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# Oncoplastic breast-conserving surgery: More relevant than ever? Results of a survey among breast surgeons

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## Abstract

**Purpose** Oncoplastic breast-conserving surgery has been part of clinical routine for several years without an internationally accepted nomenclature, standardization or a systematic evaluation of single surgical procedures.

**Methods** We carried out a structured survey of breast surgeons ($n = 50$) during the annual meeting of the German Society for Senology in Berlin 2017. In the run-up to the event, 10 questions were determined and released for an anonymous survey during the consensus meeting.

**Results** Most surgeons participating in the consensus meeting had an expertise of more than 200 oncologic breast surgeries in the last 3 years and approved the need of a higher rate of standardization in oncoplastic techniques. From the oncological standpoint, oncoplastic surgery is considered safe with a comparable rate of compilations as seen in conventional breast-conserving procedures. Most surgeons approve that using oncoplastic surgery, higher rates of breast conservation and improved aesthetic results can be accomplished. The majority of the participants would endorse a more systematic review of subjective aesthetic results in clinical routine.

**Conclusions** A higher degree in standardization of oncoplastic breast surgery is required for surgical-technical, educational, and scientific reasons as well as for a more differentiated monetary compensation of the surgical procedures. This process has already been started.

**Keywords** Breast surgery · Breast-conserving therapy · Oncoplastic surgery · Consensus

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## Introduction

At the end of the 1990s, the term "oncoplastic breast surgery" was established with the aim to already semantically express the recent endeavors to integrate reconstructive techniques into oncologic breast surgery [1–5]. The primary target was to improve the surgical-aesthetic results while preserving a high standard of oncological safety. That was associated with a paradigm shift towards breast-conserving therapies as an alternative to mastectomy as an oncological safe procedure that was especially shown in prospective randomized studies by Fisher et al. [6, 7] and Veronesi et al. [8, 9]. Depending on the authors and study group, a complete tumor or whole quadrant excision with tumor-free margins followed by defect reconstruction was aspired. The number and variations of breast-conserving surgical procedures have steadily increased over the years. The aim of oncoplastic surgery is to achieve a satisfactory form and look of the breast in a primary operation to prevent additional reconstructive procedures after radiotherapy. The surgical principles as they have been described and classified in the following years [4, 10] have not lost their relevance and they have been integrated into clinical routine of surgical breast cancer treatment [11–13] as seen in the German "S3 guidelines" [14]. Various classification systems exist parallelly and focus each on different aspects.

However, for methodical reasons, up to date, no randomized clinical studies exist that explore the oncological and surgical-technical safety and the aesthetic long-term results as compared to conventional breast-conserving procedures [15]. Gaining such evidence is desirable, yet for various reasons challenging. For example, an internationally accepted nomenclature and a standardization of single operational techniques are not available leading to a very limited comparability.

Tumor localization, differences in breast size and form and tissue factors (elasticity, fat-gland ratio, etc.) complicate attempts to standardize oncoplastic procedures. The expertise of the surgeon determines which procedure is best suited for each patient and an international consensus conference has published first results in that regard [16]. Independent from the preferred classification, there are two general opposing approaches. First, primary volume-augmenting procedures that combine the resection with an immediate reconstruction by local flap techniques (glandular, fascio-cutaneous, Latissimus-dorsi-flap) are one option. Second, primary volume-shifting procedures that combine the resection with various methods of volume reduction are another. For classification of oncoplastic techniques, several proposals were made, for example, the "Tuebingen classification" by Hoffmann et al. [13], followed by different approaches as seen in the "Basel classification" by Weber et al. [16, 17] or the "Paris classification" by Clough et al. [11].

A reflection of the above-described themes and the survey of the German breast surgeons were the main purpose of the here reported consensus conference about oncoplastic surgery on the annual meeting of the German Society for Senology in Berlin 2017.

## Materials and methods

The breast surgeons were surveyed during the 37th annual conference of the German Society for Senology (29.06.2017 and 01.07.2018 in Berlin). The consensus meeting for the classification of oncoplastic surgery of the breast ("*Konsensustreffen zur Klassifikation der Onkoplastik der Mamma*") took place on 30 June 2018 between 14:30 and 16:00 h with access for all congress participants. Chairmen of the meeting were Prof. Dr. med. Bernd Gerber, Rostock, Dr. med. Mario Marx, Radebeul, and Prof. Dr. med. Diethelm Wallwiener, Tuebingen. The purpose of the consensus meeting for the standardization of oncoplastic breast surgery was to inform participants about different international classification systems and to gather information about nomenclature, indication, monetary compensation, training, and quality control. In the run-up to the event, the group of authors came up with 10 relevant questions or statements to the above-discussed topics. The voting then followed after four more lectures that covered each the different classification systems. In addition, another lecture took place concerning breast surgery from health economical standpoints.

