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Female plastic and reconstructive surgeons' personal decision making for breast cancer treatment and reconstruction

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Abstract
Introduction No original articles have been published exploring female surgeons' preferences for breast cancer treatment and reconstruction if they were to be diagnosed with breast cancer.
Materials and methods 107 female breast plastic and reconstructive surgeons were surveyed as to the methods of breast cancer treatment and reconstruction they would opt for if they were diagnosed with a 2 cm invasive breast carcinoma.
Results 75% stated that they would opt for mastectomy rather than undergo breast conserving surgery and radiation (21%). Most (95%) of those choosing a mastectomy would opt for reconstruction. For reconstruction choices, 50% of those surveyed would have autologous breast reconstruction with abdominal tissue (38% deep inferior epigastric perforator flap; 12% transverse rectus abdominis muscle flap). 26% would choose tissue expansion with implant and 19% would opt for a latissimus dorsi flap. For those choosing tissue expansion with implant reconstruction 64% would choose a silicone implant, 9% would choose a saline implant and 27% felt either type of implant would be acceptable. For those choosing latissimus dorsi flap with implant reconstruction, 69% would choose a silicone implant, 13% would choose a saline implant and 19% felt either type of implant would be acceptable.
Discussion Female surgeons offer an exclusive insight into surgical outcomes following breast cancer therapy and reconstruction. This study suggests that due to their clinical experiences they have knowledge as to outcomes and consequences of breast cancer treatment and reconstruction and their choices do not always adhere to current guidelines.

Keywords Breast cancer · Ablative surgery · Reconstructive surgery

Introduction

Over 1.2 million cases of breast carcinoma in women occur worldwide annually [1–3]. Breast carcinoma is the most frequently diagnosed malignancy in women worldwide [1–3]. Twenty-two percent of new cancer cases in women are due to breast carcinoma [1–4]. The lifetime probability of a woman developing breast carcinoma worldwide is as high as one in eight [1–4]. Death rates from breast carcinoma have steadily decreased in women since 1990 [4]. This decrease is due to a combination of earlier detection and improved treatment. Approximately half of those patients who require surgery for breast cancer will be referred for postoperative radiotherapy. After a steady decline, mastectomy rates have increased in recent years [5]. Fewer than 20 percent of eligible women undergo breast reconstruction after treatment for breast carcinoma [2, 6].

There is a growing interest in understanding the surgical treatment decision-making process for patients with breast cancer [7, 8]. Many prospective randomised trials have shown equivalent survival after breast-conserving surgery and radiation and after mastectomy for women with stage I and II breast carcinoma [9–12]. In spite of this, mastectomy

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remains a common treatment for women with both invasive and intraductal carcinoma [13, 14]. It has been proposed that the large variation in patterns of surgical treatment is evidence of failure to involve female patients in the decision-making process for surgical therapy [7, 8, 15]. However, work examining the surgical treatment decision-making process for women with breast carcinoma suggests that greater patient involvement in the decision-making process is associated with higher rates of mastectomy [12]. All else being equal, the option of breast reconstruction may make mastectomy more appealing to women who strongly value breast preservation [8].

Women who decide to undergo breast reconstruction are exceptional, they have greater fortitude than others who suffer from the same deformities but dare not face an operation. They may even have made their decision alone, without support from their families or even doctors. For those women undergoing mastectomy, significant advances in reconstruction techniques provide several options for breast reconstruction [16]. These women go through a maze of decisions to whether they will opt for breast conservation or will choose a mastectomy with reconstruction. Patients rely on surgeons for guidance and often ask the surgeon which option they would choose, if they were the patient. When faced with these complex management problems, it is would be interesting to see how female reconstructive surgeons would deal with their own potential reconstructions. Studies have been done for patient satisfaction regarding their method of reconstruction, but no studies have been done as to surgeons' preferences regarding type of reconstruction [17–24]. For the surgeon, reconstructive breast surgery always a challenge as it is demanding surgery in which perfect results are never achieved and little is known about surgeons' perceptions regarding the decision-making process for reconstructive breast surgery. The aim of this study was to explore the opinions of female plastic surgeons regarding breast reconstruction, if they themselves required breast reconstruction after surgical ablation of a breast carcinoma.

