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Ultrasound-Guided Quadratus Lumborum Block versus Transversus Abdominis Plane Block for Post-Operative Pain after Caesarean Delivery

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Abstract

Background: Caesarean delivery is the most common surgical procedure performed worldwide; but this procedure associated with severe postoperative pain, which prevent early ambulation, that in turn increase risk of respiratory complications, venous thromboembolism, delaying breast feeding and prolong hospital stay.

Aim of Study: To assess the efficacy off ultrasound guided Quadratus lumborum block versus ultrasound guided Transversus abdominis plane block in control of postoperative pain associated with caesarean section.

Patients and Methods: After approval by the local ethical committee, a prospective, controlled, clinical, randomized study was carried out on 80 patients, and randomly allocated into two equal groups: Group A: Bilateral ultrasound guided posterior Quadratus lumborum block, and Group B: Bilateral ultrasound guided lateral Transversus abdominis plane block. An informed consent was taken from every patient subjected to this study. The Study Was Carried in The Period Between January 2021 Till September 2021 At Al-Azhar University Hospitals.

Results: This study showed that no hemodynamics changes were found between both groups. Usage of posterior Quadratus lumborum block decreased postoperative pain and analgesic consumption in the first 24 hours after surgery along with longer pain free period compared to patients who were given lateral Transversus abdominis plane block.

Conclusion: Usage of Ultrasound guided Quadratus lumborum block provided effective modality for control of postoperative pain associated with caesarean section, as it provided long-lasting analgesia and reduces consumption of opioids than, Transversus abdominis plane block.

Key Words: *Quadratus lumborum block – Transversus abdominis plane block – Caesrean section surgeries.*

Introduction

THE majority of carsrean sections are done out under spinal anesthesia and opioids considered as the classical regimen for management of postoperative pain either systemic, spinal, or both. But it is associated with undesirable side effects including nausea, vomiting, and pruritus, so it was necessary to found others non-opioid analgesics regimes for post-caesarean analgesia **[1]**.

Truncal nerves blocks as quadratus lumborum block and transversus abdominis plane block, are increasingly being used in obstetric anaesthetic practice to improve analgesic outcomes so consider one of the Multimodal analgesic strategy which offers the greatest benefit in post-caesrean delivery analgesia **[2]**.

The present study aimed to compare between Quadratus lumborum block and Transversus abdominis plane block in management of postoperative pain after caesrean section.

Patients and Methods

This prospective randomized single-blinded, clinical comparative study was conducted from June 2020 and ended at August 2021 in Al-Azhar University Hospital (Al-Hussein) and approved by the ethics committee from the Department of Anesthesia of Faculty of Medicine, Al-Azhar University. Patients gave written informed consents.

The study concluded adult patients with American Society of Anesthesiologists (ASA) scoring of I-II who were underwent caesrean section under, under spinal anaesthesia were recruited for this study.

Patients are randomized into the two equal groups: Group A (Bilateral ultrasound guided posterior Quadratus lumborum block) and Group B (Bilateral ultrasound guided lateral Transversus abdominis plane block).

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Patients were enrolled in the study according to the following criteria: American Society of Anesthesiology grade I, II (ASA I-II), patients of either sex, aged 19 to 40 years, BMI less than 30 Kg/M^2, and scheduled for caesrean section.

Exclusion criteria: Patient's refusal, patient in ASA groups III, IV, V, E, Body mass Index more than 30, abnormal coagulation profiles, skin infection, local contraindication to the technique, and patient on an analgesic regimen for any cause.

Pre-operative settings:

- Routine preoperative investigations were done to all patients including laboratory investigations as (complete blood picture, liver function tests, kidney functions tests, prothrombin time and partial thromboplastin time) and chest X-ray. Demographic data as age, weight, and sex were recorded.
- The patients were fasting for 6 hours preoperatively. The procedure were done in the operating rooms (OR) under complete aseptic technique with prophylactic antibiotics (e.g. 2gm ceftriaxone) 1 hour preoperatively.

