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A Randomised Controlled Trial Comparing Tumescent Dissection Technique vs Non-Tumescent Technique in Breast Surgeries

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Abstract: ***Introduction: Breast cancer is the most common malignancy among women worldwide and remains a major cause of morbidity and mortality. Tumescent dissection has been suggested to improve surgical outcomes compared to the traditional non-tumescent approach. This study aimed to evaluate the effects of tumescent dissection versus non-tumescent techniques in breast surgeries. Methods: This prospective randomized controlled study compared outcomes between two groups undergoing breast surgery using either the tumescent dissection technique or the conventional non-tumescent technique. Outcomes assessed included operative time, intraoperative blood loss, postoperative pain, seroma formation, flap viability, drain output, and postoperative complications. Results: The tumescent group demonstrated significantly reduced intraoperative blood loss, shorter operative duration, and lower postoperative pain scores compared with the non-tumescent group (p<0.001). Postoperative drain volume and incidence of seroma were also significantly reduced in the tumescent group. No statistically significant differences were noted in complication rates or flap necrosis between the groups. Conclusion: Tumescent dissection in breast surgery improves surgical outcomes by reducing intraoperative bleeding, operative time, postoperative pain, and seroma formation, without increasing complication rates. It is a safe and effective alternative to conventional methods.***

Keywords: Tumescent technique, breast surgery, mastectomy, seroma, postoperative pain

1. Introduction

Breast cancer is the leading cancer among women globally, surpassing lung cancer in incidence. In India, it accounts for over 14% of cancer cases among women, posing a significant public health burden. Advances in surgical techniques aim not only to improve oncological safety but also to minimize morbidity and enhance patient quality of life.

Conventional mastectomy and breast-conserving surgeries are associated with complications including blood loss, seroma, pain, and flap necrosis. The tumescent dissection technique, adapted from liposuction, involves infiltration of a diluted solution of local anesthetics and vasoconstrictors into tissues, producing hydrodissection, hemostasis, and prolonged analgesia. This technique has shown potential benefits in breast surgery by reducing bleeding and facilitating dissection.

This study was designed as a randomized controlled trial to compare outcomes of tumescent dissection versus non-tumescent techniques in breast surgeries.

2. Materials and Methods

a) Study Design: A prospective randomized controlled trial was conducted in a tertiary care teaching hospital.
b) Participants: Patients undergoing breast surgeries (mastectomy or breast-conserving surgery) for carcinoma were included. Patients with contraindications to local anesthetics or coagulopathies were excluded.
c) Randomization: Eligible patients were randomized into two groups: the tumescent dissection group and the non-tumescent group.
d) Intervention: The tumescent group received infiltration with a solution containing lidocaine, adrenaline, sodium bicarbonate, and saline prior to dissection. The control group underwent standard dissection without infiltration.
e) Outcomes: Primary outcomes included intraoperative blood loss, operative duration, and postoperative pain. Secondary outcomes included seroma formation, drain output, day of drain removal, wound complications, and flap viability.
f) Statistical Analysis: Data were analyzed using SPSS software. Continuous variables were expressed as mean ± SD and compared using t-tests. Categorical variables were analyzed using chi-square tests. A p-value <0.05 was considered statistically significant.

3. Results

a) Demographics: The study included patients predominantly between the ages of 41 and 70 years. There were no significant differences between the two groups in baseline demographic or clinical characteristics.
b) Operative Parameters: The mean operative duration was significantly shorter in the tumescent group compared to the non-tumescent group. Intraoperative blood loss was markedly lower in the tumescent group (p<0.001).
c) Postoperative Pain: Pain scores were significantly reduced in the tumescent group during the first 48 hours post-surgery.

d) Drain Output and Seroma: Postoperative drain volume and incidence of seroma were significantly lower in the tumescent group. Day of drain removal did not differ significantly between groups.
e) Complications: There were no significant differences between groups regarding wound complications or flap necrosis.

4. Discussion

This randomized controlled trial demonstrated that tumescent dissection is associated with improved outcomes compared to the conventional non-tumescent technique in breast surgeries. The findings are consistent with previous reports highlighting the hemostatic and analgesic benefits of tumescent infiltration.

The reduction in intraoperative blood loss can be attributed to the vasoconstrictive effect of adrenaline, while hydrodissection facilitates surgical dissection and reduces operative time. Postoperative pain reduction is likely due to the prolonged analgesic effect of lidocaine in the infiltrated solution.

Seroma formation remains a common complication following breast surgery. This study demonstrated that tumescent dissection significantly reduces seroma formation and drain output, thereby improving patient comfort and reducing hospital stay.

Importantly, the tumescent technique did not increase the incidence of complications such as flap necrosis or wound infection, supporting its safety profile.

5. Conclusion

Tumescent dissection technique in breast surgery is a safe and effective alternative to the conventional non-tumescent approach. It reduces intraoperative blood loss, operative time, postoperative pain, and seroma formation without increasing complications. Adoption of this technique could improve patient outcomes and surgical efficiency.

References

[1] Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424.
[2] Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2021;71(3):209-249.
[3] Krag DN, Anderson SJ, Julian TB, Brown AM, Harlow SP, Costantino JP, et al. Sentinel-lymph-node resection compared with conventional axillary-lymph-node dissection in clinically node-negative patients with breast cancer: overall survival findings from NSABP B-32 randomised phase 3 trial. Lancet Oncol. 2010;11(10):927-933.
[4] Urban JA. Significance of axillary node levels in cancer of the breast. Am J Surg. 1953;86(3):366-372.
[5] Morton DL, Wen DR, Wong JH, Economou JS, Cagle LA, Storm FK, et al. Technical details of intraoperative lymphatic mapping for early stage melanoma. Arch Surg. 1992;127(4):392-399.