Materials and methods

A questionnaire was developed for this study to inquire about female doctors preferences for breast reconstruction, if they were to be diagnosed with breast carcinoma. Female plastic and reconstructive surgeons were polled by face-to-face questionnaire by the author to the methods of breast cancer treatment and reconstruction they would opt for if they were diagnosed with 2 cm invasive breast carcinoma. These surgeons were approached at six international congresses from 2007–2010.

Results

107 female plastic and reconstructive surgeons were surveyed. The majority stated that they would opt for mastectomy ± reconstruction (75%) rather than undergo breast conserving surgery and radiation (21%) (Fig. 1). Most (95%) of those choosing a mastectomy would opt for reconstruction (Fig. 1).

For their reconstruction choices, 50% of those surveyed would choose a deep inferior epigastric artery perforator (DIEP) flap or transverse rectus abdominis musculocutaneous (TRAM) reconstruction flap reconstruction (38% DIEP: 12% TRAM) (Fig. 2). 26% would choose tissue expansion with implant (Fig. 2). Only 19% would opt for a latissimus dorsi flap if all methods of reconstruction were available to them (Fig. 2). Interestingly, 4% of the female surgeons would not want a reconstruction (Fig. 2).

For the women choosing tissue expansion with implant reconstruction 64% would choose a silicone implant, 9% would choose a saline implant while 27% felt either type of implant would be acceptable (Fig. 3). For women choosing

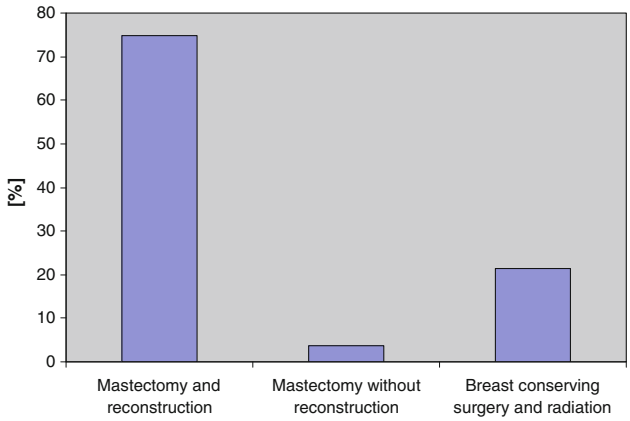

Fig. 1 Choice of treatment if they were diagnosed with a 2 cm invasive breast carcinoma

