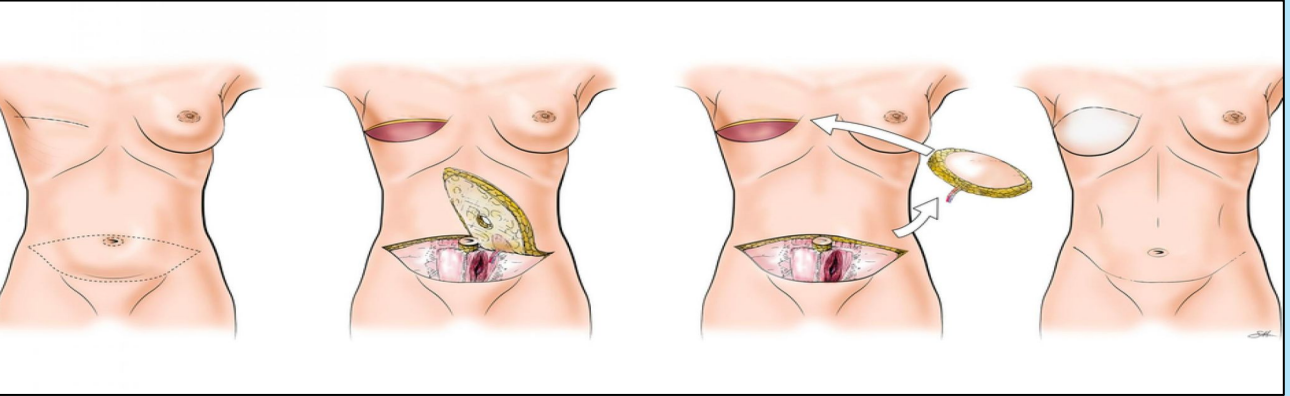


Anterior Quadratus Lumborum Block for Microvascular Free-Flap Breast Reconstruction following mastectomy: a propensity-score weighted study



PRESENTER:

Doris Pierson



BACKGROUND:

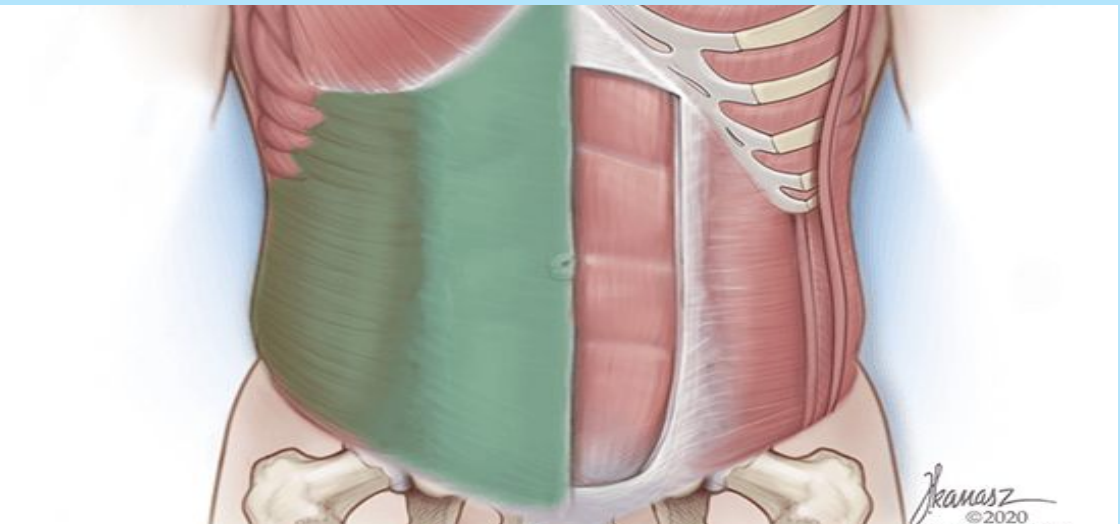
As part of a Continuous Quality Improvement (CQI) project for microsurgical free-flap breast reconstruction, anesthesia preoperatively placed anterior quadratus lumborum block (aQLB) was used to replace surgeon intraoperatively placed Transversus Abdominis Plane (sTAP) in its existing institutional early recovery after surgery (ERAS) protocol.