The surveys were anonymous and non-personalized performed with electronic voting devices that were given to the participants during the meeting. Question 1 referred to the breast surgeon's individual experience and the number of breast surgery procedures in the past 3 years. Questions 2–9 concerned specific statements in a "yes" or "no" style. Question 10 dealt with the most appropriate classification system according those interviewed. The participants could choose from the "Basel", "Tuebingen", or "Paris" classification and additionally "none" or "combination of classifications". Abstentions were also allowed for any question (Tables 1 and 2).

The analysis of the results was both descriptive by absolute and relative frequencies and hypothesis-generating by Chi square distribution (significance level $\alpha = 0.05$). We used SPSS (IBM, version 22) for statistical calculations and the tables were generated by Excel (Microsoft, version 2016).

**Table 1** Absolute and relative frequencies of the answers to questions No. 2–9 ("yes", "no" or "abstention")

| No. | "Yes/no" questions | Yes | | No | | Abstentions | |
|---|---|---|---|---|---|---|---|
| | | *n* | % | *n* | % | *n* | % |
| 2 | Do you see the need for standardization of oncoplastic breast surgery in general? | 32 | 64.0 | 3 | 6.0 | 15 | 30.0 |
| 3 | Do you consider oncoplastic surgery procedures compared to conventional tumor extirpation oncologically safer? | 24 | 48.0 | 14 | 28.0 | 12 | 24.0 |
| 4 | Do you observe higher post-operative complication rates (wound healing disorders, seroma, secondary hemorrhage, re-operation) of oncoplastic surgery as compared to conventional oncological breast surgery? | 14 | 28.0 | 26 | 52.0 | 10 | 20.0 |
| 5 | Are higher breast conserving rates possible using oncoplastic breast surgery? | 39 | 78.0 | 2 | 4.0 | 9 | 18.0 |
| 6 | Do you observe in general better aesthetic results using oncoplastic surgical procedures? | 36 | 72.0 | 2 | 4.0 | 12 | 24.0 |
| 7 | Do you consider it necessary that oncoplastic surgical procedures are more differently compensated as compared to less sophisticated tumor excisions? | 40 | 80.0 | 2 | 4.0 | 8 | 16.0 |
| 8 | Do you think post-operative patient satisfaction (aesthetic, functionality, complications) should be included in breast cancer certification (DKG/DGS) by standardized questionnaires? | 33 | 66.0 | 8 | 16.0 | 9 | 18.0 |
| 9 | Do you think an objective aesthetic evaluation (e.g. bcct.core) should be obligate for breast center certification (DKG/DGS)? | 17 | 34.0 | 18 | 36.0 | 15 | 30.0 |

*DKG* Deutsche Krebsgesellschaft (German Cancer Society), *DGS* Deutsche Gesellschaf für Senologie (German Society for Senology)

## Results

Of all participants ($n=50$), 42% conducted more than 200 and 19.4% even more than 500 oncological breast surgery procedures in the past 3 years (Table 2). The majority (64%) recognizes the need of more standardization of oncoplastic procedures and considers them safe from an oncological point of view with a comparable rate of complications (52%) as compared to standard breast-conserving operations. Higher breast-conserving rates and improved aesthetic results can be achieved simultaneously that was approved by 78% and 72% of the participants, respectively. A majority (66%) desires a systematic review of subjective aesthetic results in clinical routine for better patient satisfaction with the post-operative results. There is no majority for an obligate, for example, software-based, objective evaluation of aesthetic results as part of the certification for breast centers (34% "yes" vs. 36% "no" vs. 30% abstention). Most participants (80%) want a more differentiated monetary compensation of the procedures based on the oncoplastic efforts in comparison with less sophisticated breast-conserving operations. Table 1 demonstrates the results of all questions with absolute and relative frequencies.

No significant differences were seen in the voting record differentiated by senological experience ($<200$ vs. $\geq 200$ operations in the past 3 years). Figure 1 shows the relative frequencies and abstentions of the answers for questions 2–9 in those two groups. Similarly, in the analysis of abstentions for single questions, we could only find significant differences ($p<0.05$) in questions 3, 4, and 7 among the two groups (Table 3).

In the final question 10, we asked for the most appropriate oncoplastic classification system available with regard to indication, surgery planning, documentation, training, research, and monetary compensation. A majority favored the "Tuebingen" classification (47.5%), followed by the "Paris" classification (10%) and the Basel classification (0%). Another large group (42.5%) preferred a combination of already existing systems instead (Table 2).

