

Postoperative complications and risk of recurrence after skin sparing mastectomy and immediate reconstruction with autologous tissues: 9-year experience

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Introduction. Skin sparing mastectomy followed by immediate reconstruction with the use of autologous tissues is a promising method of treatment in breast cancer women, who can not be offered breast conserving treatment. We present our experience in applying this method.

Material and methods. Postoperative complications and long term results were analyzed in a group of 30 breast cancer women operated upon between 2000 and 2006, with a minimum 3-year follow-up. Reconstruction was performed with the use of TRAM flaps.

Results. No local recurrences were observed, one patient developed distant metastases. Minor ischaemia of breast skin flaps, not requiring additional surgery, was the most often postoperative complication.

Conclusion. Skin sparing mastectomy and immediate reconstruction with autologous tissues is a safe and recommended method of treatment in women who cannot be qualified for breast conserving treatment.

Key words: breast cancer, surgery, skin sparing mastectomy, breast reconstruction, complications, local recurrence

Introduction

Modern breast cancer treatment involves tissue conserving techniques in all applicable cases. Tumor excision and sentinel node biopsy is the method of choice. However, mastectomy is still necessary in a considerable number of patients. Breast cancer is a disease of the gland, not skin, therefore skin preservation is justified in a majority of cases, without oncological compromise.

Skin sparing mastectomy (SSM) was introduced recently by leading cancer centers, to be offered to women requiring breast amputation [1, 2]. Additionally, sentinel node biopsy or axillary dissection, according to specific indications, is performed during such procedure. As loose breast skin is left after such resection, immediate reconstruction using silicone implants or autologous tissues is mandatory.

This paper presents our 9-year experience in performing skin sparing mastectomy and immediate breast reconstruction with the use of rectus abdominis island flaps.

Material and methods

Material

We studied a group of 30 female breast cancer patients after skin sparing mastectomy and immediate breast reconstruction with the use of transverse rectus abdominis myocutaneous (TRAM) flap. Most of the flaps were delayed, according to our own method [3, 4], alternatively - microsurgical anastomoses of inferior epigastric vessels to internal mammary vessels were performed [5]. Vertical skin island (VRAM) flap was used in one case.

There were 11 cases of invasive breast cancer (T1-2, N0-1), 2 of phyllodes tumor, and CDIS was diagnosed in the remaining 17 patients.

Only patients with a full 3-year follow-up, operated upon between 2000 and 2006, were included in our study. Early postoperative complications and local recurrence or dissemination of the disease were analyzed.

Surgical technique

Mastectomy was performed through a periareolar incision (Figure 1). Additional incision was used in selected cases. Skin over the biopsy site was also excised.

Whole glandular tissue, including nipple-areola complex, was resected (Figure 2), and the whole remaining breast skin was spared. The dissection was performed with surgical knife and scissors only, without the use of electric knife. Electrocautery was applied only to close bleeding vessels.

Sentinel node biopsy or axillary lymph node dissection was performed, according to particular indications.



Figure 1. Periareolar incision with extension. TRAM flap outlined

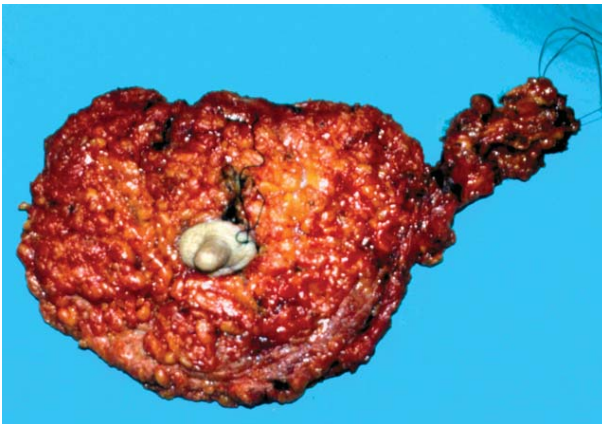


Figure 2. Breast tissue with nipple-areola complex and axillary lymph nodes removed through periareolar incision

Immediate reconstruction was executed with the use of autologous tissues alone. Transverse rectus abdominis myocutaneous island flap was our method of choice. After raising, the flap island was deepithelialised on all surface other than the estimated nipple-areola complex site (Figure 3). The island was then buried under the preserved breast skin envelope and new breast mould was created (Figure 4).

Results

Postoperative complications

Early postoperative complications requiring additional surgery were noted in three cases. Partial flap necrosis which needed necrectomy was observed in 1 case. Breast skin necrosis in the most distant region surrounding the excised nipple-areola complex, requiring excision and split-skin grafting, was seen in another patient. Persisting periumbilical fistula was seen in a third patient. This was dealt with by dacron mesh removal and hernia repair, with good result.

Limited fat necrosis in 1 patient and transient breast skin ischaemia in additional 6 were successfully cured without additional surgical intervention.

