

**Original research article**

# An observational study assessing the prevalence of headaches and back pain after regional anesthesia compared to general anesthesia

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**Abstract**

**Aim:** The aim of the present study was to investigate the prevalence of headaches and back pain after regional anesthesia compared to general anesthesia.

**Methods:** Cross-sectional studies involving 100 patients who were admitted at Department of Anesthesia, Mamata Medical College, Khammam and had undergone CS were included in the study.

**Results:** Our study was made up of 100 participants who have done a CS under the two types of anesthesia. Mean age of patients was 30.5 with a SD of 6.80. Youngest individual was 17 years old while the oldest was 50 years old. Mean height was 162.38 cm, shortest patient was 130 cm while the longest was 160. Average weight was 73 kg, biggest weight was 104 kg while the smallest weight was 50 kg. Mean BMI values were 28.32 kg/m<sup>2</sup>, largest BMI value was 38.66 kg/m<sup>2</sup> while the smallest value was 22.04 kg/m<sup>2</sup>. As for the most commonly used anesthesia type, spinal anesthesia was the most common with 79 (79%) patients, while general anesthesia was used only in 21 (21%) patients. Fentanyl was the most common anesthetic used in surgery, it was used in 15 (15%) patients followed by fentanyl with dolozal/peptidin, which was used in 12 (12%) patients. As for analgesics used after surgery, intravenous paracetamol was the most commonly used (24 patients, 24%), followed by sodium diclofinac and ketozor (2 patients, 2%). There was also no correlation between occurrence of headache and anesthesia type, as patients who had headaches and undergone general surgery.

**Conclusion:** Our study has shown that there's no link between the anesthetic procedure and occurrence of back pain and headaches, even though most of the participants have gotten regional anesthesia.

**Keywords:** Spinal anesthesia · General anesthesia · Cesarean section · Low back pain · Persistent · Technique

**Introduction**

Cesarean Section (CS) is one of the most common surgeries worldwide and is the most common surgery in obstetrics. Common procedures of anesthesia for CS are spinal and general anesthesia, which aims to alleviate the pain and discomfort in surgery as much as possible and reduce postoperative adverse reactions [1]. Postural headache and Postural Back Pain [PDBP] are two common complications seen in spinal anesthesia following a cesarean section [2]. Although headaches don't usually occur after general surgery, they are not uncommon but are seen more in spinal surgery [3]. Backache is a common complication in general surgery and is seen more frequently than headaches [4]. Spinal headaches are caused by leakage of cerebrospinal fluid through a puncture hole in the membrane that surrounds the spinal cord and typically appears within 2 to 3 days after anesthesia, while backache is usually secondary to localized inflammation, often associated with a degree of muscle spasm and lasts for a few days or a week [5, 6].

Postdural headache [PDH] and postdural back pain [PDBP] are two common complications seen in spinal anesthesia following a cesarean section [7]. Although headaches don't usually occur after general surgery, they are not uncommon but are seen more in spinal surgery [8]. Backache has been shown to be a common complication in general surgery and is seen more frequent than headaches [9]. Spinal headaches are caused by leakage of cerebrospinal fluid through a puncture hole in the membrane that surrounds the spinal cord and typically appears within 2 to 3 days after anesthesia, while backache is usually secondary to localized inflammation, often associated with a degree of muscle spasm and lasts for a few days or a week [10, 11]. Treatment for headache is usually conservative that includes caffeine supplementation, bed rest and analgesics treatment [12]. Mild cases of back pain are also treated with conservative treatment, and as for

moderate and severe it can be treated with ab epidural blood patch (EBP) [13]. Treatment for headaches is usually conservative that includes caffeine supplementation, bed rest, and analgesics treatment [14]. Mild cases of back pain are also treated with conservative treatment, and as for moderate and severe it can be treated with an Epidural Blood Patch (EBP) [15].

The aim of the present study was to investigate the prevalence of headaches and back pain after regional anesthesia compared to general anesthesia.

**Material and Methods**

A cross-sectional study was conducted at Department of Anesthesia, Mamata Medical College, Khammam which included 100 patients who have gone through a cesarean section under general and spinal anesthesia. All patients scheduled for elective or emergency surgery under spinal anesthesia during data collection period were enrolled in this study.

**Inclusion Criteria**

Our sample included patients who have done a CS and don't have a history of back pain while it excluded those who had a history of back pain, who have done surgery on the spinal cord, and those who had kidney and liver diseases.

