ÖZGÜN ARAŞTIRMA ORIGINAL RESEARCH

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EFFECTS OF THE DIFFERENT ANESTHETIC METHODS ON POSTOPERATIVE HOSPITALIZATION AND USE OF ANALGESIA IN VARICOCELE SURGERY

VARİKOSEL CERRAHİSİNDE FARKLI ANESTEZİ YÖNTEMLERİNİN POSTOPERATİF YATIŞ VE ANALJEZİ KULLANIMINA ETKİSİ

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Öz

Amaç

Çalışmanın amacı varikosel cerrahisinde kullanılan farklı anestezik tekniklerin postoperatif ağrı kesici ihtiyacı ve hasta yatış süreleri üzerine etkisini değerlendirmektir.

Gereç ve Yöntem

Bu çalışmaya 2014–2018 yılları arasında varikosel cerrahisi uygulanmış 299 hasta dahil edildi. Hastalar uygulanan anestezik yönteme göre genel anestezi+-lokal anestezi ile (20 mL prilocaine (%2)) cilt infiltrasyonu yapılan hastalar [genel anestezi grubu (grup 1, n=50)], sadece spinal anestezi uygulanan hastalar [spinal anestezi grubu (grup 2, n=142)], Spinal anestezi+Tap blok uygulanan hastalar [Spinal+Tap blok grubu (grup 3, n=52)] ve spinal anestezi ve intratekal morfin uygulanan hastalar [Spinal+ITM grubu (grup 4, n=55)] olarak gruplandırıldı.

Bulgular

Genel anestezi grubunda analjezik kullanım oranlarının spinal anestezi grubu karşılaştırıldığında aralarındaki farkı anlamlı olmadığı (p>0.05) Spinal+Tap blok grubu ve spinal+ITM grubu ile karşılaştırıldığında aralarında anlamlı fark olduğu görüldü (tüm p<0.05). Genel anestezi grubunda ilk analjezik kullanım zamanının diğer gruplarla karşılaştırıldığında anlamlı oranda kısa olduğu görüldü (p=0.001).

Sonuç

Varikosel cerrahisinde spinal anestezi+TAP blok uygulaması diğer yöntemlerle kıyasla, daha düşük analjezik ihtiyacı ve daha kısa hastanede kalış süresi ile etkin ve güvenilir bir yöntemdir.

Anahtar Kelimeler: Varikosel, anestezi ve analjezi, postoperatif ağrı.

Abstract

Objective

The aim of this study was to evaluate the effect of different anesthesia methods used in varicocele surgery on postoperative pain relief needs and duration of hospitalization.

Material and Methods

This study included 299 patients operated on for va-

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ricocele between 2014 and 2018. The patients were separated into 4 groups as Group 1 (n:50) applied with general anesthesia+local anesthesia (20 ml 2% prilocaine) skin infiltration [general anesthesia group], Group 2 (n:142) applied with spinal anesthesia [spinal anesthesia group], Group 3 (n:52) applied with spinal anesthesia+TAP block [spinal+TAP block group] and Group 4 (n:55) applied with spinal anesthesia and intrathecal morphine [spinal+ITM group].

Results
The requirement for additional analgesia showed no difference between the general anesthesia group and the spinal anesthesia group (p>0.05), but was different compared to the spinal+TAP group and spinal+ITM group (p<0.05, for both). The time to first requirement for postoperative analgesia was determined to be significantly shorter in the general anesthesia group compared to the other groups (p=0.001).

Conclusion
Spinal anesthesia+TAP block for varicocele surgery is an effective and reliable method with lower analgesic requirements and shorter duration of hospital stay.

Keywords
Varicocele, anesthesia and analgesia, postoperative pain.

