Determinants of Breast Appearance and Aging in Identical Twins

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Abstract

Background: Appearance, aging, and disorders of the breast are multifactorial. There are intrinsic, patient-specific characteristics, such as breast growth during puberty and propensity for breast cancer, which are primarily inherited. There are also environmental factors, which can be potentially controlled. Monozygotic twins provide an excellent research opportunity to examine the role of extrinsic factors in subjects with identical genetic predispositions.

Objectives: The authors investigate the role and significance of various environmental and acquired factors on breast aesthetics.

Methods: Identical female twins were recruited during the Twins Days Festival in Twinsburg, Ohio, in 2009 and 2010. After consent was obtained, enrolled subjects completed a comprehensive survey on their medical and personal history. Standardized digital photographs were taken by medical photographers. Sixteen aesthetic breast features were subjectively rated by 6 plastic surgery residents blinded to the survey results. These ratings were then analyzed against survey data to determine the significance of different exogenous factors on breast appearance.

Results: A total of 161 pairs of identical female twins (n = 322) with a mean (SD) age of 47.6 (14.5) years were recruited. Twins who moisturized their skin daily had significantly fewer rhytids (P = .002). Twins who received hormone replacement therapy after menopause had more attractive breast shape, size, projection, areolar shape, and areolar size (P < .03). However, twins who had a higher body mass index, greater number of pregnancies, and larger cup sizes had significantly less attractive breasts (P < .05). Twins who smoked cigarettes and consumed alcohol also had significantly less attractive breasts (P < .05). Twins who breastfed had less attractive areolar size and shape but better skin quality than their counterparts who never breastfed (P < .03). Finally, there was a significantly higher incidence of breast pain in twins who primarily slept on their sides compared with twins who primarily slept on their backs (P < .008).

Conclusions: This study implicates several environmental factors that significantly affect the aesthetic quality of breasts.

Keywords
breast surgery, twins, aging, aesthetics

Accepted for publication May 29, 2012.

Breast appearance is determined by both genetic and environmental factors. Although we can speculate about what causes undesired breast features, studies supporting these etiologies are limited. One study that compared breast appearance to medical history in 132 unrelated women suggested that weight loss, older age, larger cup size, and higher number of pregnancies contributed to glandular ptosis.1 A separate retrospective study suggested that higher body mass index (BMI) and smoking also contributed to increased breast ptosis.2 However, these studies were not able to control for genetic differences between subjects and did not analyze additional factors that contribute to overall breast aesthetics, such as breast symmetry, areolar shape, and nipple ptosis.

The study of monozygotic twins allows for the control of genetic predisposition to certain factors. Through this study in identical twins, we hope to elucidate the
relative contributions of different exogenous factors on breast appearance. Understanding these factors can help patients and treating physicians modify factors that contribute to accelerated breast aging as well as help improve the outcomes of reconstructive and aesthetic breast surgery.

**METHODS**

Institutional Review Board approval was obtained and recruitment of female identical twins took place during the 2009 and 2010 Twins Day Festival in Twinsburg, Ohio. The Twins Day Festival draws nearly 3000 pairs of twins annually to Twinsburg, Ohio, providing the opportunity to recruit from this specific population. There is a designated research area during the festival, which is used by many researchers performing twin studies. The participants in this breast study were compensated for their time and effort with a gift card. The research team set up a mobile, enclosed unit to provide privacy for the volunteers. Each twin also completed a separate comprehensive 150-item questionnaire that queried for information about environmental, medical, and social history.

**Photo Grading**

A professional medical photographer obtained digital photographs only when both twins agreed to fully participate in the research study. The photographer made every effort to provide consistency in lighting and sizing of the photographs. Six digital photographs were taken for each standing subject at different angles: 1 frontal view with arms at the sides, 2 lateral (right and left), 2 three-quarter (right and left oblique), and 1 frontal view with arms raised above the head. These photos were then matched and collated for individual evaluation by 6 senior plastic surgery resident judges. These judges were blinded to any identifying information as well as any information from the questionnaires. Each participant was rated on 16 aesthetic features (Table 1), as well as perceived breast age difference between 2 sisters. For each feature, the judges assigned a Likert score of 1 to 5, with 5 being the most aesthetically favorable.

