

## EARLY COMPLICATIONS AFTER SECONDARY BREAST RECONSTRUCTION USING LATISSIMUS DORSI MYOCUTANEOUS FLAP AND SILICONE BREAST IMPLANTS

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**Abstract: Introduction:** Secondary breast reconstruction is a multifactorial decision. It is based on the need for neoadjuvant/adjuvant treatment, lifestyle and expected cosmetic outcome of the patient. Aim of this study was to show early complications related with secondary breast reconstruction using latissimus dorsi myocutaneous flap and silicone breast implants.

**Material and methods:** This retrospective study was made with 24 patients who were treated at the Institute for Oncology Vojvodina in the period from 2007 to 2013. At all patients we underwent secondary breast reconstruction using pedicle latissimus dorsi myocutaneous flap (LDMF) and silicone breast implant.

**Results:** Almost at all patients we identified prolonged seroma formation like complication related to donor site (21/24 (87.5%)). Radiotherapy and chemotherapy after first operation have statistical significance on complications after LDMF. Smoking and obesity have no influence on complications.

**Conclusion:** Breast reconstruction using LDMF is related with small number of early postoperative complications and gives acceptable aesthetic results.

**Key words:** breast reconstruction, latissimus dorsi myocutaneous flap, breast cancer, breast surgery.

### INTRODUCTION

Breast cancer is the most common cancer in females and affects essential part of female sexuality and causes a wide range of psychological traumas (1).

First transfer of the Latissimus dorsi myocutaneous flap (LDMF) to cover chest wall defects was made by Iginio Tansini in 1897. Eight decades later Olivari (1976), Mühlbauer and Olbrisch (1977) rediscovered Tansini's method (2).

Secondary breast reconstruction after amputation could be made with the transfer of autologous tissue from adjacent regions to the breast region. The type and the timing (primary or secondary) of reconstruction is a multifactorial decision and it is based on the need for neoadjuvant and adjuvant chemotherapy, lifestyle of the patient, expected cosmetic outcome and experience and preferences of the surgeon (1, 3-9).

Aim of this study was to show early complications after secondary breast reconstruction using pedicle LDMF.

### PATIENTS AND METHODS

This retrospective study included 24 patients who were treated at The Institute of Oncology Vojvodina in the period from 2007 to 2013. Average age of patients was 53.21 years (range 39-69). All patients received adjuvant chemotherapy after the first operation and postoperative irradiation received 21 (87.5%) patient. Minimum six months after the irradiation we performed LDMF. Because of complication after nipple sparing mastectomy (NSM) (large skin flap necrosis etc.), we performed secondary reconstruction using LDMF in 7 cases.

At all patients we underwent secondary breast reconstruction using pedicled latissimus dorsi myocutaneous flap, after NSM or mastectomy and complete axillary lymph node dissection (cALND).

Preoperatively we underwent clinical examination at all patients, as well as imaging procedures (Ultrasound (US), mammography and magnetic resonance imaging (MRI) mammography) to exclude local relapses of primary breast cancer. Also we collected data about diabetes mellitus and smoking by patients to ex-

mine are these conditions related with increased number of complications.

All the patients preoperatively were administered with prophylactic dose of broad-spectrum antibiotics (1,5 g of Cefuroxime), one hour before the operation and the same dose was repeated the following day.

Preoperatively, all important lines (bra strap area and inframammary crease anterior and transverse skin paddle posterior) were marked. Preoperative clinical examination gives us data about latissimus dorsi muscle function. It is important that thoracodorsal neurovascular bundle is intact after first operation. Patients should make extension, adduction, and internal rotation of the shoulder joint.

The initial incision for reconstruction is usually made wherever the original mastectomy incision was made. The location may vary in different patients. After an ellipsoid incision at latissimus dorsi muscle projection (with a 90° abducted shoulder), the muscle is elevated with fat tissue and skin (this skin will be used to cover the new breast). Thoracodorsal vessels can be found at the upper lateral edge of the LDMF. After preparation of LDMF the whole muscle with fat and skin is passed through axillary tunnel between the two wound areas and brought to the place of the prior mastectomy. Wound at the back was closed in two layers with Vicryl

sutures. Two drains were usually left for two weeks postoperatively (one at the back and another under the transposed flap).

Under the LDMF, in all cases we used Mentor Contour Profile®, (Minneapolis, USA), silicone breast implants, to supplement volume of reconstructed breast. Recipient area is sutured with Vicryl sutures. This study was made in correlation with Helsinki declaration.

Values of  $p < 0,05$  were considered as statistically significant.

## RESULTS

Average number of hospital days was 11.63 (range 8-21 days). Average volume of silicone breast implants was 340cc (range 155-640cc).

The size of the LDMF skin paddle ranges from 6 to 10 cm wide and 20 to 25 cm long.

Almost at all patients we identified prolonged seroma formation like complication related to donor site (21(87.5%)). Minor skin necrosis was identified at 4 patients like complication related to flap site (Table 1).

Radiotherapy and chemotherapy after first operation have statistical significance on complications after LDMF. Smoking and obesity have no influence on complications (Table 2).

## DISCUSSION

The main aim in oncoplastic procedures after breast amputation is to create a breast, which is similar to the healthy side. The optimal method should be safe and offer a result that makes the patient feel as natural as possible (1-9).

Our opinion is that the patients' age doesn't have influence on the decision to perform or not, secondary breast reconstruction.