Introduction

During varicocelectomy, which is a commonly performed outpatient urology surgical procedure, a variety of anesthetic methods may be selected, depending on many factors such as patient age, additional problems, and surgeon or patient preference (1). Each method has its own advantages and disadvantages. Although there are advantages to spinal anesthesia, such as the patient remaining conscious, no respiratory depression, less postoperative nausea-vomiting, suppressed stress response to the surgical interventions, reduction of morbidity in high-risk patients, continuation of analgesic effect in the postoperative period and quicker recovery, there are also disadvantages such as side-effects specific to the cardiovascular system such as vasodilatation of arteries, peripheral reflex vasoconstriction, bradycardia and hypotension and urine retention (2-4). General anesthesia also has unwanted effects such as postoperative nausea-vomiting, pain and respiratory depression together with the advantages of minimal urine retention, and better control of hemodynamic parameters in the intraoperative and postoperative periods (5). However, the most important aspect of anesthetic care determining patient satisfaction is postoperative pain management, and generally multimodal analgesic techniques are recommended for this purpose, and have been commonly used in varicocele surgery in recent years. Primary of these methods is intrathecal (IT) morphine administration, which has been proven to provide perfect analgesia in postoperative pain treatment (6). However, the most important disadvantages of this method are the unwanted side-effects that reduce patient satisfaction, such as nausea, vomiting and itching, together with with delayed respiratory depression which may develop linked to rostral distribution (7,8). Another regional anesthesia technique used for different surgical procedures in recent years with increasing popularity is transversus abdominis block (TAP). In this method, a local anesthetic agent is administered between the internal oblique and transversus abdominis muscles and with a reduction achieved in postoperative pain, patient comfort and satisfaction are increased (9-12).

Varicocelectomy is a relatively commonly performed urological surgical procedure among outpatient surgical procedures. However, one of the most important factors determining the discharge of the patient on the same day is the anesthesia method. The aim of this study was to assess the correlation between the anesthesia method used and the requirements for postoperative pain relief and duration of hospital stay.

Material and Methods

Approval for the study was granted by the Ethics Committee. A retrospective review was made of the anesthesia method used on patients operated on in our clinic with a diagnosis of varicocele between September 2014 and August 2018. Data were obtained from patient files in the hospital archive and discharge summaries, patient monitoring forms and observation papers and surgery follow-up charts of patients in the computer records. Patients with missing data were excluded from the study. Only patients undergoing subinguinal varicocelectomy were included in the study because the surgical technique did not negatively affect the parameters to be evaluated. According to the anesthesia method administered, patients were separated into 4 groups as Group 1 (n:50) applied with general anesthesia+local anesthesia (20 ml 2% prilocaine) skin infiltration [general anesthesia group],

Group 2 (n:142) applied with spinal anesthesia [spinal anesthesia group], Group 3 (n:52) applied with spinal anesthesia+TAP block [spinal+TAP block group] and Group 4 (n:55) applied with spinal anesthesia and intrathecal morphine [spinal+ITM group]. All the patients were assessed in terms of age, mean operation duration, postoperative analgesic requirements, time of first postoperative analgesia, requirements for more than one analgesic, and time of discharge.

The operation duration was accepted as the time from initial anesthesia induction to the last anesthetic or surgical intervention (minutes). Discharge time was defined as the duration from patients arriving in the postoperative ward to discharge.

Statistical Analysis

Data obtained in the study were analyzed statistically using Statistical Package for the Social Sciences 17.0 software (SPSS, Armonk, New York, IL, USA). Data were stated as mean + standard deviation (M+SD). For repeated measurements, variance analysis (repeated measures ANOVA with Bonferroni) was applied. To assess factors related to CIMT, linear regression models were used and data were presented as beta coefficients with 95% confidence interval (CI). A value of $p<0.05$ was accepted as statistically significant.

Results

No significant difference was determined between the patients included in the study in terms of mean age and BMI values (p=0.105, p=0.148, respectively) (Table 1). In the evaluation of postoperative analgesia requirements, the analgesic use in the general anesthesia group was not different from that of the spinal anesthesia group ($p>0.05$), but was different compared to the spinal+TAP group and spinal+ITM group ($p<0.05$, for both). The spinal+TAP group was determined to have a longer operation time, but the difference between the groups was not statistically significant (p=0.098). The time to first requirement for postoperative analgesia use was significantly shorter in the general anesthesia group compared to the other groups (p=0.001). The length of stay in hospital was determined to be statistically significantly longer in the general anesthesia group compared to the other groups (p=0.001) (Graphic 1).

