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The Effect of Local Anesthetic Technique on Breast Cancer - Related Outcomes: a Systematic Review

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Introduction: Breast cancer is the most incident cancer in women worldwide. A multidisciplinary therapeutic approach may increase survival rates and quality of life, and surgery remains its main support. Surgical removal of the primary tumor occurs with the risk of dispersal of neoplastic cells into the blood and lymphatic systems, as well as the risk of permanence of residual neoplastic cells. Despite curative intent, a combination of perioperative factors leads to a release of chemical mediators that may, paradoxically, be direct or indirectly associated with tumor progression. Local anesthetic technique, as thoracic paravertebral block (TPVB), attenuates neuroendocrine response to surgical stress and may preserve perioperative immune function. Given that surgical stress response seems to increase opportunities for cancer dissemination and metastasis, this anesthetic approach is hypothesized as beneficial to long-term prognosis. The objective of this study was to evaluate the effect of local anesthetic technique on breast cancer-related outcomes in the clinical setting.

Methodology: The PubMed database was assessed through Mesh descriptors: “mastectomy”, “mastectomy, radical”, “anesthesia, local”, “recurrence”, “neoplasm recurrence, local”. Reviews, editorials and comments were excluded. The search provided 65 articles, from which 11 were identified as potentially relevant after title and abstract reading. After integral articles analysis, 6 studies were selected.

Results: The articles were published from 2006 to 2019, with total samples varying between 129 and 2108 patients. Of these studies, 4 were retrospective, 1 presented a retrospective review of prospective database, and only 1 was a multicenter randomized clinical trial. The average observation time varied between 28.8 to 72 months, and 1 study was stopped after a preplanned futility boundary was crossed.

Discussion: The majority of the selected studies are retrospective, being conditioned to the accuracy and availability of the information. Also, some assessed outcomes may be influenced by unmeasured factors, what could be confounding. The majority of the studies did not show improvement in cancer-related outcomes with the usage of TPVB, however, it may reduce the administration of perioperative opioids and be a feasible therapeutic approach to reduce postoperative pain intensity in breast cancer treatment, becoming a relevant intervention to facilitate recovery, accelerate hospital discharge and reduce care costs after the surgery.

Conclusion: Although preclinical studies have suggested potential benefits of local anesthesia to reduce cancer recurrence and improve overall survival, this review did not find enough clinical evidence to support thoracic paravertebral block for this purpose in breast cancer surgery. However, local anesthesia may impact the reduction of intraoperative opioid and support pain management in the postoperative period, potentially improving patient's health-related quality of life.

Keywords: Breast neoplasms; Mastectomy; Anesthetics, local.