-We hypothesized that aQLB is superior to sTAP in DIEP pain control and functional recovery.

-Possible benefits of QL blocks over more anterior TAP blocks:

- larger dermatomal spread
- sympathetically-mediated pain coverage due to spread into the paravertebral space
- longer duration of analgesia (1)

-Although it is used in many abdominal procedures, the use of aQLB has not been extensively studied in the context of microvascular breast reconstruction.



When compared to intraoperative sTAP with liposomal bupivacaine, pre-operative ultrasound guided aQLB with DXP and MPA is an effective alternative leading to similar opioid consumption and earlier ambulation for DIEP flap reconstruction.

METHODS:

DIEP flap surgical patients (N=413)

- Surgeon TAP (sTAP) (N=254)**

 - intra-operative
 - bupivacaine + liposomal bupivacaine
- Bilateral aQLB +/- supplemental blocks (N=159)**

 - pre-operative
 - bupivacaine + dexamethasone and methylprednisolone acetate

- **Primary outcome:**
 - total postoperative opioid consumption
- **Secondary outcomes:**
 - length of stay in the post-anesthesia care unit (PACU) and hospital
 - time to first ambulation
 - average daily pain scores

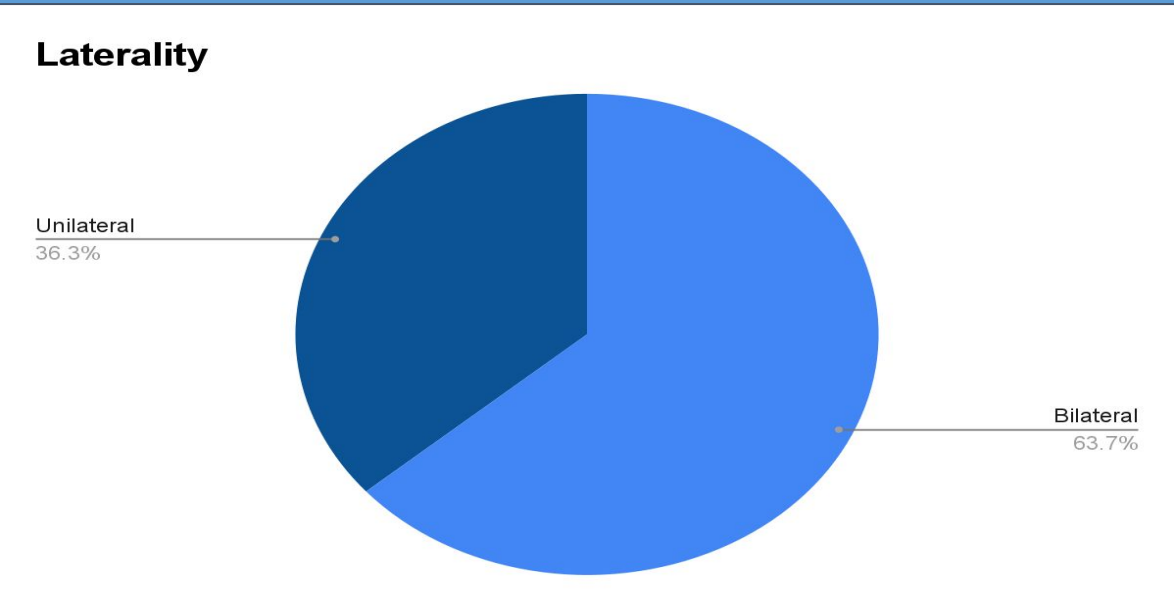
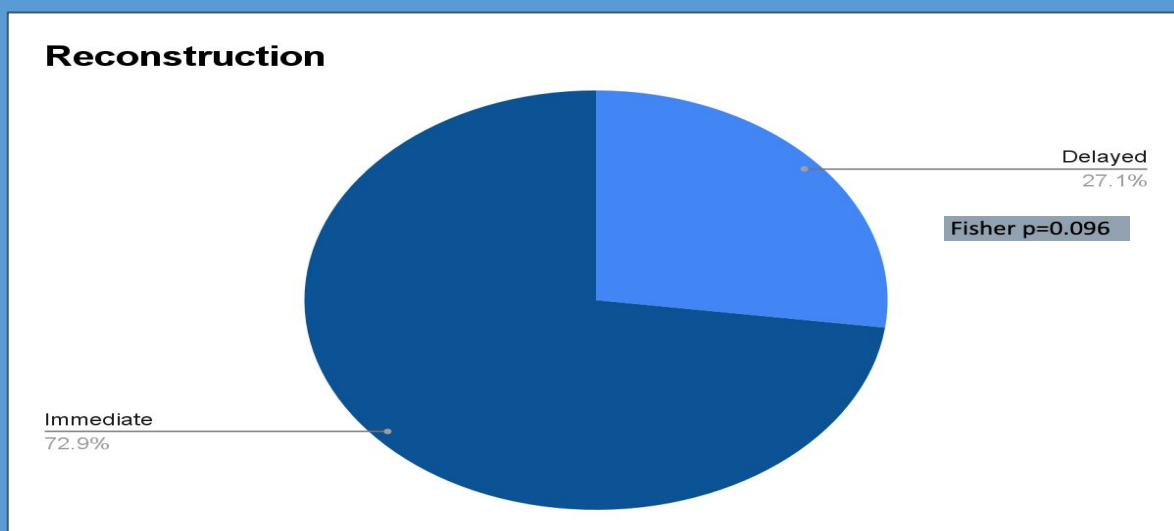
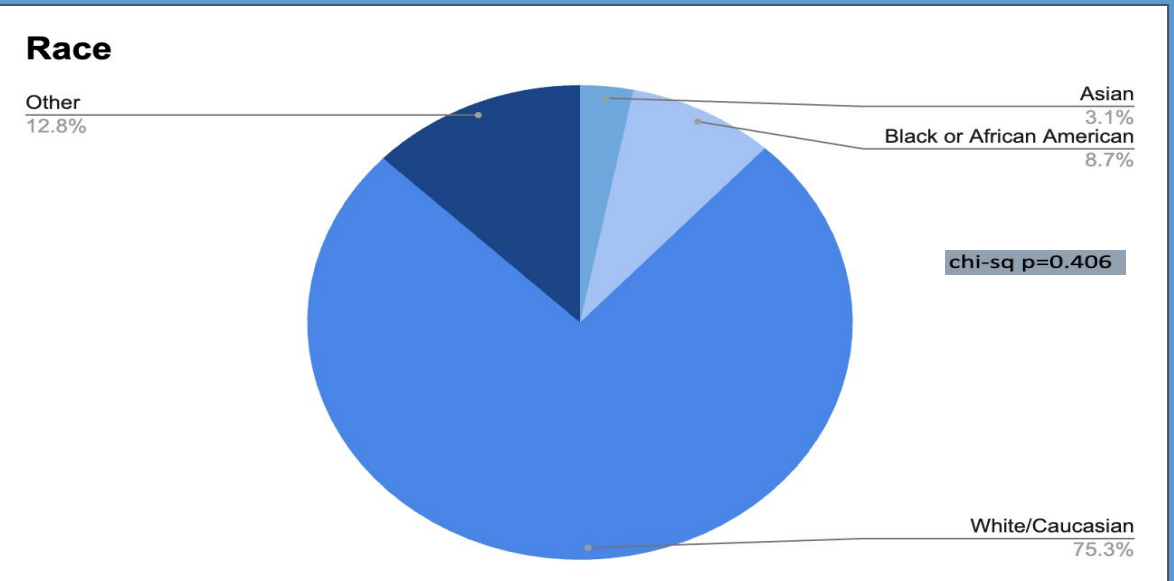
RESULTS:

