LONG-TERM RESULTS OF BREAST REDUCTION IN FEMALE-TO-MALE TRANSSEXUALS

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Transsexualism is considered to be an extreme end in a large group of gender identity disorders. Two main types of transsexualism are identified: male-to-female (MtF) and female-to-male (FtM). Transsexual persons have a feeling of being incarcerated in a foreign body and therefore they wish to change their sex by hormone therapy and surgical treatment. Breast reduction usually is the first procedure in the process of surgical reassignment in FtM transsexual persons.

The aim of this study was to evaluate the long-term results of breast reduction in FtM transsexual persons, taking into account breast size and surgical technique. The doctors’ and patients’ opinions about the results were also compared.

Material and methods. The study was carried out in a group of 98 FtM transsexual persons treated at the Department of Plastic, Reconstructive and Aesthetic Surgery. Evaluation of the long-term results of breast reduction was performed based on clinical examination done by the doctors and a questionnaire filled in by the patients and the surgeons.

Results. Good results of breast reduction were achieved in more than 60% of the examined patients operated on mainly by Webster technique.

Conclusions. Clinical examination of the long-term results of breast reduction in FtM transsexual persons revealed good aesthetic effects. The doctors’ and the patients’ opinions were similar.

Key words: breast reduction, transsexualism female-to-male
penis and scrotum (8, 9, 10). The first stage of surgical correction of external sex organs in type FtM transsexual persons is breast reduction (11, 12). It is performed using methods developed for reducing the size of female breasts or methods used in patients with gynaecomastia, after individual selection and modification of the methods (11-15).

The aim of the study was to evaluate long-term results of breast reduction in FtM transsexual persons, taking into account breast size and surgical techniques, and compare the doctors’ assessment of long-term results of surgery with the patients’ assessment.

MATERIAL AND METHODS

At the Department of Plastic, Reconstruc- tive and Aesthetic Surgery of Medical University of Łódź, between 1991 and 2006, 302 patients identified as FtM transsexual persons were treated. In 281 patients, female breast reduction was performed (others underwent this procedure in other centres). Mean patients’ age was 28.6 ± 1.7 years. All patients had undergone psychiatric, psychological, sexuological, endocrinological and gynaecological evaluation, which allowed diagnosing “woman-to-man transsexualism”. The treatment at the department was started once the legal procedure of sex reassignment was completed (birth certificate, identity card).

All the patients that were operated on were invited to a follow-up examination, and 98 FtM transsexual persons did report. The examination was conducted between one year and 14 years after the surgical treatment. Mean patients’ age at the follow-up examination was 35.8 ± 2.2 years.

Assessment of long-term treatment results

Assessment of long-term results of breast reduction in FtM transsexual persons was based on medical examination and a questionnaire, which was filled out by both the patient and the doctor. The patients were asked an additional question – whether or not they regretted having undergone surgical treatment. The examination involved assessment of the shape of nipple areola, their symmetry, appearance of the scar, presence of deformation around the breasts and possible visibility of the breast bed. For each of the five criteria listed above, zero, one or two points were assigned, where 0 meant a positive result (areola shape normal, areolas symmetrical, scar discreet, no deformation, invisible breast bed); and 2 points meant a negative result (areola shape markedly deformed, areolas markedly asymmetrical, hypertrophic scar, significant deformation of the breast area and clearly visible breast bed). Assignment of one point meant an in-between result. The following scoring was adopted for the assessment of long-term results of breast reduction:

0-2 points – good result, man-like appearance of the chest,
3-5 points – satisfactory result, indicating possible need of corrective surgery,
6-10 points – unsatisfactory result, indicating the need of repeated surgical intervention.

Analysis of surgical techniques

Breast reduction in FtM transsexual persons was performed using four surgical techniques: Webster, Maillard, Mc Kissock and Conway (fig. 1A-D). The choice of technique was based on breast size. A four grade breast classification was adopted based on breast size:

A – small, about 200 cm³ volume,
B – medium, about 200-400 cm³ volume,
C – large, about 400-600 cm³ volume,
CC – very large, over 600 cm³ volume.

Breast volume was measured using the displacement method – the patient immersed each breast separately in a water-filled calibrated container to the level of the chest (positioned horizontally).

Based on the analysis of medical history, it was ascertained that in the group of 98 FtM transsexual persons operated on, 22 (22.4%) had type A breasts; 52 (53.1%) type B breasts; 19 (19.4%) type C breasts and five (5.1%) type CC breasts.

In the case of breasts with volume of up to 200 cm³ (A, 22 patients), most frequently the Webster technique was used (20 patients, 90.9%). Only in two patients, the Maillard technique was applied (9.1%).

