



Research Article

The Cosmetic Effect of Intra Cavity Injection of Saline in Patients with Breast Conserving Therapy

Talaeizadeh Abdolhasan, Salmasi Amirahmad, Rezaee Alireza*

Department of General Surgery, Imam Hospital, Jondishapour University, Ahvaz, Iran

Abstract:

Introduction: For many women with breast cancer, breast conserving therapy (BCT) is preferable to total mastectomy because BCT produces survival rates equivalent to those after total mastectomy while preserving the breast. However the effect of breast conservation therapy on aesthetic outcome is not minimal and those patients may benefit from reconstructive consultation. Here, we present a simple and safe procedure with shortened hospital stay for centers where plastic specialty services are not available.

Methods: It was a prospective study. Twenty one women with breast cancer underwent breast-conserving surgery followed by injection of 200-400 cc of normal saline into the cavity. At 6 months follow up, all patients were evaluated of asymmetry, deformities, satisfying with the end result and requesting or requiring further cosmetic surgery.

Results: Twenty one patients were enrolled, aged 23-59 years. All margins were negative on post operative pathologic study. At 6 months follow up, all patients had some degree of asymmetry, but were satisfied with the result; none requested plastic surgery.

Conclusion: Saline injection into the cavity is a safe and quick technique to preserve breast contour for patients who do not access onco-plastic surgery.

Keywords: Breast cancer; Breast conserving surgery; Saline injection

Reviewer: Vincenzo Ravo, PhD, A.S.L. Napoli 1 Centro, Italy

Academic Editor: Xiaoning Peng, PhD, Hunan Normal University School of Medicine, China

Received: May 4, 2014 **Accepted:** June 16, 2014 **Published:** July 23, 2014

Competing Interests: The authors have declared that no competing interests exist.

Copyright: 2014 Alireza R *et al.* This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

***Correspondence to:** Rezaee Alireza, Department of General Surgery, Imam Hospital, Jondishapour University, Ahvaz, Iran.

Email: a.r.rezaee@gmail.com

Introduction

Breast cancer is one of the most common malignancies among Iranian women. Modern therapies include both surgical resection for local disease and medical therapy for systemic disease [1]. There are several surgical options for primary treatment of breast cancer such as modified radical mastectomy and breast conserving therapy. Breast conservation involves resection of the primary breast cancer with a margin of normal-appearing breast tissue, adjuvant radiation therapy, and assessment of regional lymph node status [2].

Several randomized prospective studies have documented that segmental resection (lumpectomy), axillary dissection, and postoperative irradiation and chemotherapy result in disease-free and overall survival rates equal to those of modified radical mastectomy [3].

However, the removal of adequate volumes of breast tissue to achieve tumor-free margins and reduce the risk of local relapse may compromise the cosmetic outcome, causing unpleasant results.

Oncoplastic techniques provide the opportunity for enhancing quality of life by improving cosmetic outcome and psychological well-being.

Here, we present a simple and safe procedure with shortened hospital stay for centers where plastic specialty services are not available.

Methods

This prospective study was undertaken at hospitals of Jondishapour University from 2009-2011. Twenty one women with breast cancer based on age, tumor size, pathological characteristics, and their preference were considered for enrolling in this study. The patients were fully informed and consented regarding the details of the procedure.

Excluding criteria included: previous chest wall irradiation, pregnancy, presence of severe collagen vascular disease, multiple primary tumors within the

breast, an extensive intraductal component, large tumor size, lymphatic vessel invasion, lobular histologic findings and lack of access to a radiation therapy facility.

The patients underwent lumpectomy with 2cm margins of the affected quadrant. The specimen was immediately orientated prior to submission to the pathologist with sutures. Hemostasis was then meticulously secured within the cavity. The wound has been closed with a single layer continuous absorbable 3/0 suture making the closure water-tight, for the subcutaneous tissue and non absorbable 4/0 for the skin. Axillary lymph node dissection was performed through a separate incision. Then 200-400cc of saline dependent on the size of the cavity was injected. Hospital stay ranged between 1-2 days. All patients were advised to wear external support. All patients underwent postoperative adjuvant therapy starting 2 weeks after surgery.

Clinical examinations were employed for post operative assessment and follow up on outpatient basis for six months. At 6 months follow up, all patients were evaluated of asymmetry, deformities, satisfying with the end result and requesting or requiring further cosmetic surgery.

Results

Twenty one patients underwent lumpectomy with intra-operative saline injections. All patients elected to undergo breast-conserving surgery if feasible. Age ranged between 23-59 years (Mean: 41), tumor size ranged 2-4 cm. The most frequent pathologic feature was invasive ductal carcinoma (66.7%), and 42.9% of patients were in stage IIA. Axillary lymph nodes were involved by tumoral cells in 47.6% of patients. All margins were negative on pathologic study. The contour of the breast was restored with saline, which prevented the redundant skin from caving in and adhering to the chest wall. All patients underwent further treatment with adjuvant radiotherapy and chemotherapy. Follow up based on physical examination at 4-6 weeks post operative period have

shown mild–moderate degrees of asymmetry, while breast contour was preserved. One patient developed spontaneous drainage of the saline due to wound dehiscence that was excluded from study.

There were not any reports of complications of the radiation therapy. At 4-6 months follow up, all patients noticed some degree of asymmetry in the form of difference in size but not deformities, yet all were satisfied with the end result and none requested or required further cosmetic surgery.

