

Efficacy Of Bilateral Transversus Abdominis Plane And Ilioinguinal Iliohypogastric Nerve Blocks For Postcaserean Delivery Pain Relief Under Spinal Anaesthesia.

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ABSTRACT

Introduction: Caesarean delivery (CD) has been one of the most frequently performed major surgical interventions and subsequent manipulation performed through Pfannenstiel incision are associated commonly with a significant degree of pain in postoperative period. The use of a conventional opioid and NSAIDs has never been without side effects for mothers after the cesarean section. Abdominal field blocks were among alternative techniques for postoperative pain management after the cesarean section.

Methods: 70 Parturients of ASA grade II undergoing elective caesarean operation requiring spinal anaesthesia were included for this prospective comparative study. They were received spinal anaesthesia with 1.8- 2ml of 0.5% bupivacaine heavy at L2-L3 or L3-L4 intervertebral space depending on individual's height. At the end of surgery, group T were received bilateral transverse abdominis plane (TAP) and group I were received (iliohypogastric ilioinguinal) II- IH nerve block.

Results: The VAS score at rest were significantly different between 2 groups at all time points ($p < 0.05$ which is statistically significant). The VAS score at movement/cough were comparable in both the groups at 0hr, 4th hr and 6th hr ($p > 0.05$, hence there was no statistically significant difference between 2 groups). But there was significant difference in VAS score between the groups at 8th, 12th, and 24th hrs. ($p < 0.05$ is statistically significant). The mean paracetamol consumption is high in II – IH block group than TAP block group and the mean difference is statistically significant ($p < 0.05$). The first analgesia request time is less in II – IH block group than TAP group and the mean difference is statistically significant ($p < 0.05$).

Conclusion: TAP block for post caesarean delivery pain significantly reduced the total paracetamol consumption and prolonged the time to first analgesic request than II-IH nerve block....

Keywords: TAP block, II-IH nerve block, caesarean delivery, postoperative analgesia

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INTRODUCTION

Pain management is crucially important in the postoperative period as it increases patient comfort and satisfaction. Caesarean delivery (CD) has been one of the most frequently performed major surgical interventions and subsequent manipulation performed through Pfannenstiel incision are associated commonly with a significant degree of pain in postoperative period².

The postoperative pain after cesarean section is believed to be of mild to moderate intensity lasting for up to 72 h. The development of chronic pain, prolonged hospitalization, and compromised breastfeeding were among the consequence of untreated acute pain³. Untreated pain can increase pulse rate, cardiac work, and oxygen consumption, and also it can reduce physical activity and leads to venous stasis and an increased risk of deep vein thrombosis. Furthermore, it may lead to post-operative ileus, nausea, vomiting, urinary retention and may result in prolonged hospital stay⁴.

The use of a conventional opioid and NSAIDs has never been without side effects for mothers after the cesarean section.

Abdominal field blocks were among alternative techniques for postoperative pain management after the cesarean section³.

The aim of this study was to compare the efficacy of the TAP block and II-IH block in controlling postcaesarean section pain.

METHODOLOGY

After obtaining approval and clearance from the Institutional ethics committee, 70 Parturients of ASA grade II undergoing elective caesarean operation requiring spinal anaesthesia were included for this prospective comparative study after obtaining informed consent. Patients with severe preeclampsia, eclampsia, renal, hepatic, or cardiac disorders, history of allergy to the study drugs and having any infection on the nerve block area were excluded from the study.

Preoperatively all patients were received intravenous metoclopramide 10mg and ranitidine 50mg 20-30minutes before transfer to the operation theatre. All patients were preloaded with 500ml ringer lactate before start of the surgery and on arrival to operation room, standard monitors including pulse oximetry, blood pressure and ECG were applied to all

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patients. They were received spinal anaesthesia with 1.8-2ml another pop was felt upon passing the internal oblique muscle of 0.5% bupivacaine heavy at L2-L3 or L3-L4 intervertebral sheath and an additional 10ml of local anaesthetic was injected space depending on individual's height. With the onset of to block the iliohypogastric nerves. This procedure was satisfactory block , the surgeon will proceed with surgery. repeated on the opposite side in same manner.