Also in the case of breasts with the volume ranging from 200 to 400 cm³ (B, 52), the Webster technique was applied most frequently (43
In the study group, the Webster technique was used in 63 FtM transsexual persons in total: in 20 patients with breasts classified to group A, and in 43 with type B breasts. The distribution of good, satisfactory and unsatisfactory results are presented in tab. 1a. Satisfactory effect of breast reduction was connected with a slightly increased scar breadth, without marked deformation of tissue around the breasts. Unsatisfactory results were connected with scars that caused marked deformities. The patients’ assessment of long-term results of breast reduction was similar to that of the doctors’ (tab. 1b, fig. 2a,b).

In the group of patients operated on using Maillard technique (7 patients), according to the doctors’ assessment, good long-term results were achieved in two transsexual persons (28.6%), satisfactory results in three (42.8%), and unsatisfactory in the remaining two (28.6%) (tab. 2a). Satisfactory results were connected with areola deformities. Unsatisfactory results were connected, in addition to the
Table 1a. Distribution of long-term results of Webster breast reduction in the opinion of the physician

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>47 (74.6%)</td>
<td>12 (19.1%)</td>
<td>4 (6.3%)</td>
</tr>
</tbody>
</table>

Breast size

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>A (n=20)</td>
<td>B (n=43)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>15 (75%)</td>
<td>4 (20%)</td>
<td>1 (5%)</td>
</tr>
</tbody>
</table>

Table 1b. Long-term results of Webster breast reduction in the opinion of the patients

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>45 (71.1%)</td>
<td>13 (20.3%)</td>
<td>5 (7.9%)</td>
</tr>
</tbody>
</table>

Breast size

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>A (n=20)</td>
<td>B (n=43)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result</th>
<th>good</th>
<th>satisfactory</th>
<th>unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>15 (75%)</td>
<td>3 (15%)</td>
<td>2 (10%)</td>
</tr>
</tbody>
</table>

aforementioned, with chest disfiguring scars. Due to the fact that the number of patients in this group was small, the comparative analysis of surgery results in patients with type A breasts and type B breasts was abandoned. According to the patients’ opinion, good results were achieved only in one, satisfactory results in four, and unsatisfactory – in two patients (tab. 2b).

The fact that the number of patients in the group operated on using the Mc Kissock technique was small (four patients) makes a reliable assessment of the long-term treatment results difficult. Good results were achieved in two patients (50%), while in the remaining two patients – satisfactory (25%) and unsatisfactory (25%) results were achieved (tab. 3). Less satisfactory results were caused by asymmetry of areolas and deformities within the bed of the resected gland. The patients’ opinions on the aesthetic outcomes of the surgery were similar to the doctors’ opinions (tab. 3).

In 24 patients, including 19 patients with large breasts (C) and five patients with very large breasts (CC) the Conway technique was applied. According to clinical evaluation of patients with type C breasts, good results were achieved in 12 (63.1%), satisfactory results in 4 (21.1%) and unsatisfactory results in 3 (15.8%) patients (tab. 4a). In the group of patients with type CC breasts, good results were achieved in 2 patients (40%), satisfactory results in 2 patients (40%) and unsatisfactory results in 1 (20%) patient (tab. 4a). Satisfactory long-term results were caused by asymmetry and deformity of areolas and the presence of visible horizontal scars on the chest. Unsatisfactory results were connected

![Fig. 2a. Type FtM transsexual person prior to surgical breast reduction (breast size: A)](image1)

![Fig. 2b. Good results of breast reduction using the Webster technique](image2)
with, in addition to the above mentioned, the presence of a plane scar at the site of non-healing of the free graft of the nipple–areola complex (four patients). The patients’ assessment of aesthetic outcomes of the Conway breast reduction was more critical than the doctors’ assessment, and it was as follows: 11 persons assessed long-term results as good (45.8%), eight persons as satisfactory (33.3%), and five – as unsatisfactory (20.9%) (tab. 4b).

Medical evaluation of long-term results of breast reduction allowed ascertaining that good results were achieved in 65 (66.3%) patients, satisfactory results in 22 (22.5%) and unsatisfactory results in 11 (11.2%) patients operated on (tab. 5a). The assessment made by transsexual persons showed that 58 patients (59.2%) assessed the long-term results of breast reduction as good, 27 (27.6%) – as satisfactory and 13 (13.2%) – as unsatisfactory (tab. 5b). The patients’
Long-term results of breast reduction in female-to-male transsexuals

Table 5a. Long-term results of four techniques of breast reduction in the opinion of the physician

<table>
<thead>
<tr>
<th>Result</th>
<th>good (%)</th>
<th>satisfactory (%)</th>
<th>unsatisfactory (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>65 (66.3%)</td>
<td>22 (22.5%)</td>
<td>11 (11.2%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Surgery technique</th>
<th>Webster</th>
<th>Maillard</th>
<th>Mc Kissock</th>
<th>Conway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>47 (72.3%)</td>
<td>2 (3.1%)</td>
<td>2 (3.1%)</td>
<td>14 (21.5%)</td>
</tr>
</tbody>
</table>

