Brief Communications

Spinal vs General Anesthesia in Patients Undergoing Urogenital Surgery: A Randomized Clinical Trial

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Abstract

Background: This study aimed to evaluate the pain in the 24 hours after surgery, quality of life, and the outcome of surgery in patients undergoing urogenital surgery by spinal and general anesthesia.

Materials and Methods: Women referring a candidate for urogenital surgery in Vali-e-Asr Hospital entered the study after their informed consent; in one of the two study groups: Spinal Anesthesia (SA) vs. General Anesthesia (GA). The pain scores around the clock were measured using the Visual Analog Scale (VAS) at 2, 6, 12, and 24 hours postoperatively. Also, the two groups were compared regarding patient satisfaction at the time of ambulation. The surgery outcomes were measured using International Consultation on Incontinence Modular Questionnaires ICIQ. Data were entered and analyzed by SPSS software.

Results: There was no significant relationship between parity, previous non-cesarean abdominal surgery, and urinary complications. However, there was a statistically significant difference between pain score in the two groups; while the postoperative days were not different in the two groups of anesthesia methods

Conclusion: Considering the different influence of treatment methods for this disease, further research is needed to clarify, the results of anatomical, and anatomical outcomes after treatment for pelvic floor disorders in women.

Keywords: postoperative pain, quality of life quality, urogenital surgery, spinal anesthesia, general anesthesia

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Introduction

Pelvic organ prolapse (POP) and urinary incontinency are common issues among women which potentially attenuate patients' quality of life. POP is a complex condition defined as the descent of one or more following items: anterior vaginal wall, posterior vaginal wall, uterus (cervix), or the vault after hysterectomy (1, 2). The lifetime prevalence of POP is 30-50% and is also affecting almost half of all women after menopause (3). However, its prevalence is increasing due to the progressive population aging (1). Therefore, increasing the trend of correction surgeries for these disorders could be expected considered as a significant percentage of surgical procedures(4, 5).

Some studies have evaluated and determined the factors affecting surgical outcomes of vaginal and pelvic floor disorders. Based on these studies, elements

such as patients' characteristics, the severity of the disorder, comorbidities, and surgical technique(s) have been identified as determinants of surgical outcomes. However, the outcome of surgery is also altered by type and method of anesthesia. Spinal anesthesia (SA) and general anesthesia (GA) are common methods of anesthesia used in pelvic surgery. SA yields less postoperative pain, postoperative nausea/vomiting, and perioperative stress responses among procedures like vaginal hysterectomy, laparoscopic cholecystectomy, and laparoscopic inguinal hernia repair (6) without having a notable impact on functional status within 12 weeks following surgery(7). Additionally, nausea and postoperative pain extend the length of stay in the hospital (8). Some studies have compared these two methods regarding their potential complication rates and their cost-benefit status (9–12). However, further investigation of long-term outcomes seems crucial to take place (13). Herein, this study aimed to compare the impact of GA and SA on length of stay in the hospital, pain severity, and quality of life among patients who underwent urogynecology surgery.

Methods

This study was approved by the IRB ethics committee, Tehran University of Medical Science (TUMS), Tehran, Iran (ID number IR.TUMS.VCR.REC.1396.2755) and registered in the Iranian Clinical Trial Registry (IRCT20101122005225N9).

This cross-sectional study was conducted in the gynecology ward, Valiasr Hospital, Imam Khomeini Complex, Tehran University of medical sciences (TUMS), between 2018 and 2019. Patients with the indication(s) of urogynecology surgery were included in this study. Moreover, the type of intervention, potential complications, or related adverse effect(s) was noted for all patients with the informed consent of the study. There was no restriction for inclusion criteria. Exclusion criteria were including spinal anesthesia contraindications and a lack of capacity to give consent. Finally, 114 patients entered the study and randomly divided into two groups to receive either GA or SA. In the SA group, after vital sign monitoring and proper hydration, following sterile preparation, 10 mg Bupivacaine (0.5% Hyperbaric), and 30 µgr Fentanyl were injected in L4-L5 intervertebral subarachnoid space by a 25 gauge Quincke spinal needle.

