shoulder pain in patients receiving kidney surgeries. Practice of the kidney position may strengthen the muscles and tendons of the low-back area and the shoulders. This might help the patients to pre-emptively adapt to the surgical position and resist fatigue during the surgeries.

According to the comfort theory of Kolcaba, the experience of comfort takes place in four contexts: physical,

Table 3 Scores of postoperative comfort

Time	Practice group (n=35)	Control group (n=39)	P-value
Postoperative day 1			
General comfort	80.80±3.67	78.28±5.57	0.06
Physical domain	16.10±1.25	12.86±1.48	< 0.0001
Psychospiritual domain	28.70±3.01	28.66±2.55	0.96
Sociocultural domain	17.65±0.93	17.55±1.97	0.82
Environmental domain	19.80±1.28	19.21±1.80	0.21
Postoperative day 2			
General comfort	85.21±3.44	80.28±4.69	0.05
Physical domain	18.10±1.25	13.86±2.58	< 0.0001
Psychospiritual domain	33.70±3.01	30.27±2.55	0.78
Sociocultural domain	19.85±0.86	18.55±1.82	0.44
Environmental domain	21.70±1.21	20.21±1.72	0.32
Postoperative day 3			
General comfort	86.34±2.23	82.21±3.71	0.05
Physical domain	19.22±2.34	15.78±3.34	< 0.0001
Psychospiritual domain	36.90±2.12	32.12±2.68	0.07
Sociocultural domain	19.98±1.34	19.35±1.75	0.15
Environmental domain	22.30±1.34	20.34±1.72	0.11

Notes: Data are scores of the shortened General Comfort Questionnaire. Higher score indicates higher comfort. Data presented as mean±SD.

psychospiritual, sociocultural, and environmental.^{3–5} One of the aims of nursing is to improve the patient's experience of comfort. The present study showed that the practice group had significantly higher physical comfort than the control group for 3 postoperative days. Pain is an important aspect of physiology and can cause significant discomfort of the patients.^{6,7} It was speculated that the reduction in low back pain and shoulder pain resulted in the improvement of the physical comfort. Unsurprisingly, the postoperative scores of the psychospiritual, sociocultural, and environmental comfort were not increased significantly.

The present study is a nonrandomized pilot study with a small sample size. In addition, due to the nature of the practice of surgical position, it is impossible to use blinding or masking. The reduced pain in the practice group may be explained by the placebo effect. Future investigation with a larger sample size and a more reliable study design is needed to confirm the findings of the present study.

Conclusion

In patients receiving kidney surgeries, preoperative practice of the surgical position can significantly reduce the low back

pain and the contralateral shoulder pain and significantly improve the physical comfort.

Disclosure

The authors report no conflicts of interest in this study.

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