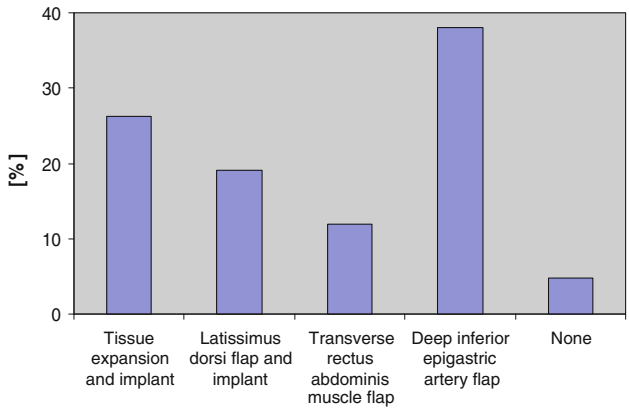

Fig. 2 Choice of reconstruction

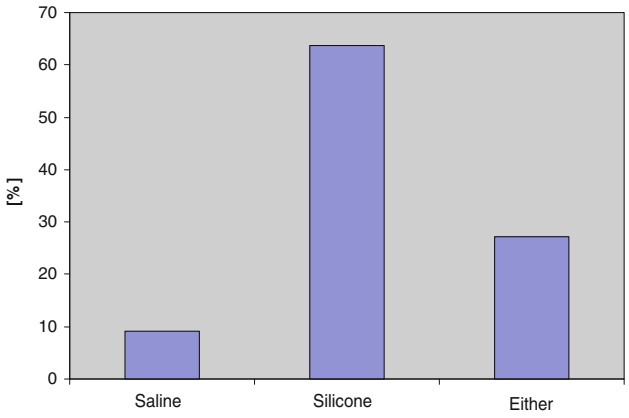

Fig. 3 Choice of implant with tissue expansion

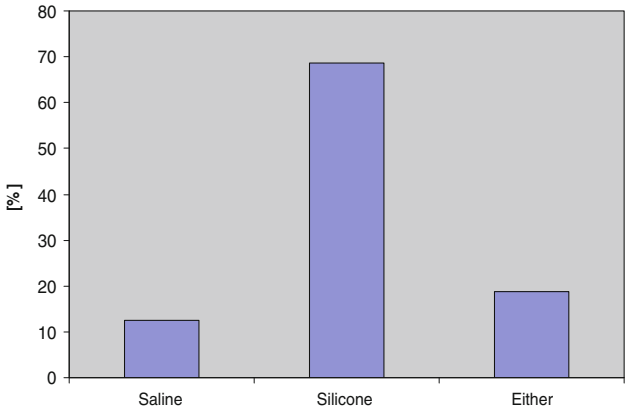

Fig. 4 Choice of implant with latissimus dorsi flap

latissimus dorsi flap with implant reconstruction, 69% would choose a silicone implant, 13% would choose a saline implant while 19% felt either type of implant would be acceptable (Fig. 4).

Discussion

A patient's overall satisfaction with a particular procedure stems from the combination of the events they experience in the preoperative, perioperative, and postoperative recovery periods and the final aesthetic outcome. Furthermore, there are few areas of medicine so dependent on ensuring our female patients are happy and satisfied with their choices as plastic and reconstructive surgery.

As mentioned in the introduction, multiple prospective randomized trials have demonstrated that survival after breast-conserving surgery and radiation is equal to survival after mastectomy for females with stages I and II breast cancer [9–12], yet mastectomy remains a widespread treatment for females with both invasive and intraductal carcinoma [13, 14]. There is little question that a female surgeons would be highly involved in her decision-making process for both treatment and reconstruction and it has been demonstrated that the more a female with breast carcinoma is involved in the decision-making process, the higher the rate of mastectomy [7, 8]. Female surgeons without clinical contraindications to breast conserving surgery may still favour mastectomy over breast conserving surgery because of concerns about cancer recurrence or fear of radiation [21, 25]. It has been demonstrated that patients with higher levels of education with early stage disease (stage I or II) who had a discussion about reconstruction were more than four times more likely to receive a mastectomy when compared with those who did not [7, 8]. Ensuring that patients are appropriately and adequately informed ensures that they can make a rational decision about their treatment and sits well with medical and governmental recommendations.

The significant advances in breast reconstruction techniques have provided several options for breast reconstruction and patients can choose what they feel is the right option for them [7, 8]. A good decision can only be made if the patient has been given all of the information [7, 8]. Female plastic and reconstructive surgeons should have all this information and may better perhaps understand the true perception of a particular procedure. By experiencing and understanding what their patients have experienced and perceived, a female plastic and reconstructive surgeon is likely to be properly and well informed about her breast cancer therapy and reconstruction choices, her expectations of the entire process, potential postoperative complications and her final outcomes.

Autologous breast reconstruction, particularly with abdominal flaps was the most popular form of reconstruction amongst the population studied and the use of abdominal tissue has been described as the "gold standard" in breast reconstruction [26]. It is interesting that over a quarter of female plastic and reconstructive surgeons with their knowledge and experience with various reconstructive methods used for breast reconstruction would choose tissue expander reconstruction; this may be due to its ease and speed compared to autologous breast reconstruction.

Silicone gel implants were a more popular implant choice than saline-filled implants with our female surgeons, primarily because they produce a natural-feeling breast and are particularly effective for women with minimal breast tissue [16].

Although these results offer some insight into current thinking amongst this group of clinicians, it is important to recognise the limitations of this study in order to take these findings in context. The questions asked were purely hypothetical and may not necessarily relate to what decisions would be taken in reality. Opinion may reflect a bias as

some methods are more commonly performed in a particular department, geographical area or personal experience. The options chosen may also be biased by the female surgeon considering their suitability for the various options, for example, if they considered that they were too slim for a DIEP/TRAM they may have chosen another option. However, female plastic and reconstructive surgeons offer an exclusive insight into surgical outcomes following breast cancer therapy and reconstruction. 75% of the female plastic surgeons stated that they would opt for mastectomy over breast conservation surgery. Although the use of autologous abdominal tissue has been described as the "gold standard," it is worthy of note that only 48% of female plastic and reconstructive surgeons with their expertise and understanding of the range of reconstructive methods used for breast reconstruction would select autologous breast reconstruction with abdominal tissue.