Outcomes prior to sIPTW

Variables	sTAP (N=254)	aQLB (N=159)	Total (N=413)	P value*
Average Daily MME during hospitalization	53.3 (35.7-75.4)	50.4 (37.4-70.2)	52.5 (36.3-72.9)	0.556
Total Perioperative MME	100 (75.0-125)	91.0 (68.0-124)	98.5 (72.0-125)	0.134
Total Postoperative MME	75.3 (25.1-157)	67.5 (22.5-120)	75.0 (23.4-143)	0.286
Average Daily Pain	2.83 (1.16)	3.42 (1.36)	3.06 (1.27)	<0.001
Time To First Ambulation (hours)	42.5 (27.0-61.1)	37.1 (17.4-47.9)	40.3 (22.8-58.4)	<0.001
PACU LOS (Hours)	2.28 (1.87-2.82)	1.88 (1.53-2.62)	2.18 (1.70-2.75)	<0.001
Hospital LOS (hours)	80.0 (78.0-103)	79.0 (77.0-101)	80.0 (77.0-102)	0.002

Notes: data are presented as mean (SD) for Average Daily Pain score, median (IQR) for the other outcomes. Abbreviations: PACU, post anesthesia care unit; sIPTW, stabilized inverse propensity of treatment weighting; aQLB, anterior quadratus lumborum block; sTAP, surgeon-placed Transversus Abdominis Plane LOS, length of stay; MME, milligram morphine equivalent; * T test for Average Daily Pain score, Wilcoxon rank sum test for the other outcomes.

Patient Variables:

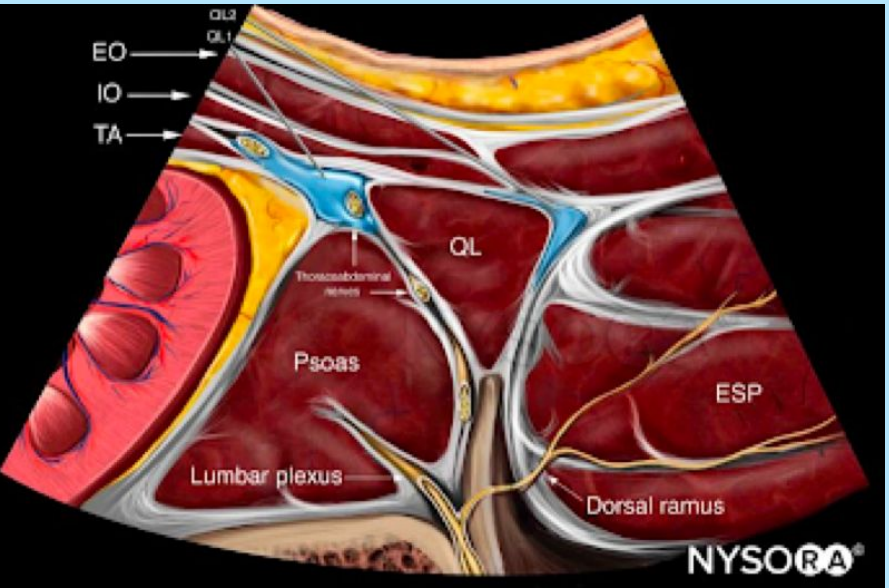


Variables	sTAP (N=254)	aQLB (N=159)	Total (N=413)	P value*
Age	53.1 (9.95)	53.6 (11.0)	53.3 (10.3)	0.644
ASA level				0.991
1-2	158 (62.2%)	98 (61.6%)	256 (62.0%)	
3-4	96 (37.8%)	61 (38.4%)	157 (38.0%)	
BMI (kg/m2)	29.1 (5.97)	29.1 (5.41)	29.1 (5.76)	0.881
History of chronic pain	30 (11.8%)	30 (18.9%)	60 (14.5%)	0.066
History of anxiety	2 (0.8%)	3 (1.9%)	5 (1.2%)	0.378
History of Substance Use Disorder	32 (12.6%)	12 (7.5%)	44 (10.7%)	0.146
Operating Surgeon (de-identified)				<0.001
A	106 (41.7%)	20 (12.6%)	126 (30.5%)	
B	136 (53.5%)	137 (86.2%)	273 (66.1%)	
C	12 (4.7%)	2 (1.3%)	14 (3.4%)	