## Discussion

To our knowledge, the results of this consensus survey about the current opinion of oncoplastic techniques in oncological breast surgery are the first gained within a general and open congress meeting among breast surgeons interested in the topic. The number of participants ($n=50$) and their expertise indicate that the group depicts a representative share of German breast surgeons, even though additional statistical information (specialty, occupation abroad, professional level in medical care, etc.) were not collected.

The answers indicate that oncoplastic procedures are by now well established in clinical routine, are considered oncologically safe, and have brought aesthetic benefits for a large share of breast cancer patients. The aesthetic outcome that is subjectively assessed by patient satisfaction should be a relevant target parameter. Standardized tools exist (e.g.,"Breast Cancer Treatment Outcome Scale") that have been broadly applied in research [18–20] and that are currently further developed [21].

**Table 2** Absolute and relative frequencies of the answers to question 1 and 10

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % | *n* | % |
| Question 1 | None | | 1–50 | | 50–199 | | 200–499 | | > 500 | | Abstentions | | | |
| How many breast surgery procedures have you done in the past 3 years? | 2 | 5.6 | 3 | 8.3 | 10 | 27.8 | 14 | 38.9 | 7 | 19.4 | 14 | 28.0 | | |
| | Thereof: < 200 | | | | | | ≥ 200 | | | | Abstentions | | | |
| | *n* = 15 | | 30.0% | | | | *n* = 21 | | 42.0% | | 14 | 28.0 | | |
| Question 10 | None | | "Basel" | | "Tuebingen" | | "Paris" | | Combination | | Abstentions | | | |
| Which classification of oncoplastic breast surgery do you consider the most appropriate in terms of teaching, guidelines, operation planning, indications, documentation and research? | 0 | 0.0 | 0 | 0.0 | 19 | 47.5 | 4 | 10.0 | 17 | 42.5 | 10 | 20.0 | | |

The objective, post-operative evaluation through, for example software assistance, however, should not be a target parameter for the certification as a breast center. That contrasts recent experiences with "BCCT.core" as the most frequently applied software solution with promising results in comparison with panel evaluations for aesthetic outcome [22]. We could not show in our survey a different voting record among groups of different operative experiences.

Our results clearly demonstrate that there is a high need for standardization of single operational procedures. Among all classification systems, the "Tuebingen" classification was considered the most appropriate for clinical use, even though a similar share favored a combination of single aspects from different classification systems. This indicates that only partial aspects from different classifications are adequately applied in clinical routine and no classifications can cover all necessary aspects.

In that context, one must consider that endeavors towards standardization reach their limits if different targets contradict each other. For example, the target of harmonization from a scientific point of view (e.g., in terms of outcome research) can contrast the desire for a differentiated view of operative procedures in the context of a fair and performance-based compensation system. The aspect of standardization of teaching is also very relevant. These potential conflicts of goals may lead to the fact that a large share of those interviewed preferred a combination of different classification systems. Moreover, the high number of abstentions may be interpreted in the way that simple solutions are always associated with compromises in utility in different settings. Interestingly, breast surgeons with a higher degree of experience (≥ 200 procedures in the past 3 years) tend to abstain over proportion. That may hint that a lot of aspects under discussion cannot be reduced to a simple and placative "yes" or "no" dichotomy.

Internationally, the field of oncoplastic breast-conserving surgery has gained a broad reputation that is reflected in the clear increase of the number of scientific publications in the last decade ("oncoplastic breast surgery" in PubMed database; 2007: 20 vs. 2017: > 90 publications). Moreover, similar to other surgical specialties, there is an increasing amount of structured approaches towards an interdisciplinary and international exchange as seen in the "Oncoplastic Breast Consortium" (OPBC; oncoplasticbc.org). It tries not only to establish standardization in oncoplastic procedures, but also to promote training and professional development programs. In addition, the role of evidence-based decision making for oncoplastic procedures should be strengthened in the future, for example, by coordination of research projects with prospective register data or the initiation of prospective clinical studies with patient relevant endpoints.