Following SA, patients remained in the sitting position for 5 minutes. In the GA group after monitoring of vital signs and appropriate hydration premedication was done using Midazolam 0.03 mg/ kg/IV, Fentanyl 3-5 µgr/kg/ IV then anesthesia was induced with Propofol 2 mg/kg, Atracurium 0.5 mg/kg. Finally, intubation was performed and anesthesia was sustained using an infusion of Propofol 100-150 µgr/kg/min ensuring that the airway has remained secure. For all patients under GA, 3–5 mg intravenous Morphine and 50 micrograms of Fentanyl were injected based on the duration of the operation and vital signs. The demographic features and quality of life of the patients were recorded on the designed questionnaire before surgery. After the operation, all patients were monitored for 90 minutes in the recovery section.

Time of onset of pain in recovery section (hours), pain score (VAS) at 2, 6, 12, and 24 hours following surgery, satisfaction with the time of ambulation (according to prepared forms), discharge time (length of stay in hospital) was observed and recorded. Surgical and functional outcomes were assessed and evaluated using ICIQ (International consultation on incontinence modular questionnaires) by a gynecologist on days 2 and 14 post-operation. Data were analyzed by SPSS software. p <0.05 was considered statistically significant.

Results

One hundred and fourteen women, who underwent urogynecology surgery, were randomized into two equal groups. Groups were peer in terms of age and

Table 1: Relationship between variables and type of Anesthesia.

		Type of Anesthesia		Total	P
		SA	GA		
Type of surgery	Vaginal	19	15	34	0.2
	Abdominal	9	14	23	
Previous abdominal surgery except for cesarean	No	14	16	30	0.3
	Yes	14	13	27	
Urinary incontinency or retention	Yes	3	3	6	0.9
	No	25	26	51	
Parity	0	1	2	3	0.3
	1	1	0	1	
	2	8	3	11	
	3	5	7	12	
	4	6	5	11	
	5	1	6	7	
	6	4	2	6	
	7	0	2	2	
	8	1	1	2	
	10	1	1	2	

Note: Chi-square test was used for statistical analysis; P value<0.05 was considered statistically significant

type of surgery performed. The results showed no significant relation between groups regarding type of surgery (p = 0.2), previous abdominal surgery (p=0.3), urinary incontinency or retention (p=0.9) and parity (p=0.3). There was a significant difference between groups in the meantime onset of postoperative pain in the recovery room (p = 0.02). Moreover, pain scores at 12 and 24 hours following surgery were significantly different between groups (p = 0.03 and p = 0.02 respectively). Besides, patients' satisfaction at the time of ambulation appeared differently between groups (p=0.09). The results of our study indicated no significant association between the average length of stay in the hospital following surgery and the type of anesthesia (p=0.5). However, repeated measure analysis demonstrated a significant effect of time on the severity of pain among both groups (p=0.01, dF=1, F=2.80).

Discussion

GA and SA are both generally used during gynecology surgery and have their advantages and disadvantages (14). This study was accomplished to determine whether there is any difference between the SA and GA in urogynecology surgery in post-operative pain, satisfaction, and long-term outcomes. In a study conducted by Segal (15) pain was less reported in the first 24 hours in SA, which was confirmed in our study. According to a study by Purwar (13), it has been concluded that SA is effective in improving post-surgical recovery.

Our study also revealed that improvement in the recovery process and satisfaction rate in SA was better than in the GA group. In another study conducted on patients undergoing anorectal surgery, urinary retention after SA was more common than GA, which did not confirm in our research (16).

On the other hand, in a study of 32 women undergoing urinary incontinence surgery, Ducket found that using SA did not change urinary function (17), which was similar to the results of the present study. Massicotte and coworkers on 40 patients undergoing SA required 2 times fewer morphine injections rather than GA on average 48 hours postoperative (18). In our study, pain relief was confirmed at 12 and 24 hours after surgery in the SA group. Previous researches found significantly less

Table 2: Comparison of two methods in post-operative pain.