Outcomes after sIPTW

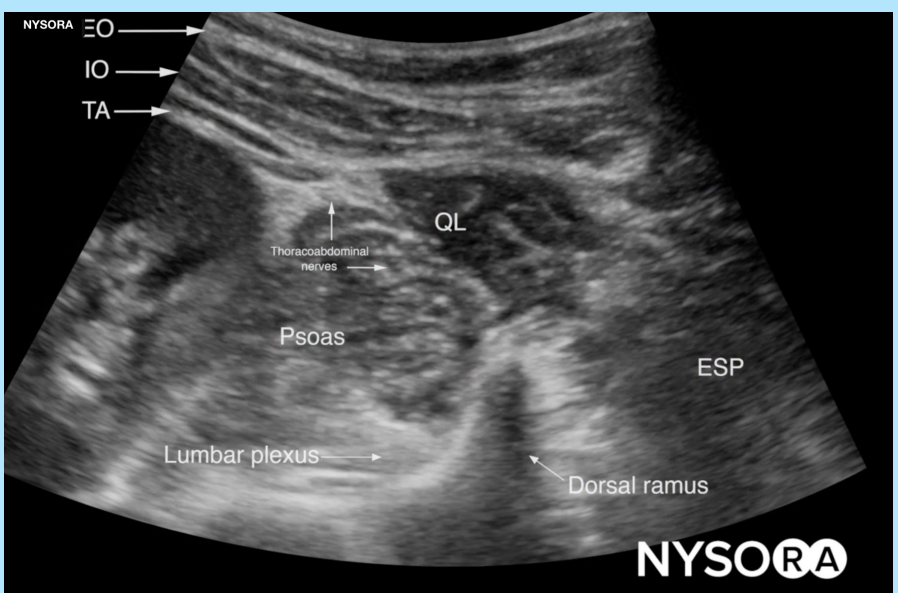
Outcomes	Mean Ratio	95% CI	P value*
Average Daily MME during hospitalization	0.96	0.87-1.06	0.414
Total Perioperative MME	0.98	0.90-1.06	0.580
Total Postoperative MME	0.88	0.70-1.12	0.362
Time to first ambulation (hours)	0.83	0.72-0.94	0.015
PACU LOS (hours)	0.92	0.81-1.05	0.333
Hospital LOS (hours)	0.95	0.90-1.01	0.166
	Mean Difference	95% CI	P value*
Average Daily Pain Scores	0.71	0.46-0.96	<0.001

Abbreviations: PACU, post anesthesia care unit; IPTW, inverse propensity of treatment weighting; Block group, anterior quadratus lumborum block group; LOS, length of stay; Post op: postoperative; Periop, perioperative; CI, confidence interval. * All except the primary outcome (average daily MME during hospitalization) were adjusted for false discovery rate.



Conclusions:

- Compared to sTAP, the aQLB group did not show a significant decrease in average daily, total perioperative, or total postoperative opioid consumption.
- The average pain score in aQLB group is 0.71 higher than sTAP, p<0.001.
- The statistical significance in shorter PACU LOS and hospital LOS were both lost after sIPTW and false discovery rate (FDR) adjustment.
- The statistically significant reduction on the time to first ambulation was maintained (0.83 (0.72-0.94), p = 0.015).



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References:

1. Blanco, Rafael; Ansari, Tarek; Girgis, Emad. Quadratus lumborum block for postoperative pain after caesarean section: A randomised controlled trial. European Journal of Anaesthesiology 32(11);p 812-818, November 2015. | DOI: 10.1097/EJA.0000000000000299

Images from:

- <https://www.bcm.edu/healthcare/specialties/aesthetics/reconstructive-surgery/breast-reconstruction/diep-flap>
- <https://www.nysora.com/topics/regional-anesthesia-for-specific-surgical-procedures/abdomen/ultrasound-guided-transversus-abdominis-plane-quadratus-lumborum-blocks/>
- <https://myblockbuddy.com/all-lessons/quadratus-lumborum-block-ql3/>