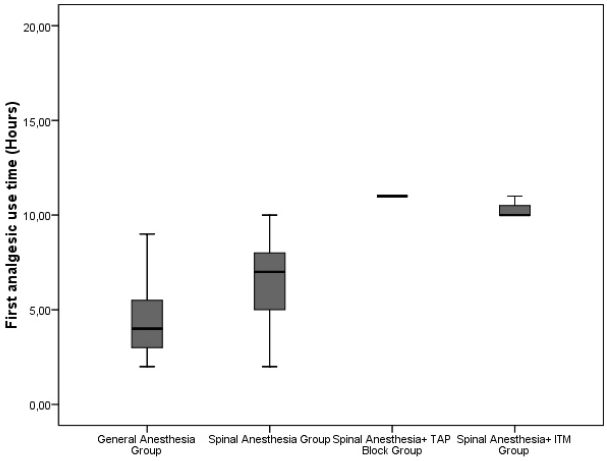
Factors affecting analgesic use in the postoperative period were assessed with correlation analysis and analgesic use was correlated with the anesthesia method used (r=0.353, p=0.001), bilateral varicocele surgery (r=0.155, p=0.009) and long operation time (r=0.395, p=0.001) (Graphic 2).

Table 1 Demographic data of patients

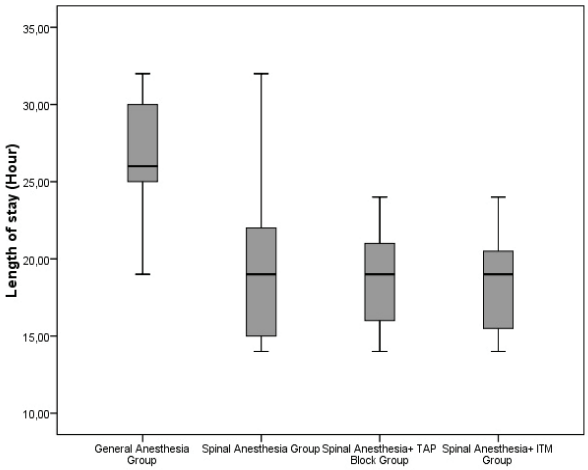
		General anesthesia (n=50)	Spinal Anesthesia (n=142)	Spinal+Tap block (n=52)	Spinal+ITM (n=55)	P value
Age (years)	30.38±6.84	31.23±5.80	30.01±5.64	32.73±6.61	0.105	
BMI (kg/m2)	24.80±3.78	25.90±3.99	26.57±3.75	23.18±-2.85	0.148	
Operation time (min)	84.70±40.14	90.10±35.06	100.36±36.82	92.79±35.10	0.098	
ASA II	1 (n/%)	23 (7.6%)	66 (22.07%)	22 (7.36%)	22 (7.36.8%)	0.213
	2 (n/%)	27 (9.03%)	76 (25.5%)	30 (10.04%)	33 (11.04%)	
Surgical side	Right (n/%)	5 (1.7%)	12 (4%)	0 (0%)	1 (0.3%)	0.327
	Left (n/%)	16 (5.4%)	27 (9.03%)	17 (5.7%)	13 (4.4%)	
	Bilateral (n/%)	29 (9.7%)	103 (34.45%)	35 (11.7%)	41 (13.62%)	
Postoperative analgesia requirements	Yes (n/%)	28 (9.4%)	53 (17.7%)	1 (0.3%)	3 (0.9%)	
	No (n/%)	22 (7.4%)	89 (29.8%)	51 (17.1%)	52 (17.2%)	
Cost (Turkish lira)		64.16±4.96	49.21±0.61	81.65±0.48	51.65±0.94	0.001

Data are expressed as mean ±SD, unless otherwise noted. Categorical data are expressed as n (number) and percent (%). Independent T Test (Bootsrap) - Mann Whitney U Test (Monte Carlo) - Fisher Exact Test (Monte Carlo)

ASA II; American Society of Anesthesiologists, BMI; Body mass index



Graphic 1
Comparisons of the time to first postoperative analgesia use according to the groups



Graphic 2
Duration of postoperative hospital stay for the patients

Discussion

In this study, evaluation was made of the anesthesia methods used for patients undergoing varicocelectomy operations under elective conditions. The results of the study showed significant differences between the methods in terms of postoperative analgesic requirements and time of analgesic use. The anesthesia method used, bilateral varicocele operation and long operation time were observed to be strongly correlated with postoperative analgesic use.