Anesthesia method		Time Onset of Postoperative Pain	2-Hours' Postoperative Pain Score	6-Hours' Postoperative Pain Score	12-Hours' Postoperative Pain Score	24-Hours' Postoperative Pain Score	Satisfaction
	p-value	0.02	0.7	0.5	0.03	0.02	0.009
Spinal	**Mean**	1.20	7.43	5.11	2.43	.96	7.61
	Std. Deviation	0.786	3.271	3.862	1.237	1.815	2.079
General	**Mean**	0.78	7.66	5.66	4.07	2.45	6.21
	Std. Deviation	0.41	3.015	2.567	1.267	1.923	1.800
Total	**Mean**	0.98	7.54	5.39	3.26	1.72	6.89
	Std. Deviation	0.726	3.117	3.250	2.882	2.534	2.050

Note: t-test was used for statistical analysis; P value<0.05 was considered statistically significant

severe and shorter pain in the SA group (19–23). The results of the study did not show a significant association with the mean number of admission days after surgery and the type of anesthesia, but the previous studies revealed that SA related to a reduction of the length of hospital stay and further reduce the hospital-related costs (24–26).

According to the results of the present study, SA is one of the best common methods of anesthesia for pelvic floor surgery.

Conclusion

Although SA has been more successful in controlling postoperative pain in the past 24 hours, more studies with larger sample sizes are still needed to evaluate long-term follow-up and outcomes of pelvic floor surgeries.

Conflicts of Interest

The authors declare that they have no conflict of interest.

References

1. Choi KH, Hong JY. Management of pelvic organ prolapse. Korean J Urol. 2014;55(11):693-702.
2. Hefni M, Barry J, Koukoura O, Meredith J, Mossa M, Edmonds S. Long-term quality of life and patient satisfaction following anterior vaginal mesh repair for cystocele. Arch Gynecol Obstet. 2013;287(3):441-6.
3. Subak L, Waetjen L, Van Den Eeden S, Thom D, Vittinghoff E, Brown J. Cost of Pelvic Organ Prolapse Surgery in the United States. Obstet Gynecol. 2001;98: 646–51.
4. Vitale SG, Caruso S, Rapisarda AMC, Valenti G, Rossetti D, Cianci S, et al. Biocompatible porcine dermis graft to treat severe cystocele: impact on the quality of life and sexuality. Arch Gynecol Obstet. 2016;293(1):125-131.
5. Hefni M, Barry JA, Koukoura O, Meredith J, Mossa M, Edmonds S. Prosthetic surgery versus native tissue repair of cystocele: literature review. Arch Gynecol Obstet. 2013;287(3):441-6.
6. Longo MA, Cavalheiro BT, de Oliveira Filho GR. Spinal/epidural block as an alternative to general anesthesia for laparoscopic appendectomy: A prospective randomized clinical study. J Clin Anesth. 2017;41:48-54.
7. Sprung J, Sanders MS, Warner ME, Gebhart JB, Stanhope CR, Jankowski CJ, et al. Pain relief and functional status after vaginal hysterectomy: intrathecal versus general anesthesia. Can J Anesth. 2006;53(7):690-700.
8. Borendal Wodlin N, Nilsson L, Kjølhede P, GASPI study group. The impact of mode of anaesthesia on postoperative recovery from fast-track abdominal hysterectomy: A randomised clinical trial. BJOG. 2011;118(3):299-308.
9. Morris MT, Morris J, Wallace C, Cho W, Sharan A, Abouelrigal M, et al. An Analysis of the Cost-Effectiveness of Spinal Versus General Anesthesia for Lumbar Spine Surgery in Various Hospital Settings. Global Spine J. 2019;9(4):368-74.
10. Sessler DI. Long-term Consequences of Anesthetic Management. Anesthesiology. 2009;111(1):1–4.
11. Hu S, Zhang ZY, Hua YQ, Li J, Cai ZD. A comparison of regional and general anaesthesia for total replacement of the hip or knee: A meta-analysis. J Bone Joint Surg Br. 2009;91(7):935-42.
12. Macfarlane AJR, Prasad GA, Chan VWS, Brull R. Does regional anaesthesia improve outcome after total hip arthroplasty? A