Discussion

Lumpectomy and postoperative radiation therapy, also called breast conservation therapy (BCT), with an efficacy equivalent to that of mastectomy is now an established surgical modality and is the preferred standard of care for management of women with early-stage breast cancer. Recent reports have suggested that the effect of breast conservation therapy on aesthetic outcome is not minimal and that patients may benefit from reconstructive consultation.

Bajaj evaluated 21 patients who had undergone breast conservation therapy to measure objectively the aesthetic change and whether the extent of change is significant enough (objectively and subjectively) to warrant plastic surgery consultation. He considered 2 SD above the control mean as significant and indicated that breast conservation therapy can cause significant asymmetry; thus, an option for plastic surgery consultation as part of the treatment protocol is warranted [4].

Many options have been introduced in recent years to optimize the efficacy of conservative surgery both in terms of local control and cosmetic results such as 3-D ultrasound navigation system [5], Transposition of adipose tissue [6], Latissimus dorsi miniflaps [7], breast implants [8] and mammoreduction combined with breast conserving treatment [9].

For the first time, Guldvog et al evaluated 548 breast cancer patients who have been operated with

saline instillation into the cavity. They found out that 85% of the BCS cases were quite satisfied with the result wanting no further surgery, and out of the 15% wanting oncoplastic surgery half of these just needed reduction on the other side. They concluded that saline instillation can optimize BCS, minimizing loss of the breast and reducing the need for plastic surgical expertise [10].

Maha evaluated Twenty-four patients who underwent extended quadrantectomy with intra-operative saline injections. Follow up with MRI at immediate post operative period T2 images axial and sagittal views have demonstrated the saline filling the cavity restoring the breast contour. Further, at 4-6 months follow up have shown mild–moderate degrees of asymmetry, yet breast contour is preserved. Saline was completely absorbed and the cavity has been filled by lipo-fibrous tissue.

So saline is gradually been absorbed by the raw surfaces, yet serum is also being concurrently secreted thereby retaining the cavity open for a longer period of time forming a therapeutic seroma preventing the redundant skin from caving in and adhering to the chest wall until natural tissue remodeling takes place. Maha and others concluded that injecting saline into cavities temporarily prevents the caving in of the redundant skin, which has the tendency to permanently adhere to the fascia thereby preventing gross deformities [11].

We evaluated 21 patients operated with saline injection in our study and follow up was based on serial physical examinations, like Bajaj's study. However Maha's follow up was based on the both MRI and examinations.

One patient developed wound dehiscence in immediate post-operative period resulted in saline drainage and was excluded from the study.

At 4-6 months follow up, all patients noticed some degree of asymmetry but not deformities, and all were satisfied with the end result and none requested or required further cosmetic surgery.

Conclusion

Saline injection into the cavity is safe, effective, with high satisfaction among patients. It is not a definite cosmetic breast surgery and should be considered in centers where the onco-plastic team approach is not readily available.

References

1. Yeo C, Cameron J: Exocrine pancreas, in Townsend C, *et al* (eds): Sabiston's Textbook of Surgery. *Lippincott-Raven*. 2008; 1112
2. Newman LA, Washington TA: New trends in breast conservation therapy. *Surg Clin North Am*. 2003; 83:841
3. Fisher B, Redmond C, Poisson R, *et al*: Eight year results of a randomized clinical trial comparing total mastectomy and lumpectomy with or without irradiation in the treatment of breast cancer. *N Engl J Med*. 1989; 320:822
4. Bajaj AK, Kon PS, Oberg KC, Miles DA. Aesthetic outcomes in patients undergoing breast conservation therapy for the treatment of localized breast cancer. *Plastic and Reconstructive Surg*. 2004; 114:1442-14429
5. Inoue T, Tamaki Y, Sato Y, Nakamoto M, Tamura S, Tanji Y, *et al*. Three-dimensional ultrasound imaging of breast cancer by a real-time intraoperative navigation system. 2005; 12:122-129
6. Noguchi M, Minami M, Earashi M, Taniya T, Miyazaki I, Nishijima H, *et al*. Oncologic and cosmetic outcome in patients with breast cancer treated with wide excision, transposition of adipose tissue with latissimus dorsi muscle, and axillary dissection followed by radiotherapy. *Breast Cancer Res Treat*. 1995; 35:163-171
7. Rainsbury RM. Breast-sparing reconstruction with latissimus dorsi miniflaps. *Eur J Surg Oncol*. 2002; 28:891-895
8. Kulmala I, Boice JD Jr, McLaughlin JK, Holmich LR, Pakkanen M, Lassila K, *et al*. A feasibility study of magnetic resonance imaging of silicone breast implants in Finland. *J Long Term Eff Med Implants*. 2005; 15: 9-14
9. Kaur N, Petit JY, Rietjens M, Maffini F, Luini A, Gatti G, *et al*. Comparative study of surgical margins in oncoplastic surgery and quadrantectomy in breast cancer. *Ann Surg Oncol*. 2005; 12: 539-545
10. Guldvog I, Podhorny N, Begic A.. Central Hospital of Telemark, Porsgrunn, Telemark, Norway The saline instillation method gives high percentage of breast conserving surgery, few reresections, few local relapses, very few patients needing reconstruction and few oncoplastic operations. 2006 Annual San Antonio Breast Cancer Symposium, December 14-17 2006, San Antonio, Texas
11. Maha SA, Abdel Hadi. Can saline be an alternative to aesthetic surgery in extended breast quadrantectomy?. *Saudi Med J*. 2007; 28: 201-205