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 Tansinis method (2).
mine are these conditions related with increased number of complications.

All the patients preoperatively were administrated 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 give 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 axilar 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 was 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 don’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 use pure autologous tissue from other parts of body (10). In some cases this procedure cannot provide a sufficient vo-

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**Table 1. Early complications after LDMF**

<table>
<thead>
<tr>
<th>Complication</th>
<th>Flap related Number (%)</th>
<th>Donor site related Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epidermolysis</td>
<td>2 (20.00)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Minor infection</td>
<td>1 (10.0)</td>
<td>2 (8.33)</td>
</tr>
<tr>
<td>Major infection</td>
<td>1 (10.0)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Major skin necrosis</td>
<td>1 (10.0)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Minor skin necrosis</td>
<td>4 (40.0)</td>
<td>0 (0.00)</td>
</tr>
<tr>
<td>Prolonged serosa formation</td>
<td>1 (10.0)</td>
<td>21 (87.50)</td>
</tr>
<tr>
<td>Hematoma</td>
<td>0 (0.00)</td>
<td>1 (4.17)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10 (100.00)</td>
<td>24(100.00)</td>
</tr>
</tbody>
</table>

**Table 2. Risk factors for complications**

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>COMPLICATIONS</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Smoking</td>
<td>Yes</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Obesity</td>
<td>Yes</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Adjuvant polychemotherapy</td>
<td>Yes</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>1</td>
</tr>
<tr>
<td>Adjuvant radiotherapy</td>
<td>Yes</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>0</td>
</tr>
</tbody>
</table>
volume 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 dont 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 indentified 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 indentified 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 MIOKUTANOG FLAPA I SILIKONSKOG IMPLANTA

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Uvod: Odluka o izvođenju sekundarne rekonstrukcije dojke je multifaktorijalna. Bazira se na potrebi primene neoadjuvantne/adjuvantne hemoterapije, stila života i estetskih očekivanja pacijentkinje. Cilj rada bio je...
da se prikažu rane postoperativne komplikacije povezane sa sekundarnom rekonstrukcijom dojke upotrebom latissimus dorzi miokutanog flapa i silikonskog implant.

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

**Rezultati:** Kod skoro svih pacijentkinja identificovano je produženo stvaranje seroma kao komplikacija povezana sa donorškim mestom (21/24 (87,5%)). Radio-terapija i hemoterapija 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.

**Ključne reči:** rekonstrukcija dojke, latissimus dorzi miokutan filap, karcinom dojke, hirurgija dojke.

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