Spinal anesthesia was performed at the L3-L4 level in the sitting position using a 27-gauge Quincke needle. After free flow of cerebrospinal fluid was observed, a total volume of 1ml spinal solution was administered to each patient over 30 seconds. Patients were turned to the prone position immediately after the block.

At the end of the surgery before transfer to the recovery area with the patient still fully monitored, the patients will be assigned to receive either:

1- Bilateral (US) guided posterior (QLB) (Group A).

2- Bilateral (US) guided lateral (TAP) block (Group B).

Both blocks were performed with complete aseptic precautions, under ultrasound guidance (Sonosite M-Turbo Portable Ultra-sound, SonoSite, Bothell, Washington, USA), and protective sheath for the ultrasound probe.

1- *Technique of US guided posterior QLB:*

Posterior QLB were performed A linear high frequency probe (6-13MHz) after covering by protective sheath will be placed at the level of the anterosuperior iliac spine and moved cranially until the 3 abdominal wall muscles will be clearly identified. The external oblique muscle was followed posterolaterally until its posterior border was visualized (hook sign), leaving underneath the internal oblique muscle, like a roof over the quadratus lumborum muscle. The probe will be tilted down to identify a bright hyperechoic line that corresponded with the middle layer of the thoracolumbar fascia. A 25 gauge, spinal needle will be inserted in plane from anterolateral to posteromedial. The optimal point of injection for the QLB will be determined by hydro-dissection over the lumbar interfacial triangle when 1-2 Ml sterile saline was injected, then 0.2ml/kg 0.25% bupivacaine was injected on each side with intermittent aspiration to avoid the accidental intravascular injection.

2- *Technique of US guided laterale TAP block:*

To give lateral TAP block, A linear high frequency ultrasound probe (6-13MHz) after covering by protective sheath, was placed in the mid axillary line between the iliac crest and the costal margin (angle of petit),with the probe moved cranially until the 3 abdominal wall muscles were clearly identified. Using the in-plane technique, A 25-gauge, spinal needle was inserted (from anterior to posterior direction) until the tip of the needle reached between the internal oblique and the transversus abdominis. Hydro-dissection with 1-2mL sterile saline was done to separate the fascial layers, then a solution of 0.2ml/kg 0.25% bupivacaine was injected on each side with intermittent aspiration to avoid the accidental intravascular injection.

The duration of technique which is defined as time interval between placements of the ultrasound probe on patient's skin till removal of the needle after termination of the LA injection was recorded.

Postoperative assessment:

Post-operatively and Immediately after surgery all vital data & hemodynamics (SBP, DBP and HR) for QLB and TAPB.

Were recorded at the following time intervals:

- Systolic blood pressure (SBP) immediately postoperative (S0), at 30min (S1) and at 1, 2, 4, 6, 12 and 24 hours (S2, S3, S4, S5, S6, S7 respectively).
- Diastolic blood pressure (DBP) was recorded immediately postoperative (D0), at 30min (D1) and at 1, 2, 4, 6, 12 and 24 hours (D2, D3, D4, D5, D, D7 respectively).
- Heart rate (HR) was recorded immediately postoperative (H0), at 30min (H1) and at 1, 2, 4, 6, 12 and 24 hours (H2, H3, H4, H5, H6, H7 respectively).

Pain intensity was assessed at rest and during coughing by using VAS score immediately postop-

erative (V0), at 30min (V1) and at 1, 2, 4, 6, 12 and 24 hours (V2, V3, V4, V5, V6, V7 respectively). When the patients experience pain (VAS score 4) IV ketorolac 30 mg (not to exceed 120mg/day) was given, then VAS was reassessed 10min later, Pethidine (1mg/kg intravenously) was given if VAS still greater than or equal to 4 after 10min from giving ketorolac.

- The time of first post-operative request of analgesia was recorded in both groups.
- The total dose of post-operative pethidine (mg) and ketorolac (mg), consumed in the first post-operative 24 hours was calculated in both group.

