

Surgical treatment of early breast cancer in day surgery

ANTONIO MARRAZZO^{a,b}, PIETRA TAORMINA^b, MASSIMO DAVID^b, IGNAZIO RIIL^b, DOMENICO LO GERFO^b, LUIGI CASÀ^b, ANTONIO NOTO^b, SEBASTIANO MERCADANTE^c

^a Department of Experimental Oncology and Clinical Application - University of Palermo - Palermo

^b Breast Unit - La Maddalena Cancer Center - Palermo

^c Anaesthesia and Intensive Care Unit & Pain Relief and Palliative Care Unit - La Maddalena Cancer Center - Palermo

Correspondence to: Dr. Antonio Marrazzo - Via C. A. Dalla Chiesa, 10 - 90132 Palermo

Riassunto

La quadrantectomia con asportazione del linfonodo sentinella (SLNB) rappresenta attualmente il "gold standard" nel trattamento del carcinoma della mammella in fase precoce. La morbilità associata alla metodica è bassa ed essa può facilmente essere eseguita in *day surgery* (DS) con una migliore accettazione da parte del paziente. Viene qui riportata la nostra esperienza.

Oggetto dello studio sono 100 pazienti affette da neoplasia mammaria avente dimensioni inferiori a 3 cm e sottoposte a quadrantectomia con SLNB in DS.

In 60 casi il linfonodo sentinella asportato è risultato esente da malattia, sicché la procedura effettuata in DS ha rappresentato l'unico intervento. In 40 casi è invece stato necessario un secondo ricovero per effettuare la linfadenectomia ascellare. In tale gruppo di pazienti, il linfonodo sentinella è risultato l'unico metastatico nel 55% dei casi (22 pazienti). Nessuna delle pazienti trattate in DS ha necessitato di un secondo ricovero dopo la dimissione e tutte si sono dimostrate pienamente soddisfatte della procedura quando sono state interrogate nel corso di controlli successivi.

I programmi sanitari di chirurgia "short-stay" nel carcinoma mammario sono oggi facilmente eseguibili grazie ad approcci meno invasivi quali la quadrantectomia e l'asportazione del linfonodo sentinella. Due sono essenzialmente i punti a favore di tale approccio: la ripresa della paziente e l'adattamento psicologico alla metodica. Il recupero è in genere più rapido e le pazienti tendono a sdrammatizzare l'importanza dell'operazione, acquisendo un approccio mentale più ottimistico nei confronti della neoplasia. Inoltre, poiché meno del 50% delle pazienti presentano metastasi al linfonodo sentinella (il 40% nella nostra casistica), in pratica l'approccio in DS conclude di fatto l'iter chirurgico.

Parole chiave: carcinoma della mammella, biopsia del linfonodo sentinella, *day surgery*



Introduction

Over the past 15 years, the need to cut medical costs has led to a decrease in hospitalisation for certain surgical therapies, also thanks to new surgical and anaesthesiological techniques^{1,2}. Quadrantectomy and associated sentinel lymph node biopsy (SLNB) is one of the most important changes in the surgical treatment and staging of breast cancer. This procedure is currently employed in most breast surgery centres as the gold standard in the treatment of early breast cancer^{3,4}. The technique of SLNB is simple and concerns the identification and subsequent removal of the initial lymph nodes upon which primary tumour drains. Histopathological evaluation of these nodes identifies patients who are likely to be node-negative avoiding axillary lymph

node dissection (ALND) and the associated major problems. This method is less invasive, provides benefit for postoperative recovery, has a modest morbidity and can usually be performed in a day-surgery (DS) regimen, leading to best acceptance by the patients^{5,6}. This report outlines the experience of our Breast Unit with quadrantectomy and SNLB in DS for early breast cancer.

Patients and methods

From November 2003 to February 2005, 100 consecutive patients with a mean age of 55.56 years (ranging

from 30 to 82) presented to our institution with primary invasive breast cancer measuring less than 3 cm and clinically negative axillary nodes and underwent quadrantectomy and SLNB in DS. Patients who had had previous excision of the primary tumour were excluded. Furthermore, patients coming from cities further away than 100 km were also excluded to avoid logistic problems in terms of organisation for the patients themselves and their relatives in case of postoperative complications. The characteristics of the patients are listed in Table I. All patients were informed of the aims of the procedure and signed a consent form at the time of admission.