**Data Analysis**

The extrinsic factors were measured against breast quality Likert scores among all participants. The weighted effect of each breast quality on perceived breast age difference was also calculated, allowing perceived age difference to be a consistent basis for comparison between different breast qualities. The differences in extrinsic factors were compared within each twin pair to determine their effects on perceived breast age. Finally, reported morbidities such as breast pain, migraine headaches, back pain, breast cancer, and carpal tunnel syndrome were also analyzed against different extrinsic factors and breast qualities to determine their relationship with breast health. Since each individual participant had been exposed to environmental factors independent from her sister, we also performed statistical analysis using the entire cohort of the participants to examine the absolute effect of environmental factors on the breast appearance. The environmental factors were correlated to the Likert scale evaluations of the appearance attributes, allowing us to create a global breast score (see below).

The data analysis was performed by a biostatistician using forward-selection, stepwise multiple regression. Mean differences between twins were conducted using the Student t-test. JMP 8 software (SAS Institute, Inc, Cary, North Carolina) was used to perform the analysis. A P value of less than .05 was considered significant.

**RESULTS**

**Demographics**

A total of 322 subjects (161 twin pairs) with mean (SD) age of 47.6 (14.5) years (range, 25-74 years), a mean (SD)
Aesthetic Surgery Journal 32(7)

Influence of Breast Qualities on Perceived Age Difference

The 16 breast qualities affected perceived age differently. The most significant quality on perceived age difference was skin quality, which contributed to a 0.924-years younger perceived age appearance for every Likert score increment. The second most important quality was scars, which accounted for 0.866-years younger perceived breast appearance for every Likert score increment. Glandular ptosis, nipple ptosis, areolar size, projection, breast shape, breast size, dyschromic patches, and breast symmetry also contributed to younger perceived age appearance for every Likert score increment. Six of the 16 breast qualities judged did not significantly contribute to changes in perceived age, including areolar shape, rhytids, striae, inframammary fold symmetry, lateral skin rolls, and upper pole fullness. The weights of all 16 breast qualities are represented in Table 1. The significant associations between exogenous factors and specific breast qualities are listed in Table 2. Of note, obesity affected all evaluated measures of the breast appearance in a negative fashion.

History of Breast Cancer

Twins who had breast cancer had significantly more scarring than their twin sisters who did not have cancer ($P < .0001$). These cancer survivors also had significantly more glandular ptosis ($P = .035$) and breast asymmetry ($P < .001$), totaling a perceived breast age difference (increase) of 2.74 years (Figure 1).

Differences in BMI

Higher BMI was associated with poorer skin quality ($P < .0001$), striae ($P < .0001$), rhytids ($P < .0001$), dyschromic patches ($P < .0001$), lateral skin folds ($P < .0001$), glandular

Table 2. Exogenous Factors That Significantly Affect Breast Quality

<table>
<thead>
<tr>
<th>Breast Quality</th>
<th>Exogenous Factor</th>
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<tbody>
<tr>
<td></td>
<td>Breast Cancer</td>
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<tr>
<td>Skin quality</td>
<td>↓</td>
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<tr>
<td>Breast shape</td>
<td>↓</td>
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<tr>
<td>Breast size</td>
<td>↓</td>
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<tr>
<td>Areolar shape</td>
<td>↓</td>
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<tr>
<td>Areolar size</td>
<td>↓</td>
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<tr>
<td>Breast symmetry</td>
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<tr>
<td>IMF symmetry</td>
<td>↓</td>
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<tr>
<td>Projection</td>
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<tr>
<td>Upper pole fullness</td>
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<tr>
<td>Scars</td>
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<tr>
<td>Glandular ptosis</td>
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<tr>
<td>Nipple ptosis</td>
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<tr>
<td>Dyschromic patches</td>
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<tr>
<td>Rhytids</td>
<td>↓</td>
</tr>
<tr>
<td>Striae</td>
<td>↓</td>
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<tr>
<td>Lateral skin rolls</td>
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</table>

Abbreviations: BMI, body mass index; HRT, hormone replacement therapy; IMF, inframammary fold. Up and down arrows indicate significant positive and negative effect on the breast appearance parameter, respectively.