Post-operative complications were spotted and recorded including postoperative nausea and/or vomiting, symptoms or signs of Local anesthetic toxicity (tinnitus, perioral numbness and seizure), Intraperitoneal injection, Transient femoral nerve palsy, and Bowel hematoma.

Statistical analysis:

Data were collected, revised, coded and entered to the Statistical Package for the Social Sciences (IBM SPSS) version 20. The quantitative data were presented as mean, standard deviations and ranges when parametric and median inter-quartile range (IQR) when data found non-parametric. Also qualitative variables were presented as number and percentages. The following tests were done: Independent-samples *t*-test of significance was used when comparing between two means. Chi-square (x^2) test of significance was used in order to compare proportions between qualitative parameters. The confidence interval was set to 95% and the margin of error accepted was set to 5%. *p*-value <0.05 was considered significant.

Results

There was no statistically significant difference found between group A and group B regarding age, gender, body mass index and total time of surgery. (Table 1).

Duration of performing block (min) was significantly longer in group A than group B with highly significant differences between both groups. (Table 2).

Visual Analogue Scale (VAS) was significantly lower in group A than group B (Table 3).

The mean Number of request of analgesia in first postoperative 24hrs was significantly lower in group A than group B, the Mean time of first request of postoperative analgesia was significantly longer in group A than group B (Table 4).

There were no significant differences between two groups regarding SBP (mmHg) (Table 5).

There was no statistically significant difference found between group A and group B regarding diastolic blood pressur. (Table 6).

There was no statistically significant difference found between group A and group B regarding heart rate at different times of measurement (Table 7).

There were no significant differences between two groups regarding complications.

Table (1): Demographic data.

	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
Age	28±4.25	22-36	28.68±4.05	22-36	–0.727	0.469
Gestational age	38.00±0.93	37-40	38.4±1.19	37-40	–1.669	0.099
BMI	28.97±2.97	22.04-35.65	28.61 ±2.55	22.04-33.12	0.582	0.562
Operative time	57.35±4.16	50-63.8	57.13±3.93	50-63.8	0.249	0.804
ASA:						
I	21 (52.5%)		19 (47.5%)		0.200	0.655
II	19 (47.5%)		21 (52.5%)			

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (2): Comparison regarding Duration of performing Block (min) between two groups.

	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
Duration of performing Block (min)	9.45± 1.77	6-14	5.98± 1.76	4-9	–8.807	0.000*

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (3): Comparison between two groups regarding Visual Analogue Scale (VAS).

VAS Score	Group A N=40		Group B N=40		Mann-Whitney test	
	Median (IQR)	Range	Median (IQR)	Range	Z	*p*-value
V0	1 (0-1)	0-1	1 (0-1)	0-10	–1.435	0.151
V1	1.5 (1-2)	0-2	1 (0-1)	0-2	–3.584	0.000
V2	1 (0-1)	0-2	2 (1-2)	1-3	–5.856	0.000*
V3	2 (1-2)	1-5	4 (3-5)	2-6	–5.831	0.000*
V4	4 (4-5)	2-6	3 (2.5-4)	2-7	–2.452	0.014*
V7	3 (2-4)	1-7	5 (4-6)	3-7	–5.467	0.000*
V6	5 (4-5)	4-7	5 (4-6)	4-8	–1.919	0.035*
V7	7 (6-7)	5-9	7 (7-8)	5-9	–2.285	0.022*

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (4): Number of request of analgesia in first postoperative 24hrs and time of first request of postoperative analgesia.

	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
Number of request of analgesia in first postoperative 24h	3.3±0.46	3-4	3.75±0.54	3-5	3.984	0.000*
Time of first request of postoperative analgesia	5.7±0.97	4-8	4.55±0.9	4-6	–5.496	0.000*

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (5): Comparison between two groups regarding Systolic Blood Pressure (SBP) (mmHg).