Summary

Surgical treatment of early breast cancer in day surgery. A. Marrazzo, P. Taormina, M. David, I. Riilli, D. Lo Gerfo, L. Casà, A. Noto, S. Mercadante

Quadrantectomy and associated sentinel lymph node biopsy (SLNB) is currently employed in most breast surgery centres as the gold standard in the treatment of early breast cancer. This approach has a modest morbidity and can usually be performed in a day-surgery regimen, leading to best acceptance by the patients. This reports outlines the experience of our Breast Unit with quadrantectomy and SLNB in day surgery for early breast cancer.

One hundred patients presenting to our institution with primary invasive breast cancer measuring less than 3 cm and clinically negative axillary nodes underwent quadrantectomy and SLNB in day surgery.

For 60 women with breast cancer the sentinel node was negative, so the only definitive surgical treatment was performed in the day-surgery regimen; 40 patients with positive sentinel nodes were hospitalised a second time for axillary dissection. In these patients that needed clearance of the axilla, SLNB was performed on the only positive node in 22 cases (55%). None of the patients admitted for quadrantectomy and SLNB in day surgery required re-hospitalisation after discharge. All patients proved to be fully satisfied with early discharge from hospital when interrogated on the occasion of subsequent monitoring.

Short-stay surgical programs in early invasive breast cancer treatment are feasible today owing to the availability of less invasive approaches such as quadrantectomy and SLNB. There are two main pointers to a distinct advantage for this kind of approach, i.e. recovery and psychological adjustment. Recovery from surgery is faster and the patient tends to play down the seriousness of the operation and to have a better mental attitude to neoplastic disease. Moreover, when performing quadrantectomy with SLNB in day surgery fewer than 50% of breast cancer patients (40% in our experience) require another surgical treatment, concluding the surgery in a single session.

Key words: breast cancer, sentinel lymph node biopsy, day surgery

Chir Ital 2007; 59, 5: 687-691

The operation consisted in a minimal quadrantectomy with lower and upper margins 2 cm from the tumour. After removal of the specimen, the residual mammary gland was detached by the pectoralis fascia to perform an optimal reconstruction and improve the cosmetic result.

The procedure applied to our patients at our institute is the following. Three hours before surgery, 5-10 MBq of technetium-^{99m}-labelled human colloid particles in 0.2 ml saline were injected into the subdermis above the tumour or in the tissue immediately surrounding it when located deep in the breast. Mammary and axillary planar scintigraphy scans, anterior and anterior-oblique, were taken 30 minutes after injection of the radiotracer. If no nodes were visualised, a further scan was taken 3 hours later. A second injection of tracer was not needed in any of the patients. The skin above the first radioactive node was marked to assist the surgeon⁴. Pre-anaesthesia was provided with diazepam 0.07 mg kg⁻¹, fentanyl 0.7 mcg kg⁻¹, and dehydro-benzoperidol 0.035 mcg kg⁻¹. After a bolus of 0.7 mg kg⁻¹ of propofol, an infusion of propofol and remifentanyl was started at a rate of 0.7-0.14 mg kg⁻¹ per hour and 2.5-5 mcg kg⁻¹ per hour, respectively. Oxygen 3-4 l/min was delivered via a mask. Patients were monitored according to department policy, including heart rate, respiratory rate, automatic blood pressure measurement, and oxygen pulsometry. Infusion rates were changed to maintain a SO₂ > 90. Superficial local anaesthesia was performed along the surgical incision and also deep in soft tissues, using 50 ml of a mixture of lidocaine 2%, bupivacaine 0.50% and saline.

Table I. Characteristics of the 100 study patients.

Characteristics	
Age	
mean	55.56
range	30-82
T (clinical)	
1	76
2 (< 3 cm)	24

In the operating theatre, the surgeon performed the quadrantectomy and removal of the marked sentinel node through the same incision or, in the case of localisation of cancer in the internal regions of the breast, through a small 1.5-2 cm incision in the axilla.

Following removal of each node, the gamma probe was placed back into the wound to identify additional sentinel nodes. Suspicious palpable nodes detected during the procedure were also excised. The average length of the procedure was 44 minutes (range: 20-60 minutes). We did not employ drains.

All removed nodes were submitted for definitive histological evaluation; a complete examination of the whole sentinel node was performed to detect micrometastases. The technique employed is the following: first of all, the SLN is sliced at 0.2 mm intervals perpendicular to the long axis. One routine haematoxylin-eosin (H&E) stained section is examined; if negative, serial level slices are performed through each block (two sections for each level, with 50 μ spacing between the following levels). One segment for each level is stained with H&E and one is for possible additional immuno-histochemical analysis with keratins to compare clusters of histologically suspect

cells. This approach offers good sensitivity for detection of micrometastases and isolated tumour cells with reasonable costs.