The complete postablative reconstruction approach should offer alternatives to breast conserving surgery [27]. Skin sparing mastectomy with autologous reconstruction is one way to avoid radiotherapy in some patients and is an alternative to breast conservation [20, 21]. This approach is often appropriate for women, especially for younger patients, with DCIS or invasive cancer without lymph node involvement and has both low morbidity and high levels of patient satisfaction [20, 21]. The absence of lymph node involvement is often the basis for avoiding radiotherapy, an integral part of the local modality in breast conserving therapy [21–23]. This N0 staging of an invasive cancer serves as a plausible rationale to discuss with the patient in the context of her preference for either skin sparing mastectomy and immediate or, in some cases, implant reconstruction to avoid a 6-week protocol of radiotherapy and a more complex follow-up imaging protocol for the treated breast. Currently, no randomized data are available comparing breast conserving surgery with skin sparing mastectomy and autologous reconstruction.

Effective management of women with breast cancer requires a complete understanding of the various options throughout the entire treatment process [7, 8, 24]. Female plastic and reconstructive surgeons have thorough understanding of these options. Breast surgery is evolving and becoming more complex, but the goal remains the same: maximize local control and minimize poor cosmetic results. Surgery of the breast and lymph nodes has become advanced and comprehensive, ranging from well designed partial ablations to mastectomy and reconstruction. In addition, breast conserving surgery has been shown to be as effective as the more radical resections in terms of overall survival [9–12]. Female plastic and reconstructive surgeons have comprehensive knowledge of both oncology and cosmesis and understand the entire process from planning to reconstruction. One complicating factor to any breast conserving therapy is the addition of postoperative irradiation as breast tissue is left in situ [9–12]. Radiotherapy is not a negligible therapeutic modality and must be balanced with its side effects and long-term sequelae [3, 28]. Skin sparing mastectomy with reconstruction is a surgical option that can avoid the use of radiotherapy [9–12], but when compared with breast conserving surgery and radiotherapy, mastectomy and reconstruction is also not without significant risks and complications. [3, 17–25, 28, 29].

This study suggests that due to their clinical experiences, female plastic and reconstructive surgeons have knowledge as to outcomes and consequences of breast cancer treatment and reconstruction and their choices do not always adhere to current guidelines. The challenge for breast cancer therapy in the future will be to produce collaborative long-term trials and datasets large enough to demonstrate beyond doubt maximal oncological safety whilst minimising cosmetic impact by a combination of ablative and reconstructive techniques. In addition, the underlying paradigm of informed breast cancer treatment decision-making may need to change to include mastectomy with the option of reconstruction, for patients who express a preference for treatment with mastectomy.

Conflict of interest None.

References

1. Curado MP, Edwards B, Shin HR, Storm H, Ferlay J, Heanue M, Boyle P (2007) In: Cancer incidence in five continents vol 9. IARC Scientific Publications, Lyon, p 160
2. Al-Benna S, Al-Busaidi SS, Papadimitriou G et al (2009) Abdominoplasty consent forms do not caution against the potential loss of a reconstructive option for breast reconstruction. Plast Reconstr Surg 123:208e–209e
3. Al-Benna S, Grob M, Mosahebi A et al (2006) Caution note on the use of the internal mammary artery in breast reconstruction. Plast Reconstr Surg 117:1653–1654
4. National Cancer Institute (2009) DevCan: probability of developing or dying of cancer software, Version 6.4.1. Rockville, Md.: Statistical Research and Applications Branch, National Cancer Institute. Available at http://srab.cancer.gov/devcan. Accessed 7 Apr 2010
5. Katipamula R, Degnim AC, Hoskin T et al (2009) Trends in mastectomy rates at the Mayo Clinic Rochester: effect of surgical year and preoperative magnetic resonance imaging. J Clin Oncol 27:4082–4088
6. Alderman AK, Hawley ST, Waljee J et al (2007) Correlates of referral practices of general surgeons to plastic surgeons for mastectomy reconstruction. Cancer 109:1715–1720
7. Katz SJ, Lantz PM, Janz NK et al (2005) Patient involvement in surgery treatment decisions for breast cancer. J Clin Oncol 23:5526–5533
8. Alderman AK, Hawley ST, Waljee J, Mujahid M, Morrow M, Katz SJ (2008) Understanding the impact of breast reconstruction on the surgical decision-making process for breast cancer. Cancer 112:489–494
9. Veronesi U, Cascinelli N, Mariani L et al (2003) Twenty-year follow-up of a randomized study comparing breast-conserving