* All breast qualities are based on Likert scale 1 to 5, with 5 being the most attractive of that quality. A Likert 5 for rhytids means lack of any rhytids, and a Likert 5 for skin quality means highest quality. All arrows indicate significant associations ($P < .05$).
ptosis ($P < .0001$), and nipple ptosis ($P < .0001$). Higher BMI was also associated with decreased breast projection ($P < .0001$) and decreased upper pole fullness ($P = .002$). Finally, twins with higher BMI had more significant breast asymmetry ($P < .0001$), inframammary fold (IMF) asymmetry ($P < .0001$), less attractive areolar size ($P < .0001$) and shape ($P < .0001$), and less attractive breast shape ($P < .0001$) and size ($P < .0001$). Each BMI unit increment was associated with a perceived age increment increase of 0.17 years (Figures 2 and 3).

### Cigarette Smoking

Smoking affected 8 of 16 breast appearance parameters negatively (Table 2). Cigarette smoking was associated with decreased skin quality ($P = .001$), decreased projection ($P = .002$), nipple ptosis ($P = .028$), and decreased upper pole fullness ($P = .016$) compared with nonsmoker twins. Smoking was also associated with less attractive breast size ($P = .007$) and less attractive areolar size ($P = .005$) and shape ($P = .028$). The breasts of twins who smoked appeared 0.76 years older.

### Number of Pregnancies

Twins with more pregnancies had significantly lower skin quality ($P = .011$), less attractive breast shape ($P = .039$), and reduced upper pole fullness ($P = .042$). These twins also had more striae ($P = .030$), rhytids ($P = .007$), nipple ptosis ($P = 0.004$), glandular ptosis ($P = .001$), and lateral skin rolls ($P = .009$). Each additional pregnancy equaled a 0.21-year increase in perceived breast age.

Figure 1. The twin on the left (A, C) never had breast cancer, but the twin on the right (B, D) had unilateral cancer in her right breast. Both women were 55 years old.
Breastfeeding was associated with less attractive areolar size ($P = .004$) and shape ($P = .002$). However, a twin who breastfed had significantly better skin quality ($P = .017$) than her twin sister who never breastfed. Overall, the twin who breastfed had a net younger breast appearance of 0.07 years (Figures 4 and 5).

**Hormone Replacement Therapy**

Twins who underwent hormone replacement therapy (HRT) had significantly more attractive breast size ($P = .017$), breast shape ($P = .021$), areolar size ($P = .010$), and areolar shape ($P = .006$) than their sisters who did not. Twins who underwent HRT also had more attractive breast projection ($P = .005$) and fewer dyschromic patches ($P = .011$). On average, these twins had breasts that appeared 0.57 years younger than their non-HRT twins.

**Alcohol**

Alcohol consumption was associated with decreased skin quality ($P = .041$), glandular ptosis ($P = .039$), and increased lateral chest skin rolls ($P = .007$). Twins who refrained from drinking appeared an average of 0.24 years younger (Figure 6).

**Bra Size and Cup Size**

Larger bra sizes were significantly associated with decreased upper pole fullness ($P = .028$) and increased...
nipple ($P = .003$) and glandular ptosis ($P = .014$). Larger cup sizes were also associated with greater nipple ($P = .010$) and glandular ($P < .0001$) ptosis, along with increased IMF asymmetry ($P < .001$) and lateral skin rolls ($P < .0001$). Each inch increment in bra size was associated with a 0.09-year perceived age increase, and each increment in cup size was associated with a 0.23-year perceived age increase (Figures 7 and 8). Furthermore, larger cup sizes were associated with a greater incidence of migraine headaches ($P = .001$) (Figure 9).

### Sun Exposure

Increased sun exposure was associated with poorer skin quality ($P < .0001$) and increased striae ($P < .001$). Each additional decade of sun exposure led to a 0.20-year older breast appearance.

### Daily Moisturizing

Daily moisturizing of the breasts was significantly associated with fewer rhytids ($P = .002$). There was also a nonsignificant but strong association with decreased striae ($P = .059$) and dyschromic patches ($P = .056$). The twins who did not moisturize appeared 0.04 years older than their twin sisters who moisturized daily (Figures 10 and 11).