96 patients left the hospital in the afternoon 4-5 hours after the surgical procedure and only 4 patients agreed to overnight hospitalisation. None of the 100 patients required postoperative analgesia and before discharge all of them were informed how to manage the wound once they returned home.

Results

The most frequent histotype was ductal cancer (70 cases); lympho-vascular invasion was found in 50 patients, and neural invasion in 12. Considering a cut-off of at least 10%, the positivity for oestrogen receptors (ER) and progesterone receptors (PgR) was 85% and 72%, respectively. More histological findings are listed in Table II.

The SLNB was identified in all patients (100%). The mean number of SLNs removed was 2.74 per patient. SLNs were positive for metastases in 45 cases (45%) whereas findings of micrometastases (18 patients) and isolated tumour cells (5 patients) were included. If isolated tumour cells (ITC) are not considered, the percentage of positive lymph nodes decreases to

40%. See Table III for further node characteristics.

Patients with ITC did not undergo further axillary dissection. For 60 women with breast cancer the only definitive surgical treatment was performed in the DS regimen, while 40 patients were hospitalised for axillary dissection. In those patients that needed clearance of the axilla (40 cases), the SLN was the only positive node in 22 (55%).

None of the patients admitted in DS for quadrantectomy and SLNB required re-hospitalisation after discharge. No adverse events such as wound infection occurred. Only one patient had a haematoma in the postoperative period, not requiring further medical care.

The cosmetic result was good in all cases.

All patients proved to be fully satisfied with early discharge from hospital when interrogated on the occasion of subsequent monitoring.

Discussion

Health-care costs are becoming an increasing financial problem for all industrialised nations, so the medical community has felt the need to employ therapies which are both efficient and of limited cost. In the last decade, reducing the hospital stay after surgery for breast neoplasms has been extensively advocated, also considering that breast cancer is one of the most frequent diseases in the female sex and the fact that breast surgery does not have a high morbidity rate^{2,7}.

Short-stay surgical programs in early invasive breast cancer treatment are feasible today owing to the availability of less invasive approaches such as quadrantectomy

Table II. Tumour characteristics in 100 patients undergoing sentinel node biopsy in the day-surgery setting.

Tumour characteristics	
Histotype	
ductal	70
lobular	14
others	16
Grading	
G1	21
G2	43
G3	36
Lymphovascular invasion (LVI)	
yes	50
no	50
Neural invasion	
yes	12
no	88
ER	
positive	85
negative	13
not tested	2
PgR	
positive	72
negative	26
not tested	2
HER2/neu overexpression	
0	57
1+	15
2+	13
3+	13
not tested	2

ER = oestrogen receptors; PgR = progesterone receptors.

Table III. Node characteristics in the 100 patients undergoing sentinel node biopsy.

Sentinel node	
N0	55
N+	45
Average number of sentinel nodes per patient	2.74
Number of sections of analysed sentinel node	
average	21.88
range	10-50
Micrometastases	18
Isolated tumour cells (ITC)	5

and SLNB. SLNB is a minimally invasive surgical procedure that can be easily carried out by experienced surgeons working in experienced teams. The procedure can be performed easily by the sentinel node team that includes a breast surgeon, nuclear medicine physician and pathologist. To date, the accuracy of SLNB for axillary staging has been confirmed in many studies^{4,8}.

Although SLNB tends to be associated with elevated costs due to the specialised equipment and examinations which are necessary for successful performance of the method, some Authors found that SLNB is less costly because of the shorter hospital stay^{2,9}.

From the economic point of view, frozen section analysis of SLNs is probably the most crucial part of the whole procedure: frozen section diagnostics proves expensive due to the substantial workloads in the laboratory. Moreover, a false-negative result leads to re-operation, increasing the costs of the overall procedure. This is the most crucial problem with frozen examination: the false-negative rate is estimated as ranging from 4% to 15%¹⁰⁻¹². We never sent the sentinel node for intraoperative examination in order to reduce the cost of the method and avoid an increase in operative time.

