Breast cancer and reconstruction: can surgical technique, reconstructive time and adjuvant treatment influence the result?

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Breast cancer and reconstruction: can surgical technique, reconstructive time and adjuvant treatment influence the result?

INTRODUCTION: *Some techniques for the total reconstruction of the breast, regardless of the complexity, have specific complications, with varying degrees of morbidity. Therefore, we wanted to identify the most frequent complications of the main techniques used for breast reconstruction, and compare the relation to the relevant independent variables.*
METHODS: *Our study was conducted by examining the medical records of patients who had received complete reconstruction of the breast after a mastectomy due to breast cancer from January 2008 to December 2010, with a minimum follow-up of 3 years postoperatively. The data collected, such as the time of intervention, reconstruction techniques, operating time, and adjuvant treatment, were statistically correlated to the presence of complications.*
RESULTS: *Of the 40 total breast reconstructions analyzed, the technique in which they were used expanders followed by replacement with implants showed the lowest prevalence of complications (16.7%, p <0.000). Some surgical techniques have shown particular complications. The operative time for transplant transverse rectus abdominis musculocutaneous flap (363.57 ± 59.91 min) was significantly higher than that required for the techniques that use alloplastic materials (155.71 ± 38.02 min, p = 0, 01), but similar to that for the latissimus dorsi flap (309.69 ± 77.66 min). The operative time, the timing of reconstructive surgery, and type of adjuvant treatment was not correlated with the incidence of complications.*
CONCLUSIONS: *Each technique has its indications, contraindications and complications. The application of each technique must be tailored to the individual characteristics of each patient.*

KEY WORDS: Adjuvant treatment, Reconstructive surgery, Results, Surgical procedure

Introduction

The major advances in breast oncology in recent decades have provided a better understanding of the pathophysiology of breast cancer. This has enabled more and more early diagnosis of this disease, with a consequent increase in the number of cases treated, and the development of more conservative surgeries that allow immediate breast reconstruction using various techniques. For example, the adenomastectomy, which is the removal of one or both breasts with maintenance of the skin and, when possible, also the nipple areolar complex, has led a growing number of indications for resection of the breast prophylactic. All this has led to the total reconstruction of the breast to be a surgical procedure increasingly given [1-3]. Many techniques of breast reconstruction have been developed over the years, and their indications are often based on factors related to the sequelae of mastectomy, physical

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characteristics of the patients, the prognosis of breast cancer, the surgeons experience and institutional resources available. Despite the specific details which depend on the conditions mentioned above, in many cases, various techniques for the total reconstruction of the breast can be performed immediately or at a later time. Among the procedures most commonly used in this type of reconstruction are implanting myocutaneous pedicle flaps, such as the latissimus dorsi muscle (LD) and transverse rectus abdominis musculocutaneous (TRAM) flaps, and the use of alloplastic materials (AM), as the fabric temporary or permanent expanders and silicone implants. Early last century, the treatment of breast cancer caused mutilation, with extensive surgery that removed the entire breast, including a large area of skin and muscles also. Moreover, the treatment involved a combination of radiotherapy, which results in a considerable aesthetic and functional sequelae. With a better understanding of the biology of breast cancer, the treatment began to be less radical, and concern for the psychological aspect and the quality of life of patients grew [4,5]. Skin -sparing mastectomy has emerged as a procedure that results in a better quality of the reconstructed breast, allowing the use of techniques that cannot be less complex, but they are less debilitating reconstruction with implants from 4.6 to 10 AM. The conservation of the breast skin envelope provides a satisfactory color tone, texture, and contour to the reconstructed breast, both with tissue expanders, alloplastic implants, fat grafts, or flaps de-epithelialized [3,4]. Some techniques for breast reconstruction, regardless of complexity, are specific complications, with varying degrees of morbidity. Therefore, our aim was to study and identify the most frequent complications of the main techniques used for breast reconstruction and compare these complications for the independent variables relevant. In this way, this long-term study (minimum follow-up of 3 years) sought to address the scarcity of information on complications related to breast reconstruction and total respective clinical courses over a period of more than 1 year.

Metods

Typology of the Patients

Our study was a cross-sectional observational performed through review of medical records of patients treated press the Breast Unit of Hospital "Santa Maria" of Terni-Italy. Inclusion criteria were female and full breast reconstruction after a mastectomy due to breast cancer from January 2008 to December 2010 at the Breast Unit directed by author, with a minimum postoperative follow-up of 3 years (time defined by the average time of the studies focused on capsular contracture Baker III/IV).

Parameters Considered

We analyzed data such as patient age, timing of reconstruction (immediate or delayed), laterality of the reconstructed breast, operative time (in minutes) correlated, length of hospital stay (in days), the technique used to reconstruction, adjuvant treatment for breast cancer, complications, and readmission.