At the end of surgery ,group T were received bilateral The assessment of presence and intensity of pain (both on rest transverse abdominis plane (TAP) and group I were received (and on passive flexion of hip and knee) was done immediately iliohypogastric ilioinguinal) II- IH nerve block. after transfer to PACU (0hrs) and at 4,6,8,12, and 24 hrs using

For group T blind landmark technique TAP block was visual analogue scale score. The patients were received Inj Paracetamol 1g IV if and when VAS score is > 4. The primary outcome variable was VAS score at rest and movement ,time performed . With the patient in supine position ,the iliac crest was palpated from anterior to posterior until insertion of latissimus dorsi muscle was felt . The 'Triangle of Petit' was located. A 22G 5cm long blunt tipped ,short bevelled needle was inserted in the triangle of petit just above the iliac crest at

RESULTS

right angle to the coronal plane until resistance was felt which In our study , total 70 patients were included. These 70 patients indicated that the needle tip had pierced the external oblique were randomly allocated into group T (35 patients) and group muscle . The needle was advanced in the same direction until I (35 patients) .

a pop sensation was felt . This shows the entry into fascial plane between the external and internal oblique muscles . Further advancement of the needle results in a second pop after passing through the internal oblique fascia into the transversus abdominis plane. At this point ,after careful negative aspiration ,20ml of 0.25% bupivacaine was injected . The same procedure was repeated on other side.

In group I ,patients were received ilioinguinal – iliohypogastric block ,which was performed at a location 2cm medial to the anterior superior iliac spine. A 22G blunted needle was inserted, an initial pop was felt as the blunt needle passes through the external oblique muscle sheath and 10ml of 0.25% bupivacaine was injected in a fanwise fashion to block the ilioinguinal nerves. The needle was furthe advanced and

T

able 1 : demographic variables

DEMOGRAPHIC VARIABLES			
VARIABLES	GROUP I	GROUP T	P-value
	Mean \pm SD	Mean \pm SD	
n(Frequency)	35	35	
AGE (Years)	26.34 \pm 3.686	25.57 \pm 3.137	0.349
HEIGHT (cm)	155.57 \pm 5.049	156.66 \pm 4.734	0.357
WEIGHT (Kg)	68.11 \pm 5.640	66.86 \pm 4.081	0.289
BMI (kg/m2)	28.12 \pm 2.23	27.2 \pm 2.23	0.145

A total of 70 patients were included in this study, 35 in each group.

There was no statistically significant difference in demographic variables between two groups.

Table 2: mean heart rate (HR) during postoperative period of ceserean section (N=70)

HEART RATE			
	GROUP I	GROUP T	P-value

	Mean \pm SD		Mean \pm SD		
HR 0hr	92.06	14.609	87.14	13.709	0.151
HR 4hr	85.66	12.139	84.11	12.595	0.603
HR 6hr	83.51	10.719	82.80	11.476	0.789
HR 8hr	81.97	11.163	81.46	11.302	0.849
HR 12hr	81.00	10.583	81.43	11.081	0.869
HR 24hr	81.63	10.364	79.49	11.528	0.416

The heart rates were comparable in both the groups at all time points ($p > 0.05$)

Fig 1 : Mean HR

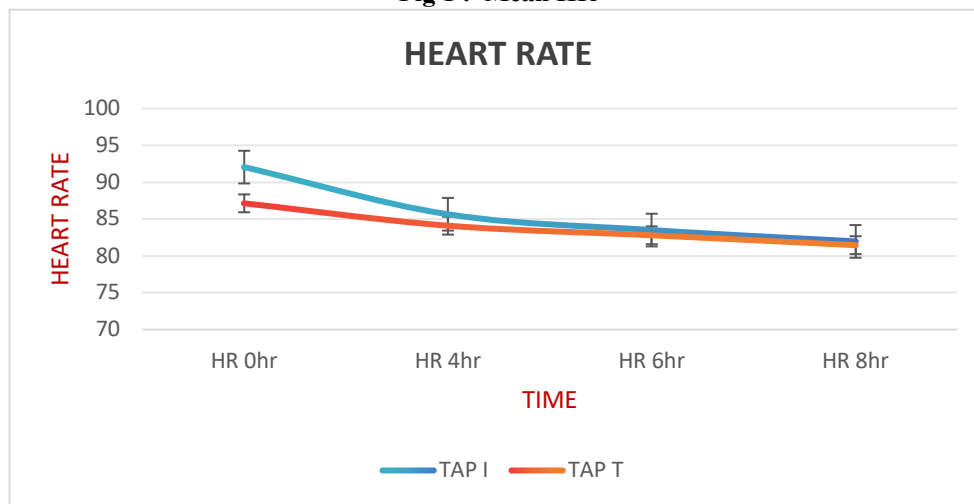


Table 3: Mean systolic blood pressure (SBP) during postoperative period of cesarean section (N=70)

