Transversus Abdominis Plane (TAP) Blocks with Single-Dose Liposomal Bupivacaine Reduce Length of Stay Following Abdominally-Based Microsurgical Breast Reconstruction

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INTRODUCTION: Microsurgical abdominally-based breast reconstruction (MABR) typically entails an inpatient length of stay between three to five days[1,2]. However, most payors reimburse for only the first two hospital days after routine mastectomy regardless of the breast reconstruction method[3]. Moreover, free flap take-back and salvage rates both drop drastically after 48 hours[4] resulting in rapidly rising incremental hospital costs for flap monitoring beyond the second post-operative day. In this study, we examined the effect of bilateral single-dose TAP nerve blockade using long-acting liposomal bupivacaine (BTBLB)[5] on length of stay after MABR to see if it facilitated safe discharge by post-operative day two.

MATERIALS AND METHODS: A single-center, single-surgeon retrospective analysis of patients undergoing MABR between 2010 and 2015 was performed. Over the study period, the practice evolved from no locoregional analgesia (historic control), to continuous bupivacaine infusion TAP-catheters (CBITC) to BTBLB. Trans-fascial injections were performed intra-operatively under ultrasound-guidance by the operating surgeon. A total of 30cc of a liposomal bupivacaine formulation was injected per side into the transversus abdominis plane. A non-narcotic pain control regimen was used post-operatively and supplemented with narcotic analgesics as needed. Demographic factors, length of stay, inpatient opioid consumption and complications were reviewed and compared among the three groups.

RESULTS: Between December 2010 and December 2015, 128 consecutive patients underwent a total of 182 abdominally-based free flaps. Of the 128 patients, 40 (62 flaps) patients received BTBLB, 48 (66 flaps) received CBITC, and 40 (54 flaps) received no locoregional analgesia. Patients who received BTBLB required significantly less narcotics during the first 48 hours (1st 24hrs: 6.6+-7.2mg vs 54.6+-52.0mg, $p<0.0001$, and 2nd 24hrs: 8.3+-8.3mg vs 34.8+-44.6mg, $p=0.02$) and had a significantly shorter hospital stay compared to historic controls (2.65+-0.66 days vs. 4.05+-1.26 days, $p<0.0001$) with most BTBLB patients (n=16, 67%) leaving on post-operative day two during the final study year. There was no other significant difference in major complication rates or flap loss rates between the BTBLB, CBITC, and historic control groups.

CONCLUSION: Healthcare reform is creating pressure to reduce length of stay and associated hospital costs. TAP-blockade with long-acting liposomal bupivacaine performed during microsurgical abdominally-based breast reconstruction facilitates early patient discharge by post-operative day two without increasing complications or flap loss rates.

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