surgery with radical mastectomy for early breast cancer. N Engl J Med 347:1227–1232
10. Fisher B, Anderson S, Bryant J (2002) Twenty-year follow-up of a randomized trial comparing total mastectomy, lumpectomy, and lumpectomy plus irradiation for the treatment of invasive breast cancer. N Engl J Med 347:1233–1241
11. Poggi MM, Danforth DN, Sciuto LC et al (2003) Eighteen-year results in the treatment of early breast carcinoma with mastectomy versus breast conservation therapy: the National Cancer Institute randomized trial. Cancer 98:697–702
12. Arriagada R, Le MG, Rochard F et al (1996) Conservative treatment versus mastectomy in early breast cancer: patterns of failure with 15 years of follow-up data Institut Gustave-Roussy Breast Cancer Group. J Clin Oncol 14:1558–1564
13. Morrow M, White J, Moughan J et al (2001) Factors predicting the use of breast-conserving therapy in stage I and II breast carcinoma. J Clin Oncol 19:2254–2262
14. Baxter NN, Virnig BA, Durham SB et al (2004) Trends in the treatment of ductal carcinoma in situ of the breast. J Natl Cancer Inst 96:443–448
15. Wennberg JE (2002) Unwarranted variations in healthcare delivery: implications for academic medical centres. BMJ 325:961–964
16. Hu E, Alderman AK (2007) Breast reconstruction. Surg Clin North Am 87:453–467
17. Tonseth KA, Hokland BM, Tindholdt TT et al (2008) Quality of life, patient satisfaction and cosmetic outcome after breast reconstruction using DIEP flap or expandable breast implant. J Plast Reconstr Aesthet Surg 61:1188–1194
18. Saulis AS, Mustoe TA, Fine NA (2007) A retrospective analysis of patient satisfaction with immediate postmastectomy breast reconstruction: comparison of three common procedures. Plast Reconstr Surg 119:1669–1676
19. Alderman AK, Kuhn LE, Lowery JC et al (2007) Does patient satisfaction with breast reconstruction change over time? two-year results of the michigan breast reconstruction outcomes study. J Am Coll Surg 204:7–12
20. Reefy S, Patani N, Anderson A et al (2010) Oncological outcome and patient satisfaction with skin-sparing mastectomy and immediate breast reconstruction: a prospective observational study. BMC Cancer 10:171
21. Patani N, Mokbel K (2008) Oncological and aesthetic considerations of skin-sparing mastectomy. Breast Cancer Res Treat 111:391–403
22. Welzel G, Hofmann F, Blank E et al (2010) Health-related quality of life after breast-conserving surgery and intraoperative radiotherapy for breast cancer using low-kilovoltage X-rays. Ann Surg Oncol 17:359–367
23. Blank E, Kraus-Tiefenbacher U, Welzel G et al (2010) Single-center long-term follow-up after intraoperative radiotherapy as a boost during breast-conserving surgery using low-kilovoltage X-rays. Ann Surg Oncol 17:352–358
24. Lee C, Sunu C, Pignone M (2009) Patient-reported outcomes of breast reconstruction after mastectomy: a systematic review. J Am Coll Surg 209:123–133
25. Veronesi U, Orecchia R, Luini A, et al. (2010) Intraoperative radiotherapy during breast conserving surgery: a study on 1,822 cases treated with electrons. Breast Cancer Res Treat Aug 15. [epub ahead of print]
26. Nahabedian MY (2004) Defining the "gold standard" in breast reconstruction with abdominal tissue. Plast Reconstr Surg 114:804–806
27. Al-Benna S, Steinstraesser L (2009) Postablative reconstruction is better terminology than oncoplastic surgery. Plast Reconstr Surg 124:463e–464e
28. Al-Benna S (2007) Caution in the use of the internal mammary artery in breast reconstruction. Plast Reconstr Surg 120:348
29. Al-Benna S, Rajgarhia P (2010) Blood transfusion requirements in elective breast reconstruction surgery. Breast Jun 2 2010 [epub ahead of print]