Systolic blood pressure (SBP)					
	GROUP I MEAN \pm SD		GROUP T MEAN \pm SD		P- value
SBP 0hr	117.2	12.679	114.0	11.00	0.263
SBP 4hr	117.69	10.096	113.40	9.614	0.073
SBP 6hr	117.86	9.708	114.97	8.886	0.199
SBP 8hr	119.09	9.275	115.23	8.661	0.077
SBP 12hr	121.37	10.304	116.37	8.395	0.029
SBP 24hr	120.23	8.370	116.17	8.169	0.044

The SBP were comparable in both the groups at 0hr, 4thhr, 6th hr, 8th hr($p > 0.05$)

*But there was significant difference in SBP between the groups at 12th, and 24th hrs. ($p < 0.05$ is statistically significant)

Fig 2 : mean SBP.

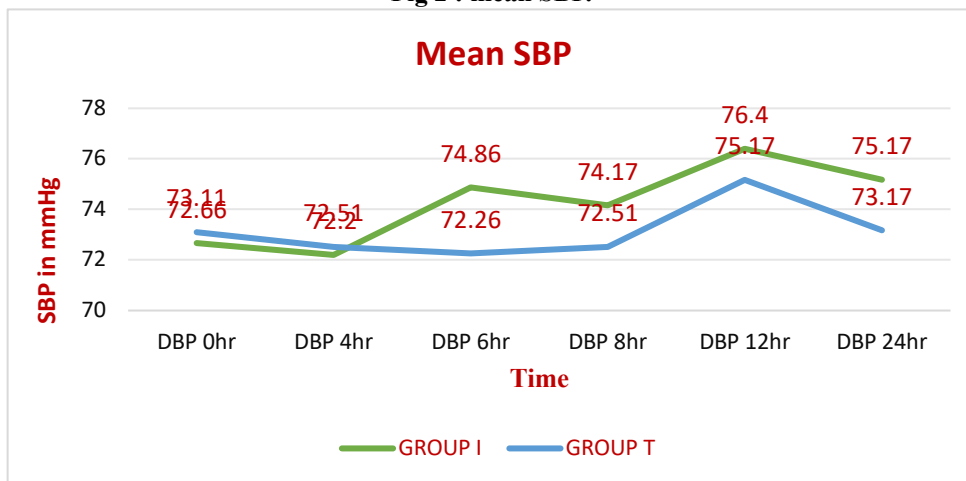


Table 4: Mean Diastolic blood pressure (DBP) during postoperative period of cesarean section (N=70)

DIASTOLIC BLOOD PRESSURE (DBP)					
	GROUP I		GROUP T		P-value
	Mean	SD	Mean	SD	
DBP 0hr	72.66	8.798	73.11	10.061	0.840
DBP 4hr	72.2	7.037	72.51	10.376	0.883
DBP 6hr	74.86	7.75	72.26	8.936	0.198
DBP 8hr	74.17	6.519	72.51	7.763	0.337
DBP 12hr	76.4	7.24	75.17	6.871	0.469
DBP 24hr	75.17	6.051	73.17	7.71	0.232

The DBP were comparable between two groups at all time points.

Fig 3 : mean DBP.