**Exclusion Criteria**

1. Patients with pre-existing backpain
2. Patients <18years,
3. Traumatic deformity of the spine or congenital abnormalities of the lumbar spine, impaired cognitive ability, and patients undergoing combined spinal and epidural anesthesia.

**Post spinal Back Pain:** The symptom of pricking sensation or local tenderness at the site of needle insertion is characterized by tenderness without radiating pain to the buttock or/and to lower extremities and no neurological findings.

**Visual Analogue Scale (VAS):** It is a method of pain assessment tool determined by the patient making a mark of their pain intensity on a line which is 100 mm. long. It is a horizontal line with “no pain” at one end to “worst possible pain” at the other end of the line.

**Angle of Lumbar Puncture:** The angle of lumbar puncture is the angle of needle bevels with respect to spinal ligaments which is perpendicular or parallel to the fibers of supraspinous and interspinous ligaments.

**Data Collection Procedures**

Data was collected by chart review, patient interview, and through observation using a semi-structured questionnaire prepared from different literature. Patients were asked whether they felt local tenderness or pain at the site of needle injection site or not. The patients who had felt pain were asked to mark on 100 mm horizontal line pain assessment tool (VAS score tool) to indicate the intensity of their back pain after the data collector gave them a detailed and adequate information. So, PSBP was assessed with VAS score tool whether they had felt. pain or not in 24 hr, 48 hr, and 72 hrs postoperatively in post-anesthesia care units (PACU) and wards. If the study participants felt PSBP, then they were asked to mark the level of pain and the data was considered but if they did not feel pain, the data collector observed those patients every 24 hrs until 72 hrs. The data collection procedure was continued until the estimated sample size is reached

**Statistical Analysis**

Data were analyzed using SPSS version. Descriptive analysis was done on all our descriptive variables. Percentages and frequencies were used for qualitative data, while the mean and standard deviation were used for quantitative data. A Chi-square test was done to examine the correlation between quantitative data.

**Results**

**Table 1:** Demographic variables

Age	
Mean (st.d)	30.04 (± 6.80)
Youngest age	17
Oldest age	50
Height	
Mean (st.d)	162.38 (± 4.40)
Smallest value	130

Largest value	160
<b>Weight</b>	
Mean (st.d)	73 (± 7.42)
Smallest value	50
Largest value	104
BMI values	28.32 (± 2.28)
Smallest value	22.04
Largest value	38.66

Our study was made up of 100 participants who have done a CS under the two types of anesthesia. Mean age of patients was 30.5 with a st.d of 6.80. Youngest individual was 17 years old while the oldest was 50 years old. Mean height was 162.38 cm, shortest patient was 130 cm while the longest was 160. Average weight was 73 kg, biggest weight was 104 kg while the smallest weight was 50 kg. Mean BMI values were 28.32 kg/m<sup>2</sup>, largest BMI value was 38.66 kg/m<sup>2</sup> while the smallest value was 22.04 kg/m<sup>2</sup>.

**Table 2:** Variables regarding anesthesia

<b>Type of anesthesia</b>	
Regional	79 (79)
General	21 (21)
<b>Anesthetics used during surgery</b>	
Fentanyl	15 (15)
Fentanyl with Dolozal/Peptidin	12 (12)
Not available	80 (80)
<b>Analgesics used after surgery</b>	
Sodium declofinac	1 (1)
Intravenous Paracetamol	24 (24)
Ketozor	1 (1)
Not available	76 (76)
<b>Surgery time</b>	
Mean (st.d)	1.15 (± 0.30)
Shortest time	1
Longest time	2

As for the most commonly used anesthesia type, spinal anesthesia was the most common with 79 (79%) patients, while general anesthesia was used only in 21 (21%) patients. Fentanyl was the most common anesthetic used in surgery, it was used in 15 (15%) patients followed by fentanyl with dolozal/peptidin, which was used in 12 (12%) patients. As for analgesics used after surgery, intravenous paracetamol was the most commonly used (24 patients, 24%), followed by sodium diclofinac and ketozor (2 patients, 2%).

**Table 3:** Relationship between anesthesia type and occurrence of back pain and headache

Variables	Anesthesia type		P value
	Regional	General	
<b>Back pain</b>			
Yes	42 (42)	32 (32)	0.315
No	58 (58)	68 (68)	
<b>Headache</b>			
Yes	54 (54)	40 (40)	0.042
No	46 (46)	60 (60)	

There was also no correlation between occurrence of headache and anesthesia type, as patients who had headaches and undergone general surgery.