There are two other main differences indicating to a distinct advantage for this kind of approach, i.e. recovery and psychological adjustment. Recovery from surgery, and the more concrete end-point of a return to a normal life and to usual activities, also including work, occurs about a week and a half earlier for patients who are not hospitalised. In-patients, who spent their first night after surgery

in the hospital, report poorer emotional adjustment and more psychological symptoms despite having more time to adjust to surgery. With regard to the psychological aspect, it should be emphasized that patients early discharged tend to play down the seriousness of the operation and have a better mental attitude to neoplastic disease. Surgery is only the beginning of a long involved treatment process that often includes chemotherapy and radiotherapy,

so the surgeon's goal should be to make the surgical part of breast cancer treatment as atraumatic as possible. Out-patients tend not to present maladaptive sick role behaviour, thus contributing to a more rapid recovery¹³⁻¹⁶.

Some Authors prefer to carry out SLNB alone in the DS regimen under local anaesthesia and then all patients are admitted to perform a second surgical procedure under general anaesthesia (quadrantectomy with or without ALND in re-

lation to the result of node sampling). We do not share this approach, because in this way all the patients need 2 hospitalisations and 2 operations, the first under local anaesthesia and the second under general anaesthesia, causing an increase in costs. When performing quadrantectomy with SLNB in DS, fewer than 50% of breast cancer patients (40% in our experience) require another surgical treatment, concluding the surgery in a single session.

References

- Orr RK, Ketcham AS, Robinson DS, Moffat FL, Tennant ND. Early discharge after mastectomy: a safe way of diminishing hospital costs. *Am Surg* 1987; 53: 161-3.
- Ranieri E, Caprio G, Fobert MT, Civitelli L, Ceccarelli F, Barberi S, Virno F. One-day surgery in a series of 150 breast cancer patients: efficacy and cost: benefit analysis. *Chir Ital* 2004; 56: 415-8.
- van der Vegt B, Doting MHE, Jager PL, Wesseling J, de Vries J. Axillary recurrence after sentinel lymph node biopsy. *EJSO* 2004; 30: 715-20.
- Marrazzo A, Taormina P, Noto A, Cardinale G, Casà L, Mercadante S, Lo Gerfo D, David M. Localization of the sentinel node in breast cancer: prospective comparison of vital staining and radioactive tracing methods. *Chir Ital* 2004; 56: 621-7.
- Reitsamer R, Peintinger F, Prokop E, Rettenbacher L, Menzel C. 200 sentinel lymph node biopsies without axillary lymph node dissection - no axillary recurrences after a 3-year follow-up. *Br J Surg* 2004; 90: 1551-4.
- Bonnema J, van de Velde CJH. Sentinel lymph node biopsy in breast cancer. *Ann Oncol* 2002; 13: 1531-7.
- Cohen AM, Schaeffer M, Chen ZY, Wood WC. Early discharge after modified radical mastectomy. *Am J Surg* 1986; 151: 465-6.
- Veronesi U, Galimberti V, Mariani L, Gatti G, Paganelli G, Viale G, Zurrida S, Veronesi P, Intra M, Gennari R, Rita Vento A, Luini A, Tullii M, Basani G, Rotmensz N. Sentinel node biopsy in breast cancer: early results in 953 patients with negative sentinel node biopsy and no axillary dissection. *Eur J Cancer* 2005; 41: 231-7.
- Ronka R, Smitten KV, Sintonen H, Kotomaki T, Krogerus L, Leppanen E, Leidenius M. The impact of sentinel node biopsy and axillary staging strategy on hospital costs. *Ann Oncol* 2004; 15: 88-94.
- Smidt ML, Besseling R, Wauters CA, Strobbe LJ. Intraoperative scrape cytology of the sentinel lymph node in patients with breast cancer. *Br J Surg* 2002; 89: 1290-3.
- Turner RR, Giuliano AE. Intraoperative pathologic examination of the sentinel lymph node. *Ann Surg Oncol* 1998; 5: 670-2.
- Smidt ML, Janssen CMM, Barendregt WB, Wobbes T, Strobbe LJA. Sentinel lymph node biopsy performed under local anaesthesia is feasible. *Am J Surg* 2004; 187: 684-7.
- Goodman AA, Mendez AL. Definitive surgery for breast cancer performed on an out-patient basis. *Arch Surg* 1993; 128: 1149-52.
- Kambouris A. Physical, psychological and economic advantages of accelerated discharge after surgical treatment for breast cancer. *Am Surg* 1996; 62: 123-7.
- McManus SA, Topf DA, Hopkins C. Advantages of out-patient breast surgery. *Am Surg* 1994; 60: 967-70.
- Margolese RG, Lasry JCM. Ambulatory surgery for breast cancer patients. *Ann Surg Oncol* 2000; 7: 181-7.