Table 5b. Long-term results of four techniques of breast reduction in the opinion of the patients

<table>
<thead>
<tr>
<th>Result</th>
<th>good (%)</th>
<th>satisfactory (%)</th>
<th>unsatisfactory (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liczba pacjentów / number of patients</td>
<td>58 (59.2%)</td>
<td>27 (27.6%)</td>
<td>13 (13.2%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metoda operacyjna / surgery technique</th>
<th>Webster</th>
<th>Maillard</th>
<th>Mc Kissock</th>
<th>Conway</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>45 (77.6%)</td>
<td>1 (1.7%)</td>
<td>1 (1.7%)</td>
<td>n</td>
</tr>
</tbody>
</table>

assessment is characterized by a lower percentage of good marks and simultaneously an increased number of satisfactory and unsatisfactory marks. However, as the statistical analysis shows, the differences in the numbers are incidental, and the distribution does not significantly differ from the probability of $\alpha = 0.05$ and $\alpha = 0.01$ ($\chi^2_{0.01} = 9.21 > \chi^2_{0.05} = 1.08 < \chi^2_{0.05} = 5.99$). In addition, the significance of differences between the number of good marks and the number of totalled up satisfactory and unsatisfactory results in the opinion of the doctor was compared, using the significance test based on the "u" variable. The analysis shows statistically significant differences between the studied groups at two levels of significance: $\alpha=0.05$ and $\alpha=0.01$ ($u_{0.01} = 1.96 < u = 6.37 > u_{0.05} = 2.58$). Analogical analysis was done in the case of the patients' assessment, and similar results were obtained ($u_{0.01} = 1.96 < u = 3.57 > u_{0.05} = 2.58$).

**DISCUSSION**

The treatment of transsexual patients involves hormonal therapy, surgery and psychotherapy. The literature on gender reassignment surgery options in FtM transsexual persons is rich, but its main focus is on methods and innovative techniques of creating penis imitation. Breast reduction, which is the first procedure in the series, is rarely brought up, and in spite of many year experience, so far no specific methods for the treatment of FtM transsexual persons have been developed. For years, modified techniques used in reduction of female breasts or in the treatment of gynaecomastia have been used for that purpose.

Hage and Bloem have presented the results of breast reduction in 70 transsexual females, but they restricted themselves to defining the number and type of complications, which, unfortunately, significantly simplifies the evaluation of the results and makes the discussion impossible (13). Takayanagi and Nakagawa prefer the Webster technique of breast reduction in FtM transsexual patients with small breasts (like in our patients), and in the second stage, they perform the correction of nipple areolas (15). Monstrey and colleagues have presented results of surgical treatment in 92 FtM transsexual persons, achieving good results, both in the doctors’ and the patient’s opinion, using periareola breast reduction (12).
We agree with these authors in that in the case of small breasts (type A and type B according the adopted classification), best results of surgical treatment are achieved using the Webster technique (fig. 2a,b). The statistically significantly higher number of good marks in the study, compared with the remaining ones, confirms that the choice of surgical techniques depending on the breast size and the performance of the procedures by surgeons were proper.

The analysis of clinical material and assessment of long-term results of the procedures revealed insignificant broadening of scars without tissue deformity around the breast in 12 (19.1%) patients, and the hypertrophic scars, which caused larger deformities, in four (6.3%) patients. What contributed to the small number of unsatisfactory long-term results in the studied group of transsexual women was the appropriate care of postoperative scars, compliant with the doctor’s recommendations.

The most important aspect of surgery is the patient’s satisfaction with the outcomes. When evaluating the treatment results, none of the FtM transsexual persons declared that he regretted the decision to undergo a surgery, which is another step on the way to self-confirmation.

There have been some limitations to the study. It analyzed the results of breast reduction in FtM transsexual persons using four surgery techniques. The number of patients in the study groups differed, which meant that statistical tests and a reliable comparison were possible only in the case of two techniques, namely the Webster and the Conway techniques. However, it should be observed that the study group included the total of 98 FtM transsexual persons, and so far, it is one of the largest in the literature. Takayanagi and Nakagawa have presented the treatment of 29 FtM transsexual persons, and Hage and Bloem – 70 (13, 15). Monstrey and colleagues have described a comparable group of patients. The authors have analyzed 92 transsexual patients, paying attention first of all to the fact that in spite of insignificant percentage of complications after this type of procedures, there is a necessity to perform additional procedures to improve an aesthetic outcome and the appearance of the chest (12).

CONCLUSIONS

1. Clinical evaluation of long-term results of breast reduction in type FtM transsexual persons showed good aesthetic results.
2. Best results of breast reduction are achieved in the case of small and medium sized breasts (up to about 400 cm$^3$) operated on using the Webster technique.
3. The opinions of the patients and the physicians with respect to long-term results of breast reduction were convergent.

REFERENCES


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