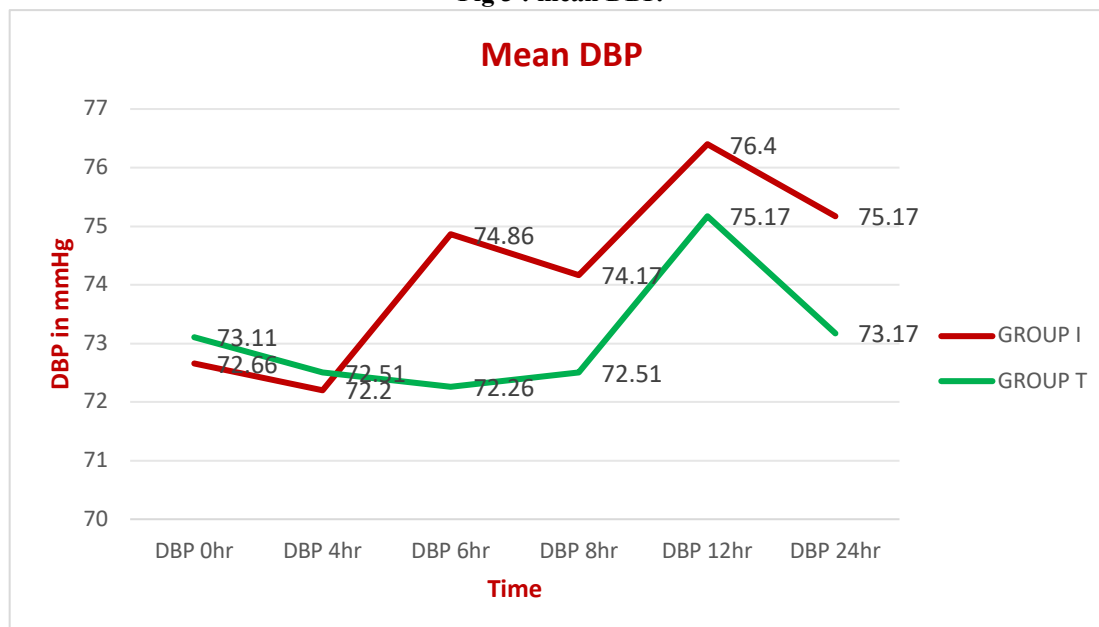


Table 5: Mean MAP during postoperative period of ceserean section (N=70)

MEAN ARTERIAL PRESSURE (MAP)					
	GROUP I		GROUP T		P-value
	Mean ± SD		Mean ± SD		
MAP 0hr	87.43	9.347	86.71	9.952	0.758
MAP 4hr	87.37	7.397	86.14	9.490	0.548
MAP 6hr	89.40	7.845	85.91	8.483	0.079
MAP 8hr	89.43	6.718	88.60	7.349	0.624
MAP 12hr	91.31	7.372	89.69	7.411	0.36
MAP 24hr	90.26	5.828	90.49	7.184	0.884

The MAP were comparable in both the groups at all time points (p> 0.05)

Fig 4 : mean MAP.

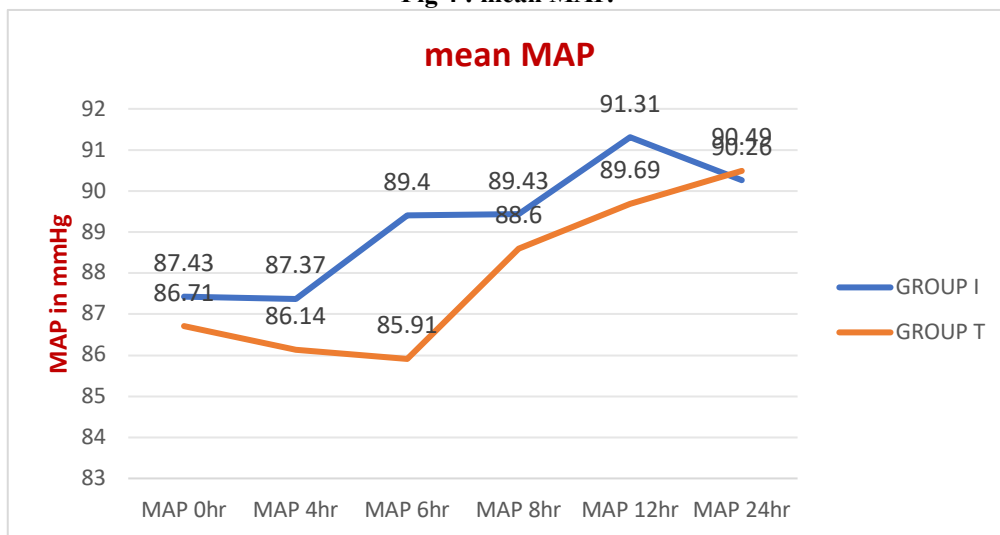


Table 6: Mean VAS at rest during postoperative period of ceserean section (N=70)

VAS at rest					
	GROUP I		GROUP T		P value
	MEAN± SD		MEAN ±SD		
VAS 0hr	0	0	0	0	-
VAS 4hr	2.94	1.434	2.29	1.045	0.032
VAS 6hr	4.77	1.516	3.29	1.25	<0.001
VAS 8hr	4.49	1.38	3.69	0.583	0.002
VAS 12hr	5.31	1.231	3.66	0.539	<0.001
VAS 24hr	5.86	1.115	4.09	0.445	<0.001

The VAS score at rest were significantly different between 2 groups at all time points (p < 0.05 which is statistically significant)

Fig 5: mean VAS at rest.