Systolic BL pr	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
S0	106.98±18.64	90-156	105.35±17.25	90-140	–0.405	0.687
S1	107.03±14.80	90-135	101.25±12.65	90-130	–1.876	0.064
S2	105.35±15.66	90-140	103.00±13.81	90-130	–0.712	0.479
S3	106.15±14.84	90-140	101.75±14.30	90-130	–1.350	0.181
S4	103.70±14.10	90-134	101.25±12.02	90-130	–0.836	0.405
S5	112.73±19.14	90-156	107.50±17.06	90-140	–1.289	0.201
S6	101.10±16.37	80-128	98.60±9.81	80-110	–0.829	0.410
S7	104.80±14.81	90-135	101.50±12.52	90-130	–1.076	0.285

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (6): Comparison between two groups regarding Diastolic Blood Pressure (DBP) (mmHg).

Diastolic Bl pr	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
D0	71.98±5.68	60-78	70.03±5.36	57-78	–1.579	0.118
D1	73.23±9.65	60-90	72.48±8.89	59-90	–0.361	0.719
D2	72.55±10.55	60-90	69.90±8.84	56-90	–1.217	0.227
D3	72.88±10.96	60-90	68.83±9.20	56-90	–1.790	0.077
D4	72.63±10.74	60-100	68.98±8.00	56-90	–1.724	0.089
D5	71.75±9.93	60-90	71.15±10.01	55-90	–0.269	0.789
D6	70.58±9.49	54-90	67.40±8.42	59-85	–1.583	0.118
D7	71.93±11.33	60-100	68.80±7.78	56-90	–1.438	0.154

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (7): Comparison regarding Heart rate between two groups.

Heart rate	Group A N=40		Group B N=40		Independent *t*-test	
	Mean ± SD	Range	Mean ± SD	Range	*t*	*p*-value
H0	82.63±9.26	73.00-100.00	85.03±11.53	69.00-120.00	1.026	0.308
H1	83.40±10.78	71.00-108.00	85.73±16.00	65.00-118.00	0.762	0.448
H2	86.28±11.04	72.00-109.00	82.68±9.97	68.00-119.00	–1.531	0.130
H3	86.45±9.99	72.00-109.00	83.05±9.84	68.00-119.00	–1.534	0.129
H4	84.40±11.15	71.00-108.00	88.08±15.78	69.00-118.00	1.203	0.233
H5	82.13±10.11	60.00-100.00	82.33±10.17	65.00-100.00	0.088	0.930
H6	83.55±10.66	71.00-108.00	87.83±16.25	65.00-118.00	1.392	0.168
H7	84.53±11.19	71.00-108.00	86.75±16.37	65.00-118.00	0.710	0.480

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Table (8): Comparison between Group A (no. = 40) and Group B (no. = 40) regarding complications.

Complications	Group A		Group B		Chi-square-test	
	N	%	N	%	x	*p*-value
Nausea	3	7.5	2	5.0	0.213	0.644
Vomiting	2	5.0	3	7.5	0.213	0.644
Intraperitoneal injection	1	2.5	2	5.0	0.346	0.556
Transient femoral nerve palsy	0	0.0	0	0.0	–	–
Bowel hematoma	0	0.0	0	0.0	–	–
Local anesthetic toxicity	0	0.0	0	0.0	–	–

p-value >0.05: Non significant (NS). Group A = US guided QLB Group. N = Number.
p-value <0.05: Significant (S). Group B = US guided TAP block Group. * = Significant.

Discussion

The results of the present study indicated that for post-caesrean analgesia quadratus lumborum (QLB) provide good-quality analgesia and reduces the need for in post-operative analgesic in compare with transversus abdominis plane (TAP) block.

As effective constituents of multimodal analgesia, quadratus lumborum (QLB) and transversus abdominis plane (TAP) block are mainly used for postoperative analgesia in abdominal surgery [3].

The current study showed that, the mean duration of performing block in the QLB group was (9.45±1.77min) which was statistically significantly longer as compared with the TAP block group (5.98 ±1.76min) (p<0.001).

This came in agreement with El-Boghdadly [4], who showed that TAP block is easier to perform and requires less time and lower level of expertise than QLB.

