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Original article

Regain Bowel Function After Anesthesia in Cesarean Section

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Abstract

Background and aims. *After abdominal surgery, postoperative ileus is a common issue that can result in significant postoperative morbidity, extended hospital stays, and higher healthcare costs. The purpose of this study was to assess the regain of bowel movement after administration of general versus spinal anesthesia in pregnancy underwent caesarean section.* ***Methods****. This prospective cross-sectional study was carried out at Alkhadra Hospital, Tripoli University Hospital, and Alajala Hospital during the period from Sept 2022 to November 2022 after approval of the hospital health ethical committee. It included 60 patients who had cesarean delivery and they were subdivided into 2 groups (spinal versus general).* ***Results****. In comparison to general anesthesia, spinal anesthesia had a quicker return to normal bowel function after cesarean delivery, and longer surgery duration. Moreover, spinal anesthesia results in a shorter mean time interval to normal intestinal sound, flatus, and first motion, compared to general anesthesia.* ***Conclusion****. We recommend using spinal anesthesia for cesarean section if there are no contraindications.*

Keywords: *Postoperative Ileus, Spinal Anesthesia, GIT Motility, Cesarean Section.*

Introduction

Postoperative ileus is a state of temporary disturbance in bowel movement after any abdominal surgery, due to manipulation or reconstruction of the bowel [1]. All anesthesia drugs that administered in the induction or maintenance of general anesthesia may disrupt bowel movements; furthermore, peritoneal incision and bowel manipulation completely impair motility [2]. The dearth of intercellular gap junctions in the large intestine makes the colon more vulnerable to the inhibitory effects of anesthetics, particularly halothane, enflurane, and atropine, which delay gastric emptying [3].

Cesarean delivery denotes to the birth of a fetus through a laparotomy followed by a hysterectomy. A dynamic paralysis is one of the most common postoperative complications that must be avoided due to its serious consequences, which include patient distress, lengthy hospitalization, and raised healthcare expenses [4]. Following the third and fifth day of the surgery, postoperative ileus typically shows symptoms commonly nausea, vomiting, retention of stool, flatus, and abdominal distention without bowel sounds. In fact, a variety of factors, including intraoperative bowel manipulation, postoperative sympathetic inhibitory pathway to the gastrointestinal tract (GIT), inflammation, anesthetic agents, and narcotic analgesia, considered as a major cause to influence the delay in the return of gastrointestinal activity [5,6]. Furthermore, the lasting sedative consequence of anesthetics used during operation may also potentiate the chance of developing bowel ileus [7,8]. Several studies compared cesarean anesthesia techniques in terms of clinical concerns such as maternal death, post-operative pain and bleeding, nonetheless very few studies looked at the regain of gut movement after cesarean section of women undergoing general anesthesia versus spinal anesthesia. Therefore, the purpose of this study was to compare the time required for regaining to intestinal movement following general versus spinal anesthesia for cesarean section.

Methods

Study design and inclusion criteria

This prospective study was conducted at Alkhadra Hospital, Tripoli University Hospital, and Alajala Hospital during Sept to Nov 2022. It included 60 patients who had cesarean delivery and they were sub grouped into 2 sets (spinal versus general) (sample size was calculated with 95% confidence level with confidence interval of 4).

Patients were included if their ages ranged from 18 and 42 who were scheduled for planned C.S under either general or spinal anesthesia, and presented with no medical complaints such as diabetes mellitus, thyroid disease, and absence of any pathology associated with pregnancy. High-risk pregnancies such as preeclampsia or eclampsia, severe hypovolemia, systemic or local sepsis were excluded.

The application of anesthesia

Patients in the general anesthesia group received a standard rapid sequence anesthesia induction, which started with a few-minutes of pre-oxygenation with 100% oxygen, followed by 4-5 mg/kg thiopental and 1-1.5 mg/kg succinylcholine. Anesthesia was then maintained with up to 1.5% isoflurane and oxygen, and muscle relaxant was supported with atracurium at 0.4 mg/kg.

In spinal anesthesia group, a fine spinal needle was inserted at the L2-3 or L3-4 intervertebral space (size 22G "3.5 inch"). Bupivacaine (1.5-3.5ml) was then injected into the subarachnoid space as a local anesthetic.

Data collection

All patients in both groups were undergoes the normal procedure of caesarean section, and ensured that no bowel stimulants were given after surgery. After the surgery, an intestinal auscultation was started and continued every 1 hour until normal bowel sounds were heard. Just 12 hours after surgery, the patients were allowed to drink a small amount of water. When normal bowel movements were heard and flatus had subsided with the transition to a regular diet following the first bowel movement, oral ingestion of clear liquid and soft food was permitted.

Statistical analysis

Data were entered Microsoft Excel version 16, and further analyzed and presented as means and standard deviations for the quantitative data, or as numbers and percentages for the qualitative data. Student's t-test was used to assess the statistical significance of the difference between two groups, while Chi-square test was used to measure association between the qualitative variables. P-value was considered significant when it is less than 0.05.

Results

Patient's demographics

Table 1 shows the demographics of the included patients, their age ranged from 18-42 years old (30.31±6.5), with mean gestational age of 38.65±1.2 weeks.

Table 1. Demographic data of the patients participated in this study

Items	Range	Mean	SD
Age (years)	(18-42)	30.31	6.542
Gestational age (weeks)	(37-41)	38.65	1.279

Comparing spinal anesthesia with general technique, most of involved patients significantly younger in general anesthesia than spinal (mean; 28.6±6.6 to 31.9±6.3, respectively; p=0.05). They were almost in the same mean gestational age of 38 weeks (Table 2).