systematic review. Br J Anaesth. 2009;103(3):335–45.
13. Purwar B, Ismail KM, Turner N, Farrell A, Verzune M, Annappa M, et al. General or Spinal Anaesthetic for Vaginal Surgery in Pelvic Floor Disorders (GOSSIP): a feasibility randomized controlled trial. Int Urogynecol J. 2015;26(8):1171–8.
14. Habib AS, Chen YT, Taguchi A, Hu XH, Gan TJ. Postoperative nausea and vomiting following inpatient surgeries in a teaching hospital: a retrospective database analysis. Curr Med Res Opin. 2006;22(6):1093-9.
15. Segal D, Awad N, Nasir H, Mustafa S, Lowenstein L. Combined spinal and general anesthesia vs general anesthesia for robotic sacrocervicopexy: A randomized controlled trial. Int Urogynecol J Pelvic Floor Dysfunct. 2014;25(3):369–74.
16. Darrah DM, Griebling TL, Silverstein JH. Postoperative urinary retention. Anesthesiol Clin. 2009;27(3):465-84.
17. Duckett RAJ, Grapsas P, Eaton M, Basu M. The effect of spinal anaesthesia on urethral function. Int Urogynecol J Pelvic Floor Dysfunct. 2008;19(2):257–60.
18. Massicotte L, Chalaoui KD, Beaulieu D, Roy JD, Bissonnette F. Comparison of spinal anesthesia with general anesthesia on morphine requirement after abdominal hysterectomy. Acta Anaesthesiol Scand. 2009;53(5):641-7.
19. Wodlin NB, Nilsson L, Årestedt K, Kjölhede P, 'GASPI' Study Group. Mode of anesthesia and postoperative symptoms following abdominal hysterectomy in a fast-track setting. Acta Obstet Gynecol Scand. 2011;90(4):369–79.
20. Naghibi K, Saryazdi H, Kashefi P, Rohani F. The comparison of spinal anesthesia with general anesthesia on the postoperative pain scores and analgesic requirements after elective lower abdominal surgery: A randomized, double-blinded study. J Res Med Sci. 2013;18(7):543-8.
21. Catro-Alves LJ, De Azevedo VL, De Freitas Braga TF, Goncalves AC, De Oliveira GS Jr. The effect of neuraxial versus general anesthesia techniques on postoperative quality of recovery and analgesia after abdominal hysterectomy: a prospective, randomized, controlled trial. Anesth Analg. 2011;113(6):1480–6.
22. Ghaffari S, Dehghanpisheh L, Tavakkoli F, Mahmoudi H. The Effect of Spinal versus General Anesthesia on Quality of Life in Women Undergoing Cesarean Delivery on Maternal Request. Cureus. 2018;10(12):e3715.
23. Ackroyd SA, Hernandez E, Roberts ME, Chu C, Rubin S, Mantia-Smaldone G, et al. Postoperative complications of epidural analgesia at hysterectomy for gynecologic malignancies: an analysis of the National Surgical Quality Improvement Program. Int J Gynecol Cancer. 2020;30(8):1203-9.
24. Pu X, Sun JM. General anesthesia vs spinal anesthesia for patients undergoing total-hip arthroplasty: A meta-analysis. Medicine (Baltimore). 2019;98(16):e14925.
25. Gonano C, Leitgeb U, Sitzwohl C, Ihra G, Weinstabl C, Kettner SC. Spinal versus general anesthesia for orthopedic surgery: anesthesia drug and supply costs. Anesth Analg. 2006;102(2):524–9.
26. Koju RB, Dongol Y, Verma R. Effectiveness of spinal anaesthesia versus general Anaesthesia for open cholecystectomy. J Nepal Health Res Counc. 2016 ;14(33):93-98.