### Breast and Back Pain

Twins who slept on their side had significantly more breast pain than their sisters who slept only on their backs ($P = .007$). The entire study group can also be analyzed as independent subjects. In that case, 91 subjects had complete data to be considered for the effect...
of exercise. This analysis revealed that increasing weekly exercise would lead to a lower incidence of back pain \( (P = .0007) \). Using a similar methodology, 141 subjects with complete data points were analyzed to show that the probability of neck pain decreased with an increase in the number of years wearing a bra \( (P = .027) \).

Additional patient photographs—including patients with a previous history of extreme sun exposure—are available in online-only Appendices 1 through 4 at www.aestheticsurgeryjournal.com.

**Creation of the Global Breast Score**

To assess the importance of various factors in perceived breast aesthetics, we created statistical models to explain the observed differences. Using 3 different approaches, 3 different equations were created. The global breast score (GBS) provides a tool to measure and compare the effect of various aesthetic characteristics of the breast on the global aesthetic perception.

First, the photograph raters were asked to rank the 3 most relevant parameters for each twin pair leading to the perceived age difference and rate them from 1 to 3 (1 being the most relevant factor). With this approach, we were able to create the following formula based on the Likert scale values.

Global Breast Score 1 = 0.638 * AreolarSize + 0.527 * NipplePtosis + 0.518 * Projection + 0.414 * BreastShape + 0.387 * SkinQuality + 0.286 * SkinColor

The coefficient for each parameter indicates the weight of that parameter in the total breast score.

**Figure 4.** Both twins had 1 pregnancy, but the twin on the left (A, C) breastfed her baby, whereas the twin on the right (B, D) bottle fed. Both women were 45 years old.
The second method involved the evaluation of the Likert scale values and the perceived age, independent from the reviewers' impression of the relevance of each parameter. With this approach, we obtained the following formula:

Global Breast Score 2 = 0.924 * SkinQuality + 0.866 * ScarPresence + 0.865 * GlandularPtosis + 0.664 * NipplePtosis + 0.620 * AreolarSize + 0.395 * BreastSize

The third method utilized the average and distribution of each Likert score. These values were correlated with the perceived age difference. The result was the following formula:

Global Breast Score 3 = 0.235 * BreastShape + 0.177 * SkinQuality + 0.117 * BreastSize + 0.117 * Dyschromia + 0.117 * BreastSymmetry + 0.117 * NipplePtosis + 0.06 * GlandularPtosis + 0.06 * Projection

There is no gold standard for measuring the breast aesthetics to compare our 3 different GBS models. To find out how the 3 models differed we plotted these 3 scores for the cohort against each other. The plots showed very close correlation even though they include different parameters (Figure 12).

Each of the above models can be used to assess the effect of environmental factors on GBS and not just the perceived age difference. Using the first formula (GBS 1) for individual subjects (n = 299) showed that 4 parameters (age, BMI, bra size, and number of pregnancies) significantly affected the GBS value for a given subject (Table 3). The GBS 2 relationship analysis revealed a similar result with addition of the effect of breast cancer (Table 4).
These data indicated that the women with breast cancer scored about 2.5 points lower in the GBS calculation. The weight of significant factors using the GBS relationship is shown in Table 5.

**DISCUSSION**

Monozygotic female twins, photographed under standardized conditions by medical photographers, offer among the best opportunities to study the effects of environmental factors on breast appearance and disorders. Although the aesthetic qualities of one’s breasts are largely determined by genetics and age, this study demonstrates that exogenous factors play a major role in accelerating or decelerating the aging process. The exogenous factor that most negatively influences perceived breast age is breast cancer. Surgical resection of breast tumors results in deformities that include asymmetry, glandular ptosis, and scars.

Cigarette smoking negatively influenced Likert ratings of 8 different breast qualities in twins, including breast size, projection, and upper pole fullness. These results are consistent with previously published findings, such as a cross-sectional study of over 900 postmenopausal women who underwent mammography, which demonstrated that a positive smoking history was significantly associated with decreased breast density.3 Although decreased breast density explains some of our associations, decreased aesthetic appeal of the areola and breast skin may be explained by other consequences of smoking. A recent prospective study...
demonstrated that cigarette smoking significantly reduced oxygen content and increased the temperature of facial skin. This mechanism may explain the accelerated areolar aging demonstrated in our study. Furthermore, our results are also consistent with the findings by Guyuron et al that cigarette smoking significantly accelerated facial aging among twins.