A systematization of oncoplastic breast surgeries is from the technical-operational point of view worth the efforts for

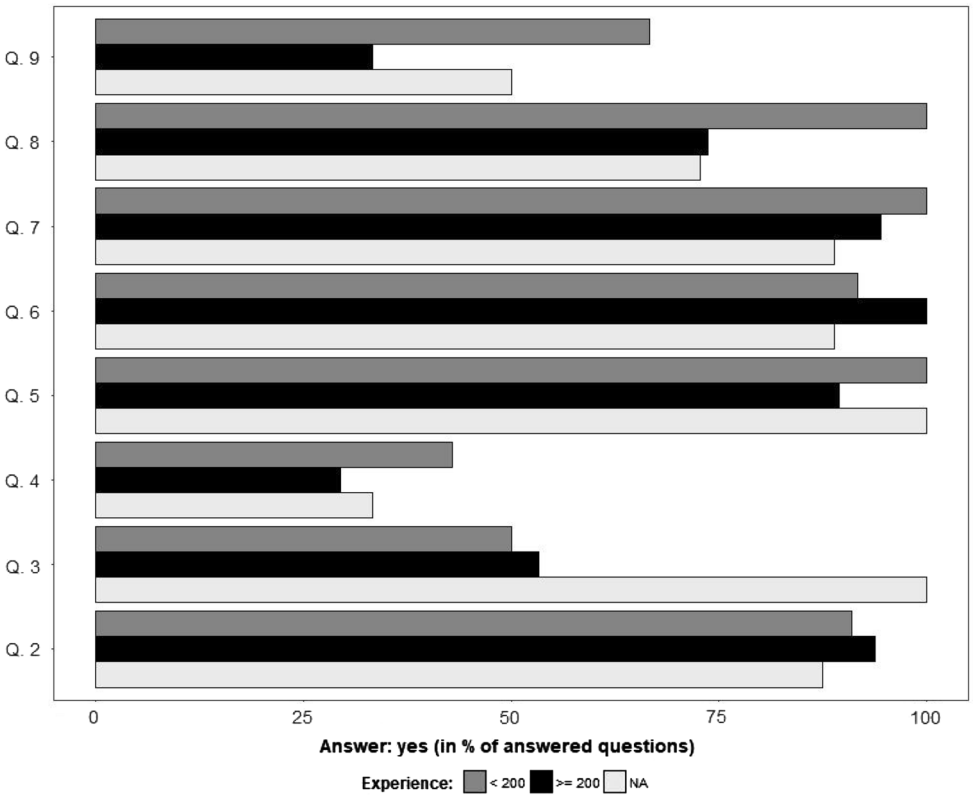


**Fig. 1** Relative frequencies (in %) of "yes" answers to question Nos. 2–9 (see Table 1 for the question content) depending on surgical experience (3 groups: < 200 vs. ≥ 200 breast surgery procedures in the past 3 years vs. abstention "NA")

**Table 3** Absolute and relative frequencies of the questions answered with "abstention" for each question No. 2–10 and their corresponding p-values comparing the groups of "< 200 vs. >= 200 breast surgery procedures in the past three years" using the chi-square test

| No. | Questions 2–10 | Number of abstentions | | | | *p* value |
|---|---|---|---|---|---|---|
| | | < 200 | | ≥ 200 | | |
| | | *n* | % | *n* | % | |
| 2 | Do you see the need for standardization of oncoplastic breast surgery in general? | 4 | 26.66 | 5 | 23.81 | 0.234 |
| 3 | Do you consider oncoplastic surgery procedures compared to conventional tumor extirpation oncologically safer? | 1 | 6.66 | 6 | 28.57 | 0.011 |
| 4 | Do you observe higher post-operative complication rates (wound healing disorders, seroma, secondary hemorrhage, re-operation) of oncoplastic surgery as compared to conventional oncological breast surgery? | 1 | 6.66 | 4 | 19.05 | 0.016 |
| 5 | Are higher breast conserving rates possible using oncoplastic breast surgery? | 2 | 13.33 | 2 | 9.52 | 0.111 |
| 6 | Do you observe in general better aesthetic results using oncoplastic surgical procedures? | 3 | 20.00 | 4 | 19.05 | 0.136 |
| 7 | Do you consider it necessary that oncoplastic surgical procedures are more differently compensated as compared to less sophisticated tumor excisions? | 0 | 0.00 | 3 | 14.29 | 0.003 |
| 8 | Do you think post-operative patient satisfaction (aesthetic, functionality, complications) should be included in breast cancer certification (DKG/DGS) by standardized questionnaires? | 4 | 26.66 | 2 | 9.52 | 0.372 |
| 9 | Do you think an objective aesthetic evaluation (e.g. bcct.core) should be obligate for breast center certification (DKG/DGS)? | 3 | 20.00 | 6 | 28.57 | 0.100 |
| 10 | Which classification of oncoplastic breast surgery do you consider the most appropriate in terms of teaching, guidelines, operation planning, indications, documentation and research? | 6 | 40.00 | 7 | 33.33 | 0.169 |

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educational purposes, for scientific standardization and for a differentiated compensation of the different procedures. This process has been already been promoted, for example, during the Stuttgart "airport meeting" 2018 and is to be continued.

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## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical approval** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** Not applicable.

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