"V"-Technique as a Method of Breast Conserving Surgery in Multifocal and T2 Invasive Breast Cancers Situated in the Upper Outer Quadrant

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ABSTRACT

Objective: *To assess the oncologic and cosmetic outcomes in women with multifocal breast cancers or T2 tumours with diameters larger than 3 cm situated in the upper outer quadrant who were treated with "V"-technique.*

Methods: *From July 1999 till June 2003, 44 conserving surgeries with "V"-technique using a local rotational flap were performed. Localization of tumours was in the upper outer quadrant. All solid tumours were larger than 3 cm in diameter. In all patients, axillary lymph node dissection was performed. All the patients received postoperative radiotherapy. Mean follow-up was 58 months.*

Results: *Out of 44 conserving surgeries with "V"-technique, an adequate distance of tumour from the margins was obtained in 84.1% (37/44). Out of 37 patients who underwent conserving surgery with this technique, the cosmetic result was favourable in 83.78% (31/37). None of these patients had a corrective surgery such as reduction mammaplasty or mastopexy. Mean weight of excised tissue was 215 g. The 5-year local recurrence rate was 10.8%. The 5-year metastasis-free survival rate was 81,1%. The 5-year overall survival rate was 86.5 %.*

Conclusions: *Surgical treatment of multifocal and T2 breast cancers larger than 3 cm in diameter situated in the upper outer quadrant and performed with "V"-technique gives a good aesthetic result and enables a wide resection of breast tissue around the tumour.*

Keywords: Breast cancer, breast-conserving surgery, upper outer quadrant

La Técnica "V" Como Método Quirúrgico para Conservar las Mamas en Cánceres de Mama Invasivos T2 y Multifocales Situados en el Cuadrante Superior Externo

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RESUMEN

Objetivo: *Evaluar los resultados oncológicos y cosméticos en las mujeres con cánceres multifocales de mama o tumores T2 de diámetro mayor de 3 cm, situados en el cuadrante superior externo, en pacientes tratadas con la técnica "V".*

Métodos: *De julio 1999 hasta junio de 2003, se realizaron 44 cirugías conservadoras usando la técnica "V" con colgajo local de rotación. Los tumores se hallaban localizados en el cuadrante superior. Todos los tumores sólidos tenían más de 3 centímetros de diámetro. A todas las pacientes se les practicó la disección del ganglio linfático axilar. Todas las pacientes recibieron radioterapia postoperatoria. El seguimiento promedio fue de 58 meses.*

Resultados: *De las 44 cirugías conservadoras con la técnica "V", se obtuvo una distancia adecuada del tumor en 84.1% (37/44) desde los márgenes. De 37 pacientes que tuvieron cirugía conservadora con esta técnica, el resultado cosmético fue favorable en 83.78% (31/37). A ninguna de estas pacientes se les realizó cirugías correctivas tales como mamoplastia de reducción, o mastopexia. El peso promedio del tejido extirpado fue 215 g. La tasa de recurrencia local quinquenal fue de 10.8%. La*

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tasa de supervivencia quinquenal libre de metástasis fue 81, 1%. La tasa general de supervivencia fue de 86.5%.

Conclusiones: *El tratamiento quirúrgico de los cánceres de mama T2 y multifocales mayores de 3 cm. de diámetro situados en el cuadrante superior externo y realizado con la técnica "V" produce un buen resultado estético y permite una resección amplia del tejido mamario alrededor del tumor.*

Palabras claves: Cáncer de mama, cirugía de conservación de la mama, cuadrante superior externo

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INTRODUCTION

Breast-conserving surgery is now confirmed as a preferable surgical option for the management of early-stage breast cancer (1). Audretsch coined the term "Oncoplastic Surgery" to describe a new surgical approach (2, 3) indicated for larger tumours where the standard breast-conserving surgery gives worse aesthetic result, since more tissue has to be removed to get clear margins.

The most common localization of breast cancer tumours is the upper outer breast quadrant (4). In the patients with T2 breast cancers with a diameter of 3−5 cm and multifocal tumours situated in that region, we can remove more breast tissue using "V"-technique local rotational flap composed of adjacent breast tissue than with classical quadrantectomy.

SUBJECTS AND METHODS

From July 1999 till June 2003, 44 conservative operations with "V"-technique rotational flap of breast tissue were performed. Case selection criteria included: patients with tumour diameter larger than 3 cm or with multifocal tumours and localization of tumour in the upper outer breast quadrant. In all patients, axillary lymph node dissection (levels 1 and 2) was performed. Intraoperative margin assessment included gross tissue inspection and specimen radiography, with or without frozen section analysis. Since 2003, the margins of the specimen (in six cases) have been analysed intra-operatively with the imprint cytology method. All the patients received postoperative radiotherapy. They also received chemotherapy and endocrine therapy according to standard protocols. The patients were examined for the early post-operative complications, local recurrence, distant metastasis and cosmetic results. No patients were lost to follow-up.

