Preoperative Assessment Tool for the Planning of Inframammary Incision and Implant Profile in Breast Augmentation

Bishara S. Atiyeh · Saad A. Dibo · Marie Nader · Nazareth J. Papazian

Abstract When using the inframammary access incision for breast augmentation, careful planning is critical to allow the surgeon to set the inframammary fold (IMF) at the most optimal position, minimize scar visibility, and mitigate the main disadvantage of this approach. Current popular evaluation systems for breast augmentation include the High Five and Randquist systems and they base their calculations on inconsistent variables like skin stretch measurements. We propose a simple method that is not dependent on skin stretch measurements to properly determine implant size, profile, and position of the inframammary fold. Excluding digital scans and computer-based systems that are not universally available, the proposed simplified assessment tool was compared to the two most popular manual measuring tools (High Five and Randquist). Twenty-five female volunteers were included in the study. The projected IMF positions over the midsternal line for each measuring tool were recorded on each patient and the sternal notch (SN) to projected IMF distance $SN-IMF_1$ (simplified evaluation system), $SN-IMF_2$ (High Five System), and $SN-IMF_3$ (Randquist system) were compared. The anticipated new IMF position is determined based on the vertical implant dimension and not on breast base width. For most subjects, the differences between the three evaluation systems were minimal. The proposed breast measurement tool constitutes a new, much simpler, and practical method that proved to be successful in our hands.

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Keywords Breast augmentation · Augmentation mammaplasty · Inframammary fold · Breast

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Introduction

Since the development of silicone elastomer-shelled breast prostheses in the early 1960s, breast augmentation surgery has evolved considerably [1–3]. At present, it is the most popular and one of the most commonly performed surgical cosmetic procedures worldwide [3]. However, the optimal access incision, implantation pocket, and implant type, size, and shape are still the subjects of heated debates [4].

The choice of implant may rely entirely on the patient's wishes and demands, even though at times these may be unrealistic, overlooking breast skin envelope stretching and ultimately leading to "soft tissue failure" [2, 3, 5–9]. For any patient with a specific body type, a pleasing aesthetic

result is determined essentially by the implant's size, shape, and position on the chest wall. Implant fill volume, shape, and placement pocket should be adjusted to the patient's breast base width (BBW), breast implantation footprint, soft tissue envelope skin stretch measurements, and breast parenchyma thickness [1–3, 5, 7, 10–12]. A pleasing aesthetic result is achieved only when the most appropriate approach and implant size and shape are selected from a large variety of surgical options and available prostheses on the market [3, 12–15]. Thus, while meeting the patient's expectations and concerns is critical [8, 16], understanding and discussing tissue viscoelastic dynamics and consciously addressing anatomical limitations with some form of measurement and mathematical calculations are essential for optimal outcomes, as already described by various preoperative assessment tools [2, 3, 5, 7–12, 15, 17–20].

Various access incisions have been described, including inframammary, periareolar, transareolar, transaxillary, and transumbilical incisions, with advantages and disadvantages to each [1, 4, 21, 22]. The inframammary incision undoubtedly is the simplest and most straightforward approach. It provides the best access with surgical control and direct visualization to the subglandular, subfascial, and subpectoral planes without violating the breast parenchyma [4, 23]. It also minimizes implant trauma and contamination. However, careful planning of the inframammary fold (IMF) is critical [1, 4, 18].

Measurements of the BBW as well as soft tissue envelope characteristics are certainly essential determinants of the implant size and volume; however, we believe that the optimal IMF position is a critical determinant of the final outcome. Regardless of the pre-existing IMF position, the vertical dimensions of the chosen implant, whether round or anatomical, and not its volume or base width, determine the final IMF position after augmentation. With the TEPID or the High Five System [5, 10, 11, 17, 18], for two implants of equal dimensions but different fill volumes, an abnormally lower IMF position may be necessary for the implant with a larger volume. On the other hand, with the Randquist formula [20], two implants with similar base widths but different heights would have the same IMF position. With the tall-height implants, this would cause the nipples to be abnormally positioned, lower than the maximal point of anterior projection.

We propose a simple breast augmentation preoperative assessment tool to properly determine implant size and profile. Determination of the anticipated new IMF position is based on the vertical implant dimension and not on BBW. Transposed measurements of nipples and IMF positions are made over the midline zone of adherence, eliminating any discrepancies caused by inconsistent and variable skin-stretching measurements.
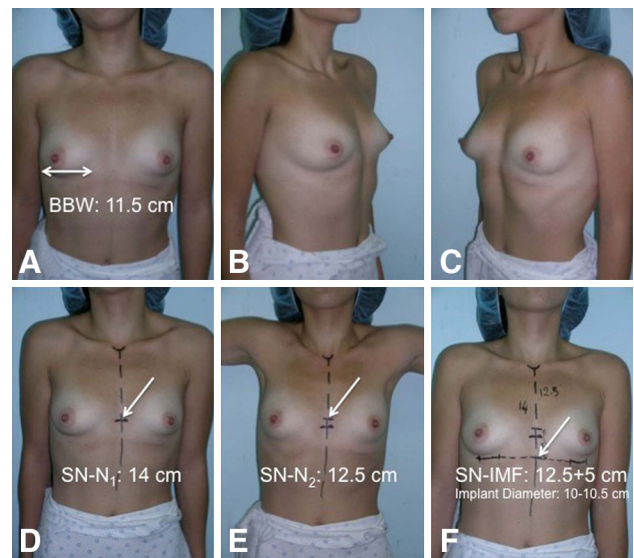

Fig. 1 **a–c** Patient presenting for breast augmentation. Her BBW was 11.5 cm. **d** Nipple position as projected to the midsternal line was 14 cm from the sternal notch (SN–N_1 = 14 cm). **e** With arms elevated to the horizontal position, the new nipple position after augmentation can be estimated as SN–N_2 = 12.5 cm. **f** With an implant diameter of 10–10.5 cm, the inframammary line would be located from the sternal notch (SN–IMF) at 17.5 cm

Planning of Inframammary Incision and Surgical Technique

Following the measurement of the BBW in the standing position, the base width of the selected implant is usually 1–1.5 cm less than the BBW, depending on the existing breast parenchyma. Existing soft tissue laxity and estimated compliance determines implant volume. Moderate-profile implants are chosen for patients with tight skin, and high and extra high profiles are selected when skin laxity is present and whenever mastopexy is not indicated. The form of the implant, whether round or anatomical, is determined based on the patient's body habitus and surgeon's preference.