Late results

The follow-up was 102-38 months (mean 73 - well over 6 years). No case of local recurrence was observed, 1 patient developed distant metastases. Esthetic result was



Figure 3. Deepithelialised skin island of TRAM flap



Figure 4. Immediate reconstruction - mould creation with flap island

assessed as very good (Figure 5) or good in 24/30 cases, and fair in the remaining 6.

Discussion

Skin sparing mastectomy with immediate breast reconstruction was initiated in the mid 1990s [1, 2] and popularized in the beginning of the present decade. All classical methods of reconstruction were applied: silicone implants, a variety of rectus abdominis flaps and, less frequently, latissimus dorsi flaps with implants [6-11]. A novel technique using endoscopy was also recently proposed [12].

It is stressed, that SSM allows to preserve two elements important in obtaining good aesthetic result: natural breast skin coverage and an intact submammary fold [6]. Additional benefit of aesthetic abdominoplasty may result from the use of TRAM flaps [9]. However, it is very difficult or even impossible to produce good result in very large and ptotic breasts [13]. Luigi Cataliotti and Claudio Calebrese from the renowned breast unit in Florence strongly advocate against performing SSM

in such cases (personal contact, unpublished data). We support this view.

The spectrum and frequency of early postoperative complications in our series do not differ significantly from those reported by others. The most common was transient breast skin ischaemia in distant regions around the removed nipple-areola complex; the frequency reported by others varies between few and over twenty percent [6, 9, 14]. Delicate dissection with the use of knife and scissors alone, without an electric knife, is crucial in our opinion to prevent this complication. After introducing this modality we did not observe problems with skin circulation in our later cases. We do not perform SSM in women with large and ptotic breasts. We did not experience a single case of total flap necrosis, reported in some other series [6, 9]. As in all breast reconstructions, obesity, smoking and irradiation are main causes of postoperative complications [6, 9, 14, 15].

We believe, as most other authors do, that the final results of breast reconstruction in SSM utilizing autologous tissues are superior to those achieved with implants, particularly, when subsequent irradiation



Figure 5. Late result after 9 years - result assessed as very good

Table I. Local recurrence and dissemination of the disease after skin sparing mastectomy and immediate reconstruction (after Fernandez-Frias [], modified and completed)

Author	n	Follow-up (months)	Stage	Recurrence %	Dissemination %
Greenway	225	49	0-II	1.7	7.1
Downes	38	53	IIA-IIIB	7.9	26.3
Fersis	60	52	T1-2, LR	6.6	5.0
Carlson	565	65	0-IV, LR	5.5	4.2
Carlson	223	4.9	CDIS	3.3	0.9
Spiegel	221	117	0-II	5.6	6.8
Foster	25	49	IIB-III	4.0	16.0
Medina-Franco	173	73	I-III	4.5	17.9
own material	30	73	CDIS, T1-2, N0-1	0	3.3

is necessary [6-9, 11]. There is, however, argument whether SSM is at all justified in patients requiring later radiotherapy [16-19]. It is well established that irradiation may form a hard capsule around the implant, but also fibrosis and shrinking of a flap island. The presence of axillary lymph node metastases is a well established indication for radiotherapy, therefore it is suggested by some authors that patients with clinically negative lymph nodes should have sentinel node biopsy performed as an initial procedure alone, and SSM should be proposed only after negative result of such biopsy [20, 21].

The basic question regarding skin sparing mastectomy is, whether this procedure may result in an increased risk of local recurrence, in other words is it oncologically safe? Table I shows the results reported in the largest groups of patients so far, and also in our experience.

All authors confirm, that the risk of local recurrence after skin sparing mastectomy is not higher, than after classical modified radical mastectomy [22-29]. Nevertheless, all potential factors that may influence such risk (tumor size, margins, age, receptors, lymph node metastases, method of biopsy - core needle or open, etc.) are scrutinized in detail. It is confirmed, that factors which may influence the recurrence rate (positive margins, G III, high grade CDIS) are the same for both SSM and classical mastectomy without immediate reconstruction. The question of inadequate removal of breast tissue from beneath the skin, to prevent skin ischaemia, is also raised [30].

In conclusion, skin sparing mastectomy (SSM) with immediate breast reconstruction is widely recognized as a procedure which is oncologically safe [6, 8, 10, 11, 15-17, 22-29, 31, 32]. It can be applied in invasive tumor less than 5 cm, in multicentric cancers, diffuse preinvasive cancers and in prophylactic mastectomies. Some authors (see Tab. I) propose to widen these indications, what may have influence on their reported results. Main contraindications to SSM and immediate breast reconstruction are: inflammatory cancer and skin involvement. Our experience confirms that SSM is an

oncologically safe procedure, with a minimal potential for complications.

Conclusions

1. Skin sparing mastectomy with immediate reconstruction using autologous tissues is a recommended and oncologically safe procedure in patients not suitable for breast conserving surgery, and particularly - in large CDIS.
2. Distant region of preserved breast skin around the removed nipple-areola complex is most vulnerable to ischaemia. Delicate dissection without the use of electric knife prevents complications in skin circulation.

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