Options for Breast Reconstruction after Mastectomy for Carcinoma of the Breast: An Observational Experience at MSKCC, New York under UICC Fellowship

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Abstract The first Author went to visit The Memorial Sloan Kettering Cancer Center (MSKCC), New York, USA on UICC ICRET Fellowship to observe as many clinical situations of options of breast reconstruction after mastectomy for carcinoma breast during a period of 1 month in June 2014. The second Author was the Supervisor for such clinical observation at the Plastic and Reconstructive Service, Department of Surgery at MSKCC. The main objective of this project was to gain a deeper understanding of the various options for reconstruction and specific operative skills and techniques needed for reconstruction after surgical resections for breast carcinoma. The gained experience would benefit our Regional Cancer Center's physicians, patients, and families. All patients treated by the Plastic and Reconstructive Surgery Service, Department of Surgery, Memorial Sloan Kettering Cancer Center (MSKCC) who underwent surgical resection and reconstruction of their breast mounds were observed during the period between June 1, 2014 and June 30, 2014. It was observed that a vast majority of patients who underwent a mastectomy at MSKCC were offered primary breast reconstruction. They underwent thorough counseling and teaching about the various options, and feasibility with regard to their specific case. Patients eventually made the final choice on type of reconstruction, type of implant, and type of nipple/areola

reconstruction. A majority of patients underwent implant reconstruction at MSKCC. This was partly related to the high rate of bilateral mastectomies (close to 50 %) as well as a significant rate of post mastectomy radiation (15 to 20 %).

Keywords Tissue expanders · Implants · Mastectomy · Cancer breast

Objectives

The first Author went to visit The Memorial Sloan Kettering Cancer Center (MSKCC), New York, USA on UICC ICRET Fellowship to observe as many clinical situations of options of breast reconstruction after mastectomy for carcinoma breast during a period of 1 month in June 2014. The second Author was the Supervisor for such clinical observation at the Plastic and Reconstructive Service, Department of Surgery at MSKCC.

The main objective of this project was to gain a deeper understanding of the various options for reconstruction and specific operative skills and techniques needed for reconstruction after surgical resections for breast carcinoma, which reflects the body image in a great way [1]. The gained experience would benefit our Regional Cancer Center's physicians, patients, and families.

Work Carried Out

All patients treated by the Plastic and Reconstructive Surgery Service, Department of Surgery, Memorial Sloan Kettering Cancer Center (MSKCC) who underwent surgical resection and reconstruction of their breast mounds were observed during the period between June 1, 2014 and June 30, 2014. In the

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operating room (OR), the size of defect after resection, the different options chosen for anatomical as well as cosmetic restoration, the logistics behind adoption of such methods of reconstruction, and the feasibility of such methods with reference to the Indian context were also carefully noted. The different methods used by MSKCC faculty were studied and appreciated both by observation and direct discussions with the Supervisor. Parallel to this, approaches used for breast conservation including lumpectomy, sentinel node mapping, total axillary lymph node dissection, as well as the extent of cosmetic deformity after such procedures were also observed and noted. In addition, indications for performing total mastectomy were noted by observation and discussion with the breast oncological surgical faculty.

A total of 191 patients underwent 279 surgical procedures during the month of June 2014. Of the total 279 procedures, only 32 (11 %) of operations were performed in the main OR. 89 % were performed in the Surgical Day Hospital (SDH) OR of which about 1/3 remained in the hospital overnight while the rest were discharged on the same day as surgery. Primary reconstructive procedures were performed in 182 cases while the rest were secondary procedures such as augmentation mammoplasty, reduction mammoplasty, mastopexy, nipple/areola reconstruction, as well as management of complications such as mastectomy flap necrosis, abdominal wound donor site problems, and tissue transfers. Of the primary reconstructive procedures, 143 patients (79 %) underwent immediate [2] placement of tissue expanders (TE). The rest underwent exchange of the tissue expander to permanent implants at a second stage. The rest of the primary breast reconstructions (39 patients, 21 %) were procedures using autologous tissue either with a pedicled or a free flap. Of the 39 autologous tissue transfer procedures, the rectus abdominus myocutaneous flap was used in 37 cases (95 %) where as a gluteal tissue transfer was used in only 2 cases (5 %). Nipple/areola reconstructions were performed using autologous tissue such as skin grafting and nipple flaps or just tattooing alone. The observer was able to see a vast majority of these procedures which occur in multiple ORs and were performed by multiple surgeons, and divided his time between these cases in order to maximize exposure to the details of operative technique as well as conceptual understanding of how these procedures were performed.