In this study, there were no significant differences between two groups regarding vital signs (SBP, DBP and HR). There were no significant differences regarding vital signs (SBP, DBP and HR) in US guided QLB at different times in com-

parison to base line value. There were no significant differences regarding vital signs (SBP, DBP and HR) in US guided TAP block at different times in comparison to base line value.

In the current study, the mean duration of analgesia (indicted by the first request of analgesia) in the QLB group (5.7±0.97 hours) which was significantly longer as compared with the TAP block group (4.55±0.9 hours) (p<0.001).

In agreement with this study [5], who reported that the time for first analgesic request was significantly prolonged in QLB group (mean ± SD = 68.77±1.74 hours) as compared to TAP block group (13.3±1.21 hours) (p<0.001).

In the current study, the mean number of requests of analgesia in first postoperative 24 hours was significantly lower in QLB (3.3±0.46) than TAP block (3.75±0.54).

This agreed with Verma K. [5], who showed that in QLB group, number of analgesic request over 72 hours reduced significantly as compared to TAP block group.

In this study, the mean average of total analgesics (ketorolac and pethidine) consumption (mg) in the first postoperative 24 hours, was significantly lower in QLB than TAP block.

This cam in agreement with Naushin S. [6], who showed that patients who received QLB had significantly less analgesia consumption than patients who received TAP block.

On the other hand, [7] showed no statistically significant difference in the total postoperative analgesic consumption between QLB and TAP block group. Also, contrary to our results [4], observe that QLB was not associated with a reduction in 24 hours IV morphine when compared with TAP block.

In the current study, the VAS score was significantly lower in the QLB group along the whole duration of observation as compared with the TAP block group.

Similar results were obtained by Verma K. [5], who showed that the VAS scores were significantly better at all observation time in the QLB group than in the TAP group, Furthermore in agreement with our results.

On the contrary [7,8], showed that there was no difference in pain severity was found on the first postoperative day between the QLB and TAP block groups. Also [4], showed similar analgesic outcomes.

In the current study, there was no significant differences found between two groups regarding complications.

Conclusion:

Ultrasound guided quadratus lumborum and transverses abdominis plane blocks provided effective modality for control of postoperative pain associated with caesarean section. QLB was superior to TAP block for control of postoperative pain as it provides long-lasting analgesia and reduces consumption of opioids than TAP block. However, TAP block still technically easier than QL block.

References

1- KERAI S., SAXENA K.N. and TANEJA B.: (Post-caesarean analgesia: What is new? Indian J. Anaesth., 61: 200-14, 2017.

2- MITCHELL K.D., SMITH C.T., MECHLING C., WESSEL C.B., OREBAUGH S. and LIM G.: A review of peripheral nerve blocks for cesarean deliveryanalgesia. Regional Anesthesia and Pain Medicine, 45: 52-62, 2020.

3- LIU X., SONG T., CHEN X., ZHANG J., SHAN C., CHANG L., et al.: Quadratus lumborum block versus transversus abdominis plane block for postoperative analgesia in patients undergoing abdominal surgeries: A systematic review and meta-analysis of randomized controlled trials. BMC Anesthesiology, 20 (1): 1-10, 2020.

4- EL-BOGHDADLY K., DESAI N., HALPERN S., BLAKE L., ODOR P., BAMPOE S., et al.: Quadratus lumborum block vs. transversus abdominis plane block for caesarean delivery: A systematic review and network meta-analysis. Anaesthesia, 76 (3): 393-403, 2021.

5- VERMA K., MALAWAT A., JETHAVA D. and JETHAVA D.D.: Comparison of transversus abdominis plane block and quadratus lumborum block for post-caesarean section analgesia: A randomised clinical trial. Indian Journal of Anaesthesia, 63 (10): 820, 2019.

6- NAUSHIN S., SARDANA V., UJJAINIYA R., BHATHEJA N., KUTUM R., BHASKAR A.K. and SENGUPTA S.: Insights from a Pan India Sero-Epidemiological survey (Phenome-India Cohort) for SARS-CoV2. Elife, 10: e66537, 2021.