Alcohol consumption also had a negative impact on breast appearance. The molecular mechanism of alcohol consumption on breast aging has not been addressed in the literature at this time. However, alcohol consumption has been strongly linked with increased risk of breast cancer. Furthermore, Guyuron et al found similar associations between alcohol consumption and accelerated facial aging. Although excessive alcohol consumption has been linked to numerous morbidities such as coronary heart disease, type 2 diabetes mellitus, stroke, hypertension, and peripheral arterial disease, there have not been any published data on the effect of alcohol consumption on breast aging until now.

Another significant factor that decreased breast attractiveness was higher BMI, which itself is determined by both genetics and behavior. By comparing BMI between identical twins, we were able to control for inherited predisposition and isolate differences in BMI to consequences of exogenous factors such as diet and exercise. A separate study of female identical twins concluded that genetics had a 56% influence on breast size, with 33% concordance in the genes that determine both breast size and BMI. This suggests that exogenous factors have a significant impact on both breast size and BMI. Our results suggest that higher BMI negatively influences almost all of the 16 different breast qualities judged, with the exception of scar appearance.

Pregnancy and breastfeeding provided interesting results in breast appearance. Although a higher number of

**Figure 7.** The twin on the left (A, C) wore a 35B bra size, and the twin on the right (B, D) wore a 40C. Both women were 33 years old.
Figure 8. The twin on the left (A, C) wore a 38D bra size, whereas the twin on the right (B, D) wore a 35C. Both women were 49 years old.

Figure 9. Association between cup size and migraine headache (MH) incidence.
pregnancies decreased the aesthetic appeal of breasts—namely, shape and ptosis—breastfeeding actually increased the overall aesthetic quality of the breast. Although the attractiveness of areolar shape and size were reduced in women who breastfed, these women had significantly better skin quality than women who had never breastfed. Since skin quality was found to be a much stronger determinant of overall perceived breast age, the net effect of breastfeeding was positive. It is conceivable that pregnancy alone causes negative changes that are significant enough in terms of breast aesthetics that potential negative effects of breastfeeding are masked. Our results support the conclusions of Rinker et al, who reported significant breast size and shape regressions following pregnancy but no significant change in breast ptosis after breastfeeding. Furthermore, their results are also consistent with our findings that smoking, larger cup sizes, and higher BMI were associated with less attractive breasts.

Hormone replacement and daily skin moisturizing were both associated with improved breast aesthetics. Moisturizing likely decreases the presence of rhytids by reducing water loss from the epidermis, forming a barrier to skin irritants and regulating epidermal enzymes for corneocyte desquamation. On the other hand, our study demonstrated that HRT decelerates breast aging in postmenopausal women by replacing estrogen and progesterone. Both estrogen and progesterone are responsible for the proliferation of breast epithelium during puberty. Estrogen elongates the rudimentary ductal tree in developing breasts, whereas progesterone fills out the stroma around the ducts. Although HRT is not primarily used for the purpose of breast maintenance, our study demonstrates that it may have a significant positive effect on preventing breast atrophy. However, it must be noted that HRT has

Figure 10. Twin on the left (A, C) has never moisturized; the twin on the right (B, D) has moisturized daily for 10 years. Both women were 50 years old.
been demonstrated to increase the risk of breast cancer; therefore, patients must be aware of both the potential benefits and risks of HRT.11

The association between breast pain and position during sleep is remarkable, considering that an estimated 45% of women suffer from mild breast pain and 21% suffer from severe breast pain.12 The currently accepted etiology for the majority of nonpathological mastalgia is hormone based. Exogenous factors such as smoking and caffeine consumption have also been implicated.13 However, to our knowledge, there have not been any studies directly linking mastalgia to sleeping in a lateral position until now.

Another very important correlation was the increased incidence of migraine headaches in patients with larger breasts. Migraine headaches are associated with irritation to peripheral sensory nerves of the head and neck, causing release of substance P and neurokinin A.14 We hypothesize that in women with larger cup sizes, posterior neck and occipital musculature show a higher baseline tone to balance for the heavier breasts ventrally. The higher tone may cause compression and irritation of the greater occipital nerve, causing occipital migraine headaches. Unfortunately, we did not obtain a detailed migraine headache history. However, starting in 2011, we have added a separate, detailed Migraine Headache Questionnaire to our protocol.