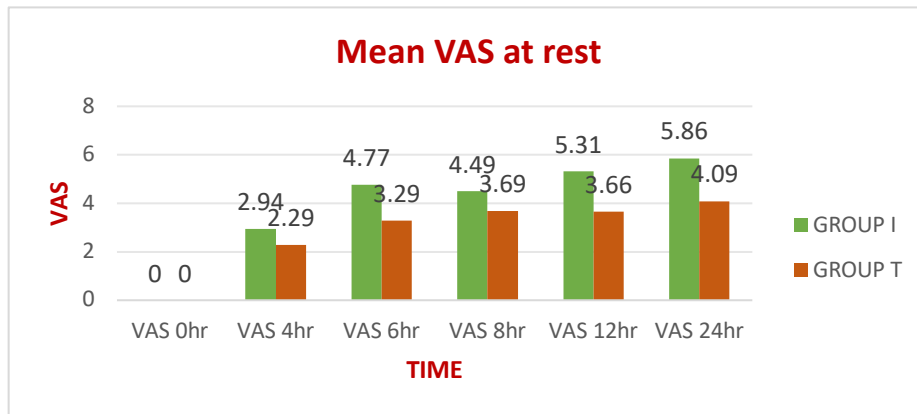


Table 7: Mean VAS at movement during postoperative period of cesarean section (N=70)

VAS at movement/ cough					
	GROUP I MEAN± SD		GROUP T MEAN± SD		P value
VAS 0hr	0	0	0.06	0.236	0.156
VAS 4hr	3.37	1.19	2.97	1.224	0.170
VAS 6hr	4.11	1.549	3.86	0.912	0.4
VAS 8hr	4.94	1.434	4.37	0.598	0.03
VAS 12hr	5.54	1.246	3.66	0.591	<0.001
VAS 24hr	5.71	1.073	3.17	0.822	<0.001

The VAS score at movement/cough were comparable in both the groups at 0hr, 4th hr and 6th hr ($p > 0.05$, hence there was no statistically significant difference between 2 groups).

*But there was significant difference in VAS score between the groups at 8th, 12th, and 24th hrs. ($p < 0.05$ is statistically significant)

Fig 6: VAS at movement.

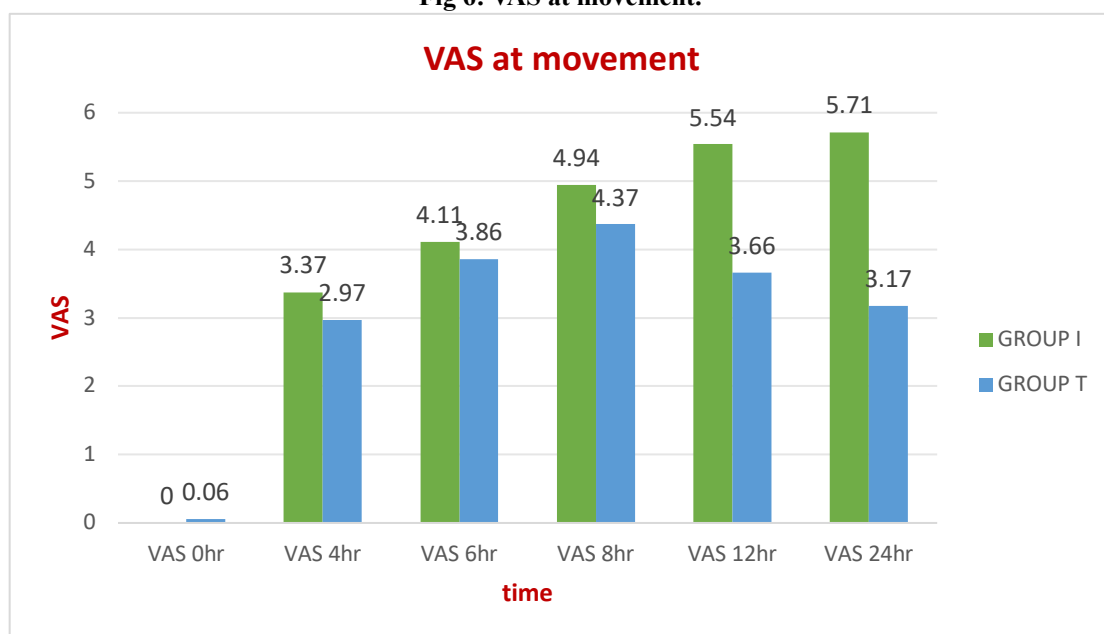


Table 8: Analgesia consumption during postoperative period of ceserean section (N=70)