The average age of the patients was 56 years (age range 39–86 years). The average size of the tumour determined by ultrasound examination was 34 mm (range 16–49 mm). Tumour histology is shown in Table 1. Some tumours 36.4% (16/44) were multifocal. Pathological TNM staging after the operation is shown in Table 2.

Table 1: Distribution of pathohistological type of tumours

Pathohistological type	No.	% (n =44)
Invasive ductal carcinoma	28	63.7
Invasive ductal carcinoma with extensive intraductal component	6	13.6
Invasive lobular carcinoma	4	9.1
Invasive ductal and invasive lobular carcinoma	2	4.5
Other types of invasive breast carcinoma	4	9.1
Total	**44**	**100**

Table 2: Pathological TNM (pTNM) classification of tumours and nodal status

Tumour status			Nodal status							
	No. (n = 44)	%	No. N0 (n = 44)	%N0	No.N1 (n = 44)	% N1	No. N2 (n = 44)	%N2	No.N3 (n = 44)	%N3
T2	28	63.7	10	22.7	7	15.9	5	11.3	6	13.6
T2 (m.*)	11	25	4	9.1	3	6.8	3	6.8	1	2.3
T1c**(m.)	5	11.3	4	9.1	0	0	1	2.3	0	0
Total	**44**	**100**	**18**	**40.9**	**10**	**22.7**	**9**	**20.5**	**7**	**15.9**

m.* = multifocal
T1c** = Tumour > 1 cm but < 2 cm
N1 = Metastasis in 1 – 4 lymph node (s)
N2 = Metastasis in 5 – 9 lymph nodes
N3 = Metastasis in 10 or more lymph nodes

Preoperative markings were done with the patient in the upright position. In this position, a semi-circular margin of the breast was marked in the area of inframammary crease, and laterally and above as the anticipated place of quadrantectomy attempting to place the tumour centrally Fig. 1 presents the state after presurgical marking, and Fig. 2 the state after the surgery. Fig. 3 shows the surgery scheme. In

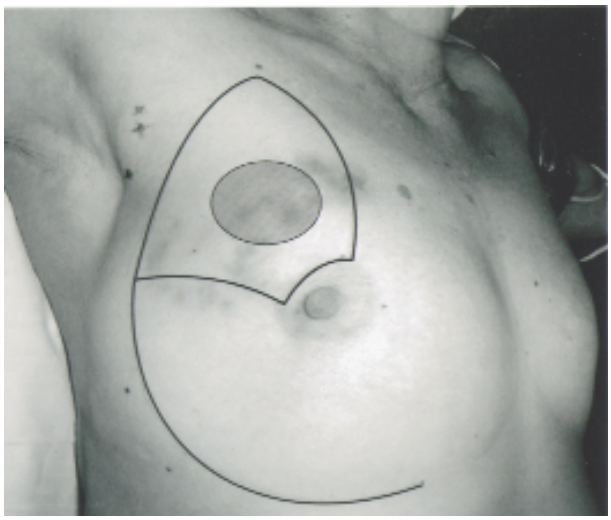


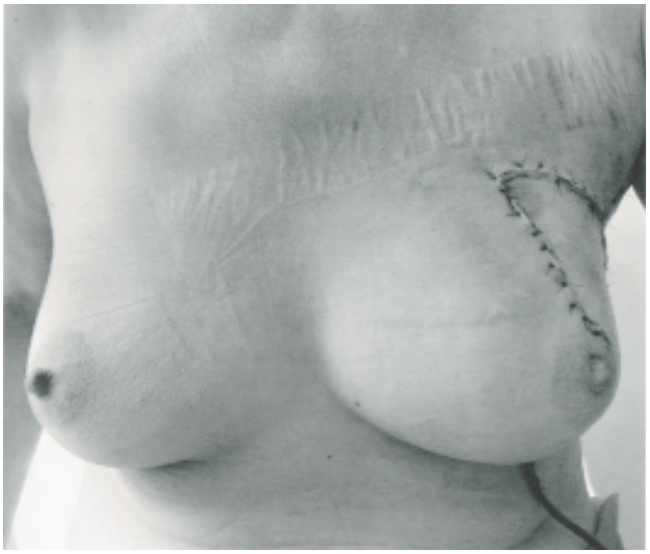
Fig. 1: Breast after the marking

Fig. 2: Breast after the surgery

the first phase of the surgery with V-incision directly to a pectoral muscle without skin or gland undermining, the quadrant was removed including the over-lying skin and the fascia below. The margins were marked on the slide (lateral, medial and upper) with 3 stitches, and then it was sent to X-ray screen and pathological analysis (with or without frozen section), and since 2003, also to intra-operative imprint cytology. In all the cases with positive imprint cytology (2 positive out of 6) frozen section examination was done.