Although there are many studies in literature related to the anesthesia procedures used for different surgical procedures, to the best of our knowledge, there has been no previous study of anaesthesia methods in varicocele surgery (13). Varicocelectomy is a relatively common urological surgical procedure, which is performed as an outpatient surgical procedure. However, one of the most important factors determining same-day discharge of the patient is the anesthesia method (13-15). The aim of this study was to assess the correlation between anesthesia method and postoperative pain relief requirements and length of hospital stay.

When the patients were assessed in terms of demographic characteristics such as age, BMI, American Society of Anesthesiologists score (ASA) and surgical side, there were no differences between the groups. This indicates that the patient groups in the study were homogeneous.

Three important results were obtained from this study. The first was the analgesic requirements of the methods and the time of analgesic use by patients. When assessed in terms of analgesic use, 56% of patients in the general anesthesia group were observed to require analgesia within mean 3.80±2.11 hours, despite an injection of 20 ml prilocaine into the incision line after suturing. Of patients administered spinal anesthesia, 37.32% had analgesic requirements and the mean time for postoperative analgesic use was 5.76±2.11 hours. In comparison with the other two groups are compared, both the general anesthesia and spinal anesthesia groups appeared to be significantly different in terms of both analgesic requirements and time of analgesic use. In a study by Kadihasanoglu et al. (13) spinal anesthesia and local anesthesia were administered to patients undergoing varicocele operation and the postoperative analgesic requirements were assessed. It was reported that 85.71% of spinal anesthesia patients required analgesia (13). Cui et al. (16) assessed the postoperative pain of patients undergoing bilateral varicocelectomy with general anesthesia and unilateral local anesthetic agent and skin infiltration. Lower pain scores were reported for the side with local anesthesia. Only two studies in literature have compared spinal anesthesia, TAP block and ITM administration in patients undergoing varicocelectomy (11,12). The first study compared the efficacy of conventional spinal anesthesia and spinal anesthesia+TAP block methods in patients undergoing varicocelectomy and stated that the anesthesia efficacy and postoperative pain scores (VAS) in TAP block administration were similar to those of spinal anesthesia (11). The other study compared morphine and TAP block for postoperative pain control in patients undergoing varicocelectomy with general anesthesia. Both methods were seen to have a similar effect on pain control, although TAP block administration was clearly superior in terms of unwanted somatic effects such as nausea, vomiting and itching (12). In the current study, in terms of both postoperative pain relief requirements and time of analgesic use, patients in the general anesthesia group and spinal anesthesia group were observed to be statistically significantly different compared to the other groups. One of the important aspects of this study is that it is the first to assess factors affecting analgesic use in the postoperative period for varicocelectomy operations. When examined from this aspect, general anesthesia administration and bilateral varicocele surgery increased postoperative analgesic requirements, while spinal+TAP block administration was observed to result in lower analgesic requirements, even in patients with bilateral varicocelectomy and longer operating times.

To the best of our knowledge, this is the first study to assess the effect of different anesthesia methods in patients undergoing varicocelectomy on duration of hospital stay. A statistically significantly longer length of hospital stay was determined for the patients administered general anesthesia compared to the other groups (p=0.001). There was no significant difference when the other groups were compared with each other (p>0.05). In the literature there are no studies assessing the correlation between hospital stay duration and anesthetic method for varicocelectomy. Ebert et al. (17) compared spinal and general anesthesia administration for different urology surgical procedures such as inguinal hernia repair, scrotal exploration, posterior urethral valve ablation and ureterocele puncture, and reported no difference between the groups in respect of hospital stay durations.

There were some limitations to this study, primarily the retrospective design. However, the main data assessed in the study were analgesic use and hospital stay, which were included in the definite records of postoperative monitoring forms or the hospital information system and patient medicine use forms, this situation was not considered to have diminished the reliability of the study. Another limitation is that there was no group administered local anesthesia for surgery in the patient groups of the study. However, the choice of anesthetic method to be used in varicocele surgery is not only controlled by the anesthesiologist but is linked to many factors such as surgeon and patient preference, comorbidities of the patient and duration of the procedure. As local anesthesia is not selected for varicocelectomy in our clinic, this study could not assess the efficacy of this method.

In conclusion, spinal anesthesia+TAP block can be considered to be an effective and reliable method for varicocele surgery with lower analgesic requirements and shorter duration of hospital stay.

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