Statistical Analysis of Data

The Kolmogorov-Smirnov test was performed in advance to evaluate the normal distribution of the data analyzed for ordinal variables. After confirmation, the mean and standard deviation were calculated, and these variables were correlated with variables of complications and readmission to the comparison of means by Student's t test. The alpha error was set at 5% (P <0.05%), and a confidence interval of 95% (95% CI) was used. For nominal variables, the prevalence was analyzed. The correlation of these variables with the parameters of complications and readmission was performed by cross-tabulation of a maximum of two independent variables, and significance was calculated using the chi-square test or Fisher (when n <5), with the level of significance set at 5% (P <5%). All statistical analyzes were performed using the software XLSTAT (Kovach Computing Services, Pentraeth, Isle of Anglesey, UK).

Results

The average age of the women was 46 years and 7 months, with a standard deviation of ± 10:59, ranging from 26 to 69 years. Forty breast reconstruction procedures were performed by the team of the surgical care unit, under the supervision and assistance of plastic surgeons, to correct the sequelae of total mastectomy to treat breast cancer. Twenty one procedures were performed in the right breast and 19 in the left breast. About 71% were immediate reconstructions and 29% were delayed reconstructions. The techniques involving the use of AM alone were the most frequent and represent 43.8% of the reconstructions (9 surgeries with an expander permanent, 6 with an expander followed by exchange of the implant, and 6 with the only implant). Reconstructions LD accounted for 37.4% and 18.8% of all TRAM reconstructions. The average age of the patients was similar in the three groups, being 45.81 ± 11.04 12.37 ± 48 and 46 ± 2.27 years for reconstruction with only AM, LD, and TRAM, respectively. The operative time for the procedure with TRAM (363.57 ± 59.91 min) was significantly higher than that for procedures with AM (155.71 ± 38.02 min) (P = 0.01, 95% CI - 266.65 at -119 to 06), but similar to that for the procedures with LD (309.69 ± 77.66 min); statistically significant difference

was found between AM and LD (P = 0.07). The duration of the intervention was not associated with the incidence of complications, but to the intrinsic difficulty of the procedure. In patients who received TRAM flaps, the length of hospital stay (4.53 ± 2.27 days) was significantly higher than that for patients who received LD (1.83 ± 0.48 days) (p = 0.004 ; 95% CI, -2.85 to -0.87) and AM (1.05 ± 0.22 days) (P = 0.000; 95% CI, -2.74 to -1.83). There was no statistically significant difference in length of stay between LD and AM. The presence of any complication local, regardless of severity, was detected in 22 cases (55%). The seroma has accounted for 10% of the complications identified and was more prevalent in the donor site of the LD, which represents 16.7% of the complications identified with this technique. The second most frequent complications were capsular contracture, infection superficial and deep infection, which individually accounted for 6.3% of the complications. In the present study, capsular contracture has been identified exclusively with techniques LD, that is, similar to seroma, 16.7% of complications with this technique. In turn, the superficial infection was not associated to a specific technique and had a homogeneous distribution, while deep infection has been identified only in reconstructions with expanders permanent (22.2% of complications in this technique) and breast implants single step (16.7% of complications in this technique).Other complications of note included the presence of abdominal bulge, and infection of the abdominal lining complications specific TRAM, which account for 22.2% and 11.1% of total complications, respectively. Among the complications identified, those that showed the greatest severity, with 100% of patients requiring hospitalization for treatment, were extrusion and deep infection. A patient who has undergone re building with TRAM had infection of the abdominal lining that proceeded to sepsis. This patient has been hospitalized for 2 months for the treatment and had a good recovery. The patient did not require the replacement of the coating and showed sequelae. There were no deaths in this series of patients. The technique of reconstruction of the breast in two cases with an expander and a plant showed the lowest incidence of complications (16.7%), represented by superficial infection and the absence of need for readmission. The technique with the highest prevalence of infection has been the use of TRAM (75%), which represents 22.2% of the cases readmission. However, the surgery that has had the highest incidence of readmission (33.3%) was the reconstruction with an implant in a single procedure. There was a difference in the need for readmission between the technique with expanders and breast implants in two procedures and other techniques (chi-square test, P <0.001). Regardless of the technique used, the incidence of complications was lower in patients undergoing reconstruction delay without radiotherapy (33.3%) and higher in those who have undergone reconstructions delay in combination with radiotherapy (62.5 %); however, there was no significant difference.