**Table 4:** Relationship between anesthesia type and occurrence of age, BMI and pain scale

Age mean/BMI/pain scale	Anesthesia type		P value
	Regional	General	
Age	29.87	31	0.350
BMI	28.39	29.35	0.0130
Pain scale (VAS)	1	1.06	0.720

As for the relationship between type of anesthesia, BMI, age mean and pain scale we found a statistical relationship between these variables. Average BMI in patients who undergone general anesthesia was 29.35 kg/m<sup>2</sup>, compared to 28.39 kg/m<sup>2</sup> in spinal anesthesia, with a P value of 0.0130.

**Discussion**

Anesthesia can be regional or general. General anesthesia is associated with better hemodynamic stability than in regional anesthesia<sup>[16]</sup>. As for regional anesthesia, it is done by applying anesthetics through the spinal cord or through the dura matter, which results in better surgical outcomes in terms of avoiding mechanical ventilation and reducing the amount of blood loss<sup>[17]</sup>. Both types of anesthesia can cause complications in older people. General anesthesia can increase pulmonary complications, hypotension and nausea and vomiting after surgery<sup>[18, 19]</sup>. Regional anesthesia can cause hypotension during surgery, headaches, injury to neurons and is a contraindication in severe aortic stenosis and coagulation defects<sup>[20]</sup>. Regional anesthesia can cause hypotension during surgery, headaches, and injury to neurons and is a contraindication in severe aortic stenosis and coagulation defects<sup>[21]</sup>. The main aim of choosing an anesthetic type for CS is to ensure the well-being of the fetus and the mother. Operations have become safer as the years have gone by, but there is still morbidity and mortality that can affect the fetus and the mother<sup>[22]</sup>. Probable causes for back pain are hematoma formation, abscess formation and hyperexpansion of ligaments<sup>[23]</sup>. We found that to be similar to a study done by Benzon *et al* which showed that there wasn't a huge difference in occurrence of back pain between the two types of anesthesia<sup>[24]</sup>. Another study, which, in contrast to our results, has found a link between back pain and spinal anesthesia compared to general anesthesia<sup>[26]</sup>. A frequent iatrogenic complication for spinal anesthesia is postdural headache which is related to accidental dural puncture and leakage of cerebrospinal fluid<sup>[25]</sup>. We found that to be similar to a study done by Benzon *et al.* which showed that there wasn't a huge difference in the occurrence of back pain between the two types of anesthesia<sup>[26]</sup>. Another study, in contrast to our results, has found a link between back pain and spinal anesthesia compared to general anesthesia<sup>[27]</sup>

### Conclusion

Our study has shown that there's no link between the anesthetic procedure and occurrence of back pain and headaches, even though most of the participants have gotten regional anesthesia.

### References

1. Jain PN, Arora A, Myatra SN, Gehdoo RP. Continuous infusion of epidural morphine and bupivacaine for postoperative pain relief-a prospective study. *Indian J Anaesth.* 2003;47(6):454-455.
2. Fernández-Guisasola J, Serrano ML, Cobo B, Muñoz L, Plaza A, Trigo C, *et al.* A comparison of 0.0625% bupivacaine with fentanyl and 0.1% ropivacaine with fentanyl for continuous epidural labor analgesia. *Anesth Analg.* 2001;92(5):1261-1265.
3. Malhotra N, Singh R, Hooda S, Singla V. Intermittent versus continuous epidural infusion technique for post-operative analgesia. *North J ISA.* 2016;1(1):24-28
4. Ginosar Y, Weiniger CF, Kurz V, Babchenko A, Nitzan M, Davidson E. Sympathectomy-mediated vasodilatation: a randomized concentration ranging study of epidural bupivacaine. *Can J Anaesth.* 2009;56(3):213-221.
5. Yoroza T, Morisaki H, Kondoh M, Tomizawa K, Satoh M, Shigematsu T. Epidural anesthesia during hysterectomy diminishes postoperative pain and urinary cortisol release. *J Anesth.* 1997;11(4):260-264.
6. Nimmo SM, Harrington LS. What is the role of epidural analgesia in abdominal surgery?. *Contin Educ Anaesthesia, Crit Care Pain.* 2014 Oct 1;14(5):224-229.
7. Martínez B, Canser E, Alonso A, Alonso E, Gredilla E, Díez J, Gilsanz F. Postdural Puncture Headache and Epidural Blood Patch in a Large Obstetric Anaesthesia Population. *Asian J Anesthesiol.* 2018 Mar;56(1):23-32.
8. Rakmani N, Olwan R, Alkhalaf S. Prevalence of back pain and headache after spinal anesthesia for cesarean section compared to general anesthesia.
9. Hickmott KC, Healy TE, Roberts SP, Faragher EB. Back pain following general anaesthesia and surgery: evaluation of risk factors and the effect of an inflatable lumbar support. *British Journal of Surgery.* 1990 May;77(5):571-5.
10. <https://www.mayoclinic.org/diseases-conditions/spinal-headaches/symptoms-causes/syc-20377913#:~:text=Spinal%20headaches%20are%20caused%20by,which%20leads%20to%20a%20headache>.
11. Messina A, Frassanito L, Colombo D, Vergari A, Draisci G, Della Corte F, *et al.* Hemodynamic changes associated with spinal and general anesthesia for hip fracture surgery in severe ASA III elderly population: a pilot trial. *Minerva Anesthesiol.* 2013 Sep 1;79(9):1021-9.
12. Kwak KH. Postdural puncture headache. *Korean J Anesthesiol.* 2017 Apr;70(2):136-143.
13. Brown EM, Elman DS Postoperative backache. *Anesth Analg.* 1961;40:6835.
14. Holte K, Foss NB, Svensén C, Lund C, Madsen JL, Kehlet H. Epidural anesthesia, hypotension, and changes in intravascular volume. *Anesthesiology.* 2004;100(2):281-286.
15. Baig T. Incidence of lower limb motor weakness in patients receiving postoperative epidural analgesia and factors associated with it: an observational study. *Saudi J Anaesth.* 2016;10(2):149.
16. Brown DL. Atlas of regional anesthesia. Elsevier Health Sciences; c2010.
17. Chen X, Zhao M, White PF, Li S, Tang J, Wender RH, Sloninsky A, *et al.* The recovery of cognitive