The observer spent 3 days per week in the operating room and 2 days in clinic. During the clinic period, he was able to follow-up patients both that were recently post operative as well as patients that returned for long-term follow. A great benefit was the ability to observe interactions with patients who presented as a new visit breast reconstruction pre-operatively. Of the follow-up patients, the observer was able to witness weekly tissue expanders for dozens of patients and to see the interaction between both the nursing staff and the surgeon. The observer was able to gain a good understanding

of what volumes could be injected on a weekly basis and what the decision we were making was with regard to final volumes of tissue expansion. These are simple procedures and using a magnet the valve could be localized under the skin and injections were performed by nurse practitioners. Post operative patients with complications such as early infections and skin necrosis were observed and the methods of managing these patients were noted. Pre-operative counseling of patients was also observed for a multitude of different procedures including immediate breast reconstruction, delayed breast reconstruction, nipple/areola reconstruction, and a multitude of other small breast procedures. Finally, several small procedures that were performed in clinic were observed that included nipple reconstruction using local flaps, skin grafts, tattoos, and revision of the nipples. Overall, clinical set up was noted including patient flow, room set up, clinical photography, and assessment of patients using questionnaires to evaluate a patient's level of satisfaction. The observer attended the weekly Breast Multidisciplinary Conferences with contributions from Surgical Oncology, Medical Oncology, Radiation Oncology, as well as Plastic and Reconstructive Surgery.

Results Obtained

From the above observations, the observer was able to acquire a keen understanding of several oncologic and reconstructive problems. 1) It was evident that patients who underwent a lumpectomy with or without axillary node dissection were usually not treated with any specific reconstructive procedure to optimize the cosmetic defect. This was usually because the amount of tissue resected during the lumpectomy was minimized and due to the principle of maintaining margins of resection at about one centimeter. Margins did not play a role as long as there was no ink on tumor in the final histopathological report. 2) Prophylactic mastectomy was offered to patients who were BRAC1 or BRAC2 positive in addition to those with a significant history of breast cancer in the family. 3) Therapeutic mastectomy was offered to patients who had positive ink margins after one or multiple lumpectomies and those with a high volume mass relative to the breast. 4) With regard to reconstruction, implant-based reconstructions were significantly more common than autologous tissue reconstructions (approximately 3.8 times more common). This was sometimes dictated by the need for post mastectomy radiation therapy, inadequate abdominal or gluteal donor site, as well as patient choice. 5) Most of the smaller procedures were done as day surgical procedures with overnight hospitalization for patients who underwent mastectomy in combination with the reconstructive procedure. Most were done in the Surgical Day Hospital OR. 6) The decision on type of implant selected was made by the patient in the clinic after counseling by the surgeon. Saline and cohesive silicone gel implants were the

two most common choices. Patients seeking the best aesthetic results would generally select cohesive silicone gel implants while those seeking peace of mind would usually select saline in order not to worry about leaking implants. Statistics with regard to leaking implants, the issues surrounding silicone, were discussed with the patient at the time of initial consultation as well as prior to their exchange procedure in order that they could make a well informed decision. 7) With regard to outcomes, the observer only witnessed one infection during the month period that required implant removal. Thus, this is not a common complication as seen only in about 2 to 3 % of patients. 8) Most patients appear to have a very high satisfaction rate, both demonstrated by the scores on questionnaires but also in discussions with the surgeon. Patients who underwent reconstruction with autologous tissue had very natural-looking results and were happy with this in addition to the additional cosmetic gain achieved from a flattening of their tummy [3]. Implant reconstruction patients were also quite happy, particularly those undergoing bilateral reconstructions who appear to have the highest level of satisfaction [4, 5]. Nipple/areola reconstruction, whether by using a surgical approach or tattoo, additionally added a significant amount of satisfaction for patients; although 1/3 of patients underwent no nipple/areola reconstruction and even long term were quite happy with their results.

Conclusions

A vast majority of patients who undergo a mastectomy at MSKCC are offered primary breast reconstruction. They

undergo thorough counseling and teaching about the various options, and feasibility with regard to their specific case. Patients eventually make the final choice on type of reconstruction, type of implant, and type of nipple/areola reconstruction. A majority of patients do undergo implant reconstruction at MSKCC. This is partly related to the high rate of bilateral mastectomies (close to 50 %) as well as a significant rate of post mastectomy radiation (15 to 20 %).

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