Although this study successfully isolated exogenous factors by controlling for genetic contributions in a relatively large sample size, it was not without methodological limitations. Not all subjects were included in all statistical analyses because of occasional missing data points. The data on exogenous factors were obtained through

Figure 11. The twin on the left (A, C) moisturized daily for 10 years, whereas the twin on the right (B, D) never moisturized. Both women were 60 years old.
self-reported questionnaires that were subject to recall bias and question misinterpretation. Furthermore, our breast quality scores were assigned on a subjective Likert scale for “attractiveness,” based on reviewer interpretation and personal preference. However, because the ratings of 6 different judges were averaged, the risk of outlier scores substantially decreased. Identical twins also tend to develop similar lifestyles and have similar exposures to exogenous factors. This emphasizes the need to analyze a larger set of identical twins to discern differences in environmental factors. To improve the validity of our study, we are currently conducting objective measurements of breast parameters to create a correlation with exogenous factors.

Figure 12. Plots of 3 different models for global breast score (GBS) calculations. (A) Correlation between GBS 1 and GBS 2. (B) Correlation between GBS 1 and GBS 3. (C) Correlation between GBS 2 and GBS 3.

Table 3. Significant Parameters According to the Global Breast Score 1 Formula

<table>
<thead>
<tr>
<th>Term</th>
<th>Estimate</th>
<th>P Value</th>
</tr>
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<tbody>
<tr>
<td>Age</td>
<td>−0.058129</td>
<td>&lt;.0001*</td>
</tr>
<tr>
<td>BMI</td>
<td>−0.072635</td>
<td>.0005*</td>
</tr>
<tr>
<td>Bra size</td>
<td>−0.121991</td>
<td>.0084*</td>
</tr>
<tr>
<td>Number of pregnancies</td>
<td>−0.158338</td>
<td>.0132*</td>
</tr>
</tbody>
</table>

Abbreviation: BMI, body mass index.
*The estimate column refers to the quantitative effect of each factor of the global breast score (GBS). The negative sign indicates a negative correlation with the global score—that is, the older the subject, the larger the BMI, the larger the bra size (the chest circumference, not the cup size), and the higher the number of pregnancies, the lower the GBS will be.
*Indicates statistical significance

Table 4. Significant Parameters According to the Global Breast Score 2 Formula

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<td>Age</td>
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<tr>
<td>BMI</td>
<td>−0.103804</td>
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<tr>
<td>Bra size</td>
<td>−0.278389</td>
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<tr>
<td>Number of pregnancies</td>
<td>−0.283393</td>
<td>.0081*</td>
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<tr>
<td>Breast cancer (0 = no, 1 = yes)</td>
<td>−2.464381</td>
<td>.0104*</td>
</tr>
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</table>

Abbreviation: BMI, body mass index.
*The estimate column refers to the quantitative effect of each factor of the global breast score (GBS). The negative sign indicates a negative correlation with the global score—that is, the older the subject, the larger the BMI, the larger the bra size (the chest circumference, not the cup size), and the higher the number of pregnancies, the lower the GBS will be.
*Indicates statistical significance
In this study, we introduced 3 slightly different equations to measure a global score for the aesthetic appearance of the breast. We hope that with inclusion of objective measurements and further refinement of the analyses, one unifying equation can be formulated.

**CONCLUSIONS**

Multiple exogenous factors play a significant role in breast aging and morbidity. Our study provides statistical evidence that higher BMI, smoking, drinking, multiple pregnancies, and larger bra and cup sizes contribute to accelerated breast aging, whereas hormone replacement therapy, breastfeeding, and daily moisturizing significantly decelerate the perceived aging of breasts.

**Disclosures**

Dr Soltanian is a paid consultant for LifeCell Corporation (Branchburg, New Jersey). The other authors have no financial interest to declare in relation to the content of this article.

**Funding**

This study was supported by 2 Allergan Foundation Breast and Cosmetic Medicine Grants from the Aesthetic Surgery Education and Research Foundation (ASERF).

**REFERENCES**