LDMF is the first surgical breast reconstruction procedure, while procedure is simple and uses pure autologous tissue from other parts of body (10). In some cases this procedure cannot provide a sufficient vo-

**Table 1.** Early complications after LDMF

Complication	Flap related Number (%)	Donor site related Number (%)
Epidermolysis	2 (20.00)	0 (0.00)
Minor infection	1 (10.0)	2 (8.33)
Major infection	1 (10.0)	0 (0.00)
Major skin necrosis	1 (10.0)	0 (0.00)
Minor skin necrosis	4 (40.0)	0 (0.00)
Prolonged seroma formation	1 (10.0)	21 (87.50)
Hematoma	0 (0.0)	1 (4.17)
Total	10 (100.00)	24(100.00)

**Table 2.** Risk factors for complications

FACTOR		COMPLICATIONS		p value
		YES	NO	
Smoking	Yes	13	2	p = 0.74
	No	1	8	
Obesity	Yes	6	2	p = 0.71
	No	1	15	
Adjuvant polychemotherapy	Yes	16	7	p = 0.29
	No	1	0	
Adjuvant radiotherapy	Yes	5	16	p = 0.01
	No	0	3	

lume of tissue for breast reconstruction. For women who have a relatively big breast an extended latissimus dorsi myocutaneous flap (ELD-MC) can sometimes avoid the use of any implant (3, 4, 11-14). One technically simple method, in French called "fleur de lis", imitating the pattern of a lily flower can provide additional fat tissue for reconstruction (11).

LDMF has a solid blood supply, but disadvantages of this procedure are sometimes a difficult surgical technique, a prolonged operational time and possible postoperative complications at the donor site. Most common postoperative complications is prolonged seroma formation at the donor site, which occurs with an incidence of approximately 20% (8). In our case 87.50%. We explain that because we don't use fibrin glue and quilting sutures. Some authors have minimized this complication by using a quilting suture when suturing the donor site or by using fibrin glue (12). We identified only few wound healing complications related to flap like epidermolysis in 2, minor infection in 1 and minor skin necrosis in 1 case. Major infection of flap site was identified only in one case. After prolonged antibiotics therapy (7 days) we were able to preserve LDMF and prosthesis beneath it. Radovanovic (15) have show that in 6% of cases after NSM, extensive flap necrosis is a reason for prosthesis explantation. In that cases secondary reconstruction is only possibility to reconstruct breast.

Obesity, smoking, postoperative irradiation, prognostic stage and the location of cancer in the breast are important factors to consider, before performing breast reconstruction using LDMF (16,17,18). Our results shows that adjuvant chemotherapy and postoperative radiation have influence on postoperative complications after secondary breast reconstruction. Smoking and obesity are not risk factors for secondary breast reconstruction. Breast reconstruction with pedicle flaps in smokers are not associated with a significant increase of the rates of vessel thrombosis, flap loss or fat necrosis compared with nonsmokers (17). Expert consensus is that patients should stop smoking at least 4 weeks

before operation. The majority of overweight patients who undertake breast reconstruction complete the reconstruction successfully but have a significantly higher rate of flap complications and donor-site complications (16-18, 19, 20). After irradiation complications rate are more often than in patients than are non-irradiated (39% vs. 25%). The aesthetic outcome is also slightly poorer (18).

Few months after the successful LDMF breast reconstruction we can perform secondary interventions at contralateral breast to achieve symmetry and volume. This secondary procedures help women to appreciate their own appearance and become more self-confident without feeling a loss of their femininity (6, 7, 11, 14, 19, 20).

## CONCLUSION

Secondary breast reconstruction using LDMF is related with small number of early postoperative complications. It also gives acceptable aesthetic results.

## Abbreviations

**LDMF** — latissimus dorsi myocutaneous flap

**NSM** — nipple sparing mastectomy or mastectomy

**cALND** — complete axillary lymph node dissection

**US** — Ultrasound

**MRI** — magnetic resonance imaging

**ELD-MC** — extended latissimus dorsi myocutaneous flap

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## Sažetak

# RANE KOMPLIKACIJE NAKON SEKUNDARNE REKONSTRUKCIJE DOJKE UPOTREBOM LATISSIMUS DORSI MIKUTANOG FLAPA I SILIKONSKOG IMPLANTA

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**Uvod:** Odluka o izvođenju sekundarne rekonstrukcije dojke je multifaktorijska. Bazira se na potrebi pri-

mene neoadjuvantne/adjuvantne hemioterapije, stila života i estetskih očekivanja pacijentkinje. Cilj rada bio je

da se prikažu rane postoperativne komplikacije povezane sa sekundarnom rekonstrukcijom dojke upotrebom latisimus dorzi miokutanog flapa i silikonskog implanta.

**Materijal i metod rada:** Retrospektivna studija obuhvatila je 24 pacijentkinje koje su lečene na Institutu za onkologiju Vojvodine u periodu od 2007. do 2013. godine. Kod svih pacijentkinja urađena je sekundarna rekonstrukcija dojke koristeći peteljkaсти latisimus dorzi miokutani flap (LDMF) i silikonski implant.

**Rezultati:** Kod skoro svih pacijentkinja identifikovano je produženo stvaranje seroma kao komplikacija

cija povezana sa donorskim mestom (21/24 (87,5%)). Radioterapija i hemioterapija nakon primarne operacije imaju statistički značajan uticaj na pojavu komplikacija nakon izvođenja LDMF. Pušenje i gojaznost nisu imali uticaja na broj komplikacija.

**Zaključak:** Sekundarna rekonstrukcija dojke upotrebom LDMF povezana je sa malim brojem postoperativnih komplikacija i daje estetski prihvatljive rezultate.

**Cljučne reči:** rekonstrukcija dojke, latisimus dorzi miokutani flap, karcinom dojke, hirurgija dojke.

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