- function after general anesthesia in elderly patients: a comparison of desflurane and sevoflurane. *Anesthesia & Analgesia*. 2001 Dec 1;93(6):1489-94.
18. Strøm C, Rasmussen LS, Sieber FE. Should general anaesthesia be avoided in the elderly?. *Anaesthesia*. 2014 Jan;69:35-44.
  19. Singelyn FJ, Deyaert M, Joris D, Pendeville E, Gouverneur JM. Effects of intravenous patient-controlled analgesia with morphine, continuous epidural analgesia, and continuous three-in-one block on postoperative pain and knee rehabilitation after unilateral total knee arthroplasty. *Anesthesia & Analgesia*. 1998 Jul 1;87(1):88-92.
  20. Sumikura H, Niwa H, Sato M, Nakamoto T, Asai T, Hagihira S. Rethinking general anesthesia for cesarean section. *Journal of anesthesia*. 2016 Apr;30:268-73.
  21. Cupitt J, Haigh C, Vernon P, Marshall J, Nield A. A prospective randomized pragmatic double-blinded comparison of 0.125% and 0.0625% bupivacaine for the management of pain after operation in patients undergoing major abdominal surgery. *Acute Pain*. 2005;7(2):85-93.
  22. Patil SS, Kudalkar AG, Tendolkar BA. Comparison of continuous epidural infusion of 0.125% ropivacaine with 1 µg/ml fentanyl versus 0.125% bupivacaine with 1 µg/ml fentanyl for postoperative analgesia in major abdominal surgery. *J Anaesthesiol Clin Pharmacol*. 2018;34(1):29.
  23. Sırt I, Yazıcıoğlu D. Aminophylline does not prevent postdural puncture headache in caesarean section. *Int. J. Anesth. Anesthesiol*. 2015;3(3).
  24. Montasser MG. Post dural puncture headache after spinal anesthesia for caesarean section: a comparison of 27G quincke and whitacre spinal needles in midline and paramedian approaches. *Journal of Medical Sciences*. 2015 Jan 1;15(1):44.
  25. Ali HM, Mohamed MY, Ahmed YM. Postdural puncture headache after spinal anesthesia in cesarean section: Experience in six months in 2736 patients in Kasr El aini teaching hospital–Cairo University. *Egyptian Journal of Anaesthesia*. 2014 Oct 1;30(4):383-6.
  26. Benzon HT. Epidural steroid injections for low back pain and lumbosacral radiculopathy. *Pain*. 1986 Mar 1;24(3):277-95.
  27. Kulkarni K, Patil R. Comparison of Ropivacaine-Fentanyl with Bupivacaine-Fentanyl for Labour Epidural Analgesia. *The Open Anesthesia Journal*. 2020 Dec 15;14(1).