Fig. 3: A schematic presentation of the surgery

After performing the quadrantectomy, the lateral and the lower part of the adjoining tissue were immobilised and rotated to the place of the developed defect. Before the final closing of the wound, the axillary dissection and correction of minor wrinkling of the skin (that were made by rotation in the area around the areola and towards the armpit) were performed. Figures 4−7 present the postsurgical results in some of the patients.



Figs. 4–7: Postsurgical results after “V”-technique

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RESULTS

Mean operative time was 95 minutes (range 65–130 minutes). Mean weight of excised breast tissue with tumour was 215 grams (range 135−780 grams). In 15.9% (7/44) of all cases, the margins were involved. Out of these 7, the tumour was multifocal in two cases and in another two there was extensive intraductal component. All patients with involved margins proceeded to a modified radical mastectomy of the Madden type. In 2 patients, surgery was immediately extended because of a positive intra-operative finding for malignancy and in 5 patients later after a final pathologic diagnosis was established. The average hospital stay was 7 days (range 3−12). Early complications (within two months after operation) developed in 21.6% (8/37) patients (Table 3). Median follow-up was 58 months (range 12−90 months).

Table 3: Early complications in operated patients

Complications	No. (n =37)	%
Haematoma	2	5.4
Breast seroma	2	5.4
Axillary seroma	4	10.8
Total	**8**	**21.6**

All the patients were checked once in 6 months at the clinic by both the surgeon and the oncologist. Bilateral mammograms were performed annually.

The results were analyzed statistically using life table (survival) analysis in program SPSS 16.0 for Windows. End points were survival (calculated from the operation date to death or the date of the last follow-up), local recurrence in the operated breast and disease (metastasis)-free period. All these parameters were analysed in five-year rates. There was developed ipsilateral breast local recurrence, in 10.8% (4/37) patients, 18.92% (7/37) developed distant metastases and 13.51% (5/37) died of the disease in the period within five years after the operation. The 5-year overall survival rate was 86.5% (st.err. 0.06). The 5-year disease free survival rate was 81.1% (st.err. 0.06). The 5-year local recurrence rate was 10.8% (st err 0.05).

The grading of the aesthetic results was performed by the surgical team in the 6 to 9 month period after the surgery. A grading system which was used had a score of 5 to 1 (5 = excellent; 4 = good; 3 = fair; 2 = mediocre; 1 = poor), and has been described previously by other authors (2). An estimation of three or more were considered to have a favourable result. Table 4 present the aesthetic result graded by the surgical team. The cosmetic result was favourable in 83.78% (31/37) of cases. From aesthetic parameters, the worst grade was given to the postsurgical scar.

Table 4: The grading of aesthetic result of the surgery, taking into consideration all the patient parameters

Grading score	No. of patients (n = 37)	%
1	0	0
2	6	16.2
3	6	16.2
4	12	32.4
5	13	35.2
Total	**37**	**100**

DISCUSSION

A rapid increase in the use of breast conserving-surgery started in the 1980s with the publication of three randomized studies which showed the same survival of the patients after radical mastectomy and those with the breast-conserving surgery followed by radiotherapy (5−7). Today conservative breast surgery has developed into an advanced treatment. A large tumour size became an indication for oncoplastic surgery, because wider surgical margins can be achieved without poor cosmetic results (8, 9).

The present study showed that the "V"-technique is one of the ways of successfully conserving surgery in the treatment of multifocal and T2 tumours with diameter larger than 3 cm in the upper outer breast quadrant. With the mean weight of excised breast tissue of 215 g in the majority of cases (84.1%, 37/44), we obtained an adequately wide rim of normal tissue around the tumour. Approximately 10 to 15% of the patients undergoing breast conservation therapy for operable breast cancer will develop a loco-regional recurrence within 10 years (10−12).

As the average size of the tumour was 34 mm and there were 4 pT2pN3 cases and 7 pT2pN2 cases (29.73%, 11/37) in this sample of patients treated with breast-conserving surgery, we consider the results of our survey (86.5% overall survival rate, 81.1% metastasis-free rate and 10.8% local recurrence rate in 5-years) comparable to the results of previous studies (10−12).

Favourable cosmetic result in 83.78% of this study is also one of the advantages of "V"-technique rotational flap, especially in most patients for whom corrective surgery on the other breast is not necessary. Major reasons for worse cosmetic results were too visible scars and too small residual breast volume in correlation to the other breast.

In conclusion, surgery with the "V"-technique rotational flap of breast tissue is technically simple, it enables a wide resection with a good aesthetic result and the breast symmetry in most cases does not demand corrective surgery on the other side. The advantage of this surgical technique is surgical simplicity that increases the possibility of its clinical application. Its primary disadvantage is a large postsurgical scar.

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