Table 2. Comparison of demographic information for spinal and general anesthesia

Items	Spinal (n= 30)		General (n= 30)		Independent t-test	
	Mean	SD	Mean	SD	t	p-value
Age (years)	31.96	6.363	28.66	6.631	1.948	0.056*
Gestational age (week)	38.72	1.279	38.60	1.272	0.298	0.766

Post-anesthesia GIT motility

As exhibited in table 3, general anesthesia showed delay in gut motility based on the delayed of intestinal sound, flatus, and motion, whoever the delay was not statistically significant in compare to spinal anesthesia.

Table 3. Comparison of general and spinal anesthesia in terms of regaining GIT motility and duration of surgery

Items	Spinal (n= 30)		General (n= 30)		Independent t-test	
	Mean	SD	Mean	SD	T	p-value
1st Intestinal Sound (hour)	6.96	2.282	20.90	3.711	20.873	8.271
1st Flatus (hour)	17	4.271	26.13	2.639	10.443	1.314
1st Motion (hour)	21.56	4.710	27.60	2.523	6.361	1.089
Duration of surgery (minutes)	55.96	4.826	51.26	7.494	-2.867	0.006*

Post anesthesia complications

Abdominal pain was the most common postoperative complication exhibited by 27(90%) followed spinal anesthesia techniques, and by 23(76.7%) followed general anesthesia. All postoperative complication was not significantly differing between the two anesthesia methods (Table 4).

Table 4. Comparison of postoperative complications after spinal versus general anesthesia

Postoperative complications		Spinal (n= 30)		General (n= 30)		Chi-square test	
		No	%	No	%	X2	P-value
Fever (temp>37.2) 1st day	No	20	66.7%	15	50%	1.714	0.190
	Yes	10	33.3%	15	50%		
Distension	No	11	36.6%	22	73.3%	0.693	0.405
	Yes	19	63.4%	8	26.7%		
Ileus	No	16	53.3%	12	30%	1.071	0.300
	Yes	14	46.7%	18	60%		
Abdominal Pain	No	3	10%	7	23.3%	1.92	0.165
	Yes	27	90%	23	76.7%		

Discussion

The current study was conducted to compare the time needed to regain gastrointestinal motility after general versus spinal anesthesia in cesarean section. Our study revealed non-significant effect of spinal anesthesia compared to general anesthesia for cesarean delivery regarding mean time interval to normal intestinal sound (6.96 versus 20.90 hours), time to pass of flatus (17 versus 26.13 hours), and first motion (21.56 versus 27.60 hours). The current findings were in line with earlier study done in Egypt reported that patients who underwent epidural or spinal anesthesia recovered from their procedure much more quickly than those who underwent general anesthesia [3]. Another study, conducted by Havas et al., found that the time interval between the first bowel sound was reduced to 4.75 h in the spinal anesthesia group versus 16.6 h in the general anesthesia group (P 0.001). In the same study, there was a statistically significant difference in the time interval from the first pass of flatus and the interval to pass motion after a CS in the spinal anesthesia group versus the general anesthesia group (P 0.001) [7]. Furthermore, according to Liu et al., patients who received spinal or epidural anesthesia had a significantly faster return of bowel activity than those who received general anesthesia. The time difference between general anesthesia and regional anesthesia was 1.560.64 days and 1.390.56 days, respectively [9].

The current findings also reported statistically significant effect of spinal anesthesia versus general anesthesia in term of shorter duration of surgery (34.41 versus 56.18 hours). This was dissimilar to the findings of Graber et al., who revealed that the length of the operation had little or no effect on the delay of the bowel emptying.10 Additionally, Bayoumi et al., found no link between the length of surgery and the regaining of gastrointestinal motility in both spinal and general anesthesia groups (40-60 minutes) [3].

One of the most frequently issues that patients experience following surgery is postoperative ileus [11,12]. Lengthy postoperative ileus sufferings up to one in every eight gastrointestinal surgery patients, causing worry and a longer hospital stay [13]. It was stated that GI motility is known to be disrupted after general anesthesia [14]. It was also conveyed that the inhibition of thoracolumbar sympathetic fibers by local anesthetics is thought to encourage gastrointestinal motility [15,16]. In the present study, it has been shown that compared to general anesthesia, spinal anesthesia was associated with less postoperative GIT ileus (46.7 versus 60%), and these results were agreed with previous findings reported fast recovery of the bowel movement after regional anesthesia which reduced the length of hospitalization and healthcare costs [17]. Thus, spinal anesthesia was found to be valuable for postoperative ileus control. Moreover, there was no statistically significant difference between the two studied groups to postoperative complications after spinal anesthesia (Fever, distension, and abdominal pain). The sensitivity for predicting fever was 33.3%, while the sensitivity for predicting abdominal pain was 90 % and the sensitivity for predicting distension was 43.7%.

The current study had limitation that it was only done on female patients undergoes cesarean section, which could not be generalized on other types of surgery. Moreover, we could not correlate the findings between the genders.

Conclusion

Compared to general anesthesia, spinal anesthesia results in a quicker return of bowel action after cesarean section than general anesthesia, accompanied with a reduced hospital stay and better patient comfort. Therefore, we recommend using spinal anesthesia for cesarean section if there are no contraindications.

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