	GROUP I Mean \pm SD	GROUP T Mean \pm SD	P- value
Total PCT consumption (no. Of doses)	3.86 \pm 0.355	1.80 \pm 0.473	<0.001
First analgesic request time (hr)	6.51 \pm 1.121	8.57 \pm 0.917	<0.001

The mean paracetamol consumption is high in II – IH block group than TAP block group and the mean difference is statistically significant (p< 0.05)

The first analgesia request time is less in II – IH block group than TAP group and the mean difference is statistically significant (p < 0.05)

DISCUSSION

LSCS is one of the most common lower abdominal surgeries in young females. The efficient care of the newborn requires adequate pain relief in mother. LSCS is performed by Pfannenstiel incision which lies on L1- L2 dermatomes and the viscera are innervated by nerve roots from T10- L2 segments. Sensory innervation of L1- L2 dermatome is by ilioinguinal and iliohypogastric nerves. Dermatome T10- L1 can be blocked by TAP block.

In our study , there was no significant difference between age and weight of the patients. The SBP were comparable in both the groups at 0hr, 4thhr, 6th hr, 8th hr(p> 0.05). But there was significant difference in SBP between the groups at 12th, and 24th hrs. (p < 0.05 is statistically significant). The VAS score at rest were significantly different between 2 groups at all time points (p < 0.05 which is statistically significant).

The VAS score at movement/cough were comparable in both the groups at 0hr, 4th hr and 6th hr (p> 0.05, hence there was no statistically significant difference between 2 groups). But there was significant difference in VAS score between the groups at 8th, 12th, and 24th hrs. (p < 0.05 is statistically significant). The mean paracetamol consumption is high in II – IH block group than TAP block group and the mean difference is statistically significant (p< 0.05). The first analgesia request time is less in II – IH block group than TAP group and the mean difference is statistically significant (p < 0.05).

Neha patel et al1, conducted a study to compare between bilateral II-IH nerve block and TAP block for postoperative pain relief for parturient undergoing caesarean section under spinal anaesthesia, showed that the cumulative median tramadol consumption over 48 h were 16.96 \pm 32.66mg for TAP group and 56.25 \pm 567.98mg for II/IH. Pain score was statistically significantly lower in group TAP compared to

group IIIH at 8hr, 12hr, 24hr and 48hrs (p=<0.05). Time for first request for rescue analgesia was also prolonged in the TAP block compared to IIIH block. Our study results were comparable with their findings.

Abiy et al3., showed that both ilioinguinal-iliohypogastric and transverses abdominis nerve block were equally effective in decreasing postoperative pain after cesarean section, total tramadol consumption within 24 h. TAP block has achieved longer analgesic duration compared to Ilioinguinal-iliohypogastric nerve block, which strongly correlates with our study.

Seid adem ahemed et al2., showed that there was no statistically significant difference between TAP and II-IH nerve blocks regarding the postoperative pain score in each time point both at rest and at movement, but the II-IH block significantly reduced total tramadol consumption and prolonged the time to first analgesic request than TAP. Our study revealed that TAP block provided better pain control than II-IH block.

Krishnegowda, et al6., conducted RCT on efficacy of bilateral II-IH nerve block and local infiltration for post cesarean delivery analgesia, showed that ILIH nerve block has a longer duration of postoperative pain relief in cesarean delivery patients compared to local infiltration and placebo.

Yetneberk et al4., in their meta-analysis found no significant differences in the time to first request for rescue analgesia, postoperative analgesic consumption, and post-operative pain score following cesarean section between TAP block and IL/IH block.

CONCLUSION

TAP block for post caesarean delivery pain significantly reduced the total paracetamol consumption and prolonged the time to first analgesic request than II-IH nerve block.

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Conflicts of interest: There are no conflicts of interest.

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