Discussion

Breast reconstruction is taking an increasingly important role in the treatment of breast cancer, following the proven physical and psychological benefits for patients. This process promotes a more rapid return of patients to their daily lifestyle, with greater immunity and better prognosis 4.5. In this study, the percentage of use of expanders, with or without fins LD or rectus abdominis, was 31.25%, which corresponds to the results reported in the international literature about the reconstruction of the breast, where the incidence varies from 30 43% to 11-15%. The TRAM been used for about a quarter of the reconstructions, especially in cases of delayed reconstructions and outcomes in patients with post-operative radiotherapy. The overall incidence of any complication (about 50%) in this study was consistent with that of previous studies (range, 4-58%; mean, 30%); However, the rate of readmission was low (approximately 16%), and in our series there were no deaths. These data demonstrate the complexity of the procedures and the need for such activities to be performed by surgical teams experienced in well-equipped hospitals, regardless of the technique used. No relationship was found between complications and rebuild times or adjuvant treatment received by the patient, probably every intervention was planned with the most suitable technique for each case. This hypothesis was confirmed by a complication rate similar to that described in the literature, the results in favor of long-term reconstruction, and low rates of hospital readmission. No relationship was found between complications and rebuild times or adjuvant treatment received by the patient, probably every intervention was planned with the most suitable technique for each case. This hypothesis was confirmed by a complication rate similar to that described in the literature, the results in favor of long-term reconstruction, and low rates of hospital readmission. The use of accompanying measures, despite allowing quick and easy breast reconstruction when there is adequate preservation of the skin flap and no remote, usually presents specific complications that often require readmission. The use of accompanying measures, despite allowing quick and easy breast reconstruction when there is adequate preservation of the skin flap and no remote, usually presents specific complications that often require readmission. The percentage of capsular contracture Baker III / IV observed in this study (6.3%) is lower than that in other publications, from 10% to 56% (median, 28% for a period of follow-up of approximately 3 years). Capsular contracture has an increased incidence when the reconstructed breast received radiotherapy after implantation AM, even in the presence of a myocutaneous flap, as shown in the 3 cases of reconstruction with LD. Reconstruction with AM only after irradiation was not performed in the group of patients in this study, probably because of the relative contraindication of this technique. In this study,

total reconstruction with myocutaneous flaps distant show good cosmetic results, particularly in the event of loss of skin greater; however, the procedures were more complex and had times more than those of other operating reconstruction techniques. Because other surfaces of the body are involved, these techniques have complications unique [16,19,20,22,33,] as the donor site seroma (TRAM abdomen and dorsal region in LD). Some authors have described a reduction in the incidence of seroma using sutures membership in donor sites after removing muscle flaps 19, 22. Scevola et al. [20,33,34] analyzed 768 breast reconstructions with TRAM and deduce that the use of two drains in the abdomen can reduce the incidence of seroma. Other common complications specific total reconstruction with TRAM are the development of hernias and abdominal swelling, resulting from the weakness of the abdominal wall secondary to resection of the rectus abdominis. Ascherman et al. [30-32] reasoned that these complications may be related to the amount of muscle used to create the flap; found no statistical difference in the incidence of these complications than single or double-pedicle TRAM flap pedicle. One factor that appears to contribute to the reduction of these complications is a careful reconstruction of the abdominal wall with non-absorbable network plans [31-35]. Since the purpose of this study was the clinical complications of total breast reconstructions, long-term analysis was crucial. The main limitation of this study was the small sample size, because of the strict inclusion criteria and the large loss to follow-up, because the period of follow-up was more than a year. However, we have identified consistent results for the complications arising from the total reconstruction of the breast. The long-term follow-up post-operative and the normal distribution and proportion of patients treated with any kind of technique of total breast reconstruction is permitted adequate statistical comparisons between techniques, major complications, and individual factors related to these patients complications.

Conclusions

Breast reconstruction provides satisfactory results. However, during the clinical course, complications of low gravity is common. These complications are usually treated with therapy clinic alone, and the re-admission is not required. Reconstructions with weapons, while being generally easiest and with less surgical comorbidity have a higher incidence of hospitalization for the treatment of complications compared to techniques that do not use these materials. Each technique has its indications, contraindications and complications. The application of each technique must be tailored to the individual characteristics of the patient in order to achieve better results, thus avoiding the short and long-term complications.

Riassunto

INTRODUZIONE: Alcune tecniche per la ricostruzione del seno, indipendentemente dalla complessità, presentano complicanze specifiche, con vari gradi di morbilità. Abbiamo voluto identificare le complicanze più frequenti delle principali tecniche utilizzate e confrontare il rapporto con le variabili indipendenti pertinenti.
METODI: Lo studio è stato condotto esaminando le cartelle cliniche dei pazienti che avevano ricevuto ricostruzione dopo mastectomia per cancro della mammella dal gennaio 2008 al dicembre 2010, con un follow-up minimo di 3 anni dopo l'intervento. I dati raccolti, come la durata di intervento, tecniche di ricostruzione, tempo di funzionamento, e il trattamento adiuvante, erano statisticamente correlati alla presenza di complicanze.
RISULTATI: Delle 40 ricostruzioni mammarie analizzate, i casi in cui sono stati utilizzati espansori seguiti da sostituzione con impianti hanno mostrato la più bassa prevalenza di complicanze (16,7%, p <0.000). Alcune tecniche chirurgiche hanno mostrato particolari complicanze. Il tempo operatorio degli interventi in cui si è adoperato il lembo miocutaneo con retto dell'addome (363,57 ± 59,91 min) è risultato significativamente superiore a quello richiesto per le tecniche che utilizzano materiali alloplastici (155,71 ± 38,02 min, p = 0, 01), ma simile a quello per lembo il gran dorsale (309,69 ± 77,66 min). Il tempo operatorio, i tempi della chirurgia ricostruttiva, e tipo di trattamento adiuvante non sono significativamente correlati con l'incidenza di complicanze.
CONCLUSIONI: Ogni tecnica ha le sue indicazioni, controindicazioni e complicanze. L'applicazione di ogni tecnica deve essere adattata alle caratteristiche individuali di ogni paziente.

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