7- BORYS M., POTRĘC´-STUDZIN´SKA B., KUTNIK P., SYSIAK-SlAWECKA J., RYPULAK E., GĘCA T., et al.: The Effectiveness of Transversus Abdominis Plane and Quadratus Lumborum Blocks in Acute Postoperative Pain Following Cesarean Section-A Randomized, Single-Blind, Controlled Trial. International Journal of Environmental Research and Public Health, 18 (13): 7034, 2021.

8- ANJU PARIHAR, SHAZIA ASHRAF, KAUSER BENAZIR and WASIM RAFIQ: Ultrasound guided quadratus lumborum block and transversus abdominis plane block and for postooprative analgesia after lower segmental caesrean section. Indian Journal of Anaesthesia, 8 (1): 79-85, 2021.

دراسة الاحصار الموجه بالموجات فوق الصوتية للعضلة المستعرضة البطنية مقارنة باحصار العضلة الرباعية القطنية لتسكين الالام ما بعد الولادة القيصرية

خلفية: البحث يعتبر الألم الحادث بعد عملية الولادة القيصرية متغير ومتعدد العوامل تم استحداث طرق عديدة لتخفيف هذا اللألم حيث أصبح علاج الألم بعد العمليات الجراحية عنصراً أساسياً فى عالم التخدير.

\الهدف من \البحث: دراسة فاعلية تسكين الألام باستخدام الموجات فوق الصوتية لتخدير العضلة الرباعية القطنية مقارنة بتخدير العضلة البطنية المستعرضة بعد عمليات الولادة القيصرية عن طريق استهلاك المسكنات على مدار الاربع والعشرون الساعة الأولى.

\المرضى وطرق \البحث: بعد موافقة اللجان العلمية والاخلاقية لجامعة الازهر تم اختيار ثمانون من المرضى المقرر لهم إجراء عمليات قيصرية وتم تقسيمهم عشوائياً إلى مجموعتين متساويتين:

- مجموعة التخدير الموضعى للعضلة الرباعية القطنية.
- مجموعة التخدير الموضعى للعضلة البطنية المستعرضة.

وقد تم مراقبة العلا مات الحيوية للمرضى ودرجة الألم باستخدام مقياس التماثلية البصرية بعد الجراحة حتى تمام الاربع والعشرين سلعة الأولى كما تم رصد وقت احتياج المرضى لأول جرعة مسكنة لتسكين الألم وكذلك رصد الأستهلاك الكلى للعقاقير المسكنة من قبل المرضى فى خلال الأربع والعشرون ساعة الأولى بعد الجراحة كما تم رصد أى مضاعفات ما بعد الجراحة وتسجيلها. وقد تم إجراء الدراسة فى الفترة ما بين يناير ٢٠٢١ حتى سبتمبر ٢٠٢١ فى مستشفيات جامعة الازهر.

نتائج \البحث: كشفت نتائج هذه الدراسة أن التخدير الموضعى للعضلة الرباعية القطنية موجها بالموجات فوق الصوتية كان الأسلوب الأكثر فعالية فى توفير تسكين الألم بعد عمليات الولادة القيصرية مع الاستقرار التام فى العلامات الحيوية والدورة الدموية بالمقارنة مع التخدير الموضعى للعضلة البطنية المستعرضة موجها بالموجات فوق الصوتية.

\الاستنتاج: استخدام التخدير الموضعى للعضلة الرباعية القطنية باستخدام الموجات فوق الصوتية وكذلك استخدام التخدير الموضعى للعضلة البطنية المستعرضة باستخدام الموجات فوق الصوتية يوفرا طريقة فعالة للسيطرة على الألم بعد عمليات الولادة القيصرية مع تفوق التخدير الموضعى للعضلة الرباعية القطنية على التخدير الموضعى للعضلة البطنية المستعرضة من حيث درجات الألم، ومدة التسكين ومدة تسكين الألم، وكذلك كمية استهلاك المسكنات على الرغم من أن التخدير الموضعى للعضلة البطنية المستعرضة ما زال أسهل فى طريقة إعطائه عن تخدير العضلة الرباعية القطنية.