Measuring the distance from the sternal notch to each nipple checks the nipple position. If the nipples are located at the same level, a horizontal line is drawn in between them with the patient's arms at her sides. The intersection of this line with a midsternal vertical line marks the original nipple position at the midline fixed zone of adherence. In case of a slight discrepancy in nipple level where a corrective mastopexy is not contemplated, the position of the higher nipple or, alternatively, a slightly lower position is transposed to the midline. To estimate nipple ascent secondary to augmentation and implant soft tissue envelope expansion, as already described by others [3, 15], the patient is asked to elevate her arms to the horizontal position. The projected higher new nipple position is then transposed to the midsternal line. Determination of the final IMF position is made in relation to
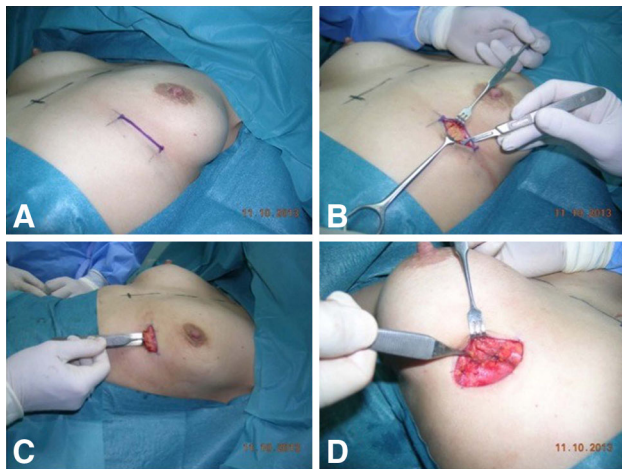
Fig. 2 a–c A 4–5-cm inframammary fold (IMF) incision was made with caudal beveling, including a 1.5–2-cm soft tissue rim with the cephalad flap. **d** Soft tissue rim secured by anchoring to the chest wall following implant insertion simulating normal IMF configuration

Fig. 3 Patient 20 days postoperatively following subglandular insertion of a 265 round textured cohesive gel implant with a diameter of 10.5 cm (Natrelle). Nipples and inframammary folds are at the preoperative estimated position

Table 1 Breast measurements made

Sternal notch to nipple	SN–N
Clavicle to nipple	C–N
Breast base width	BBW
Medial pinch	MP
Lateral pinch	LP
Upper pole pinch	UP
Nipple to infra mammary fold	N–IMF
Nipple to infra mammary fold$_{maximal\ stretched}$	N–IMF$_{Max\ Str}$
Areola diameter$_{vertical–horizontal}$	AD$_{V–H}$
Anterior pull skin stretch	APSS
Parenchyma to stretched envelope fill	PCSEF %
Nipple distance from midline	NDM
Sternal notch to nipple midline position$_{initial}$	SN–NP$_1$
Sternal notch to nipple midline position$_{projected}$	SN–NP$_2$
Sternal notch to infra mammary fold midline position$_{initial}$	SN–IMF$_I$
Sternal notch to infra mammary fold midline position$_{high\ 5}$	SN–IMF$_{H5}$
Sternal notch to infra mammary fold midline position$_{Randquist\ formula}$	SN–IMF$_{RF}$
Sternal notch to infra mammary fold midline position$_{simplified\ system}$	SN–IMF$_{SS}$

followed by dissection of the preoperatively chosen pocket in the subglandular, subfascial, or dual plane which proceeds in the standard fashion. Following insertion of the implant, the soft tissue rim is anchored to the chest wall while making sure to protect the implant with a malleable retractor, thus restoring the anatomical framework of the IMF with a firm zone of adherence (Figs. 2 and 3). Skin closure is finally achieved.

Materials and Methods

Excluding digital scans and computer-based systems that necessitate sizable investments and are not universally available, we have compared two already described manual measuring tools (High Five and Randquist) with our proposed simplified assessment tool.

Twenty-five female volunteers and potential candidates for breast augmentation participated in the study. Recorded demographic data of the study cohort included age, height, weight, and cup size of the bra usually worn. Breast measurements, including recommended measurements for High Five and Randquist assessments, were made as indicated in Table 1. Any existing asymmetries were also recorded. Subjects with tuberous breast malformation as well as more than Grade II ptosis were excluded. Implant size and position of the IMF were determined according to

this new higher point and is a function of the linear vertical dimension of the selected implant footprint and not of its volume or convex anterior surface, regardless of the existing IMF. The distance between the anticipated new nipple position and the final IMF level is equal to the radius of the round implant to be used (Fig. 1). For anatomically shaped implants, it is equal to the distance between the inferior implant border and a point on the implant footprint corresponding to the point of maximal anterior projection [21].

A 4–5-cm IMF incision is made with caudal beveling to include a 1.5–2-cm soft tissue rim with the cephalad flap,

Table 2 Projection of the IMF positions over the mid-sternal line as determined by the three systems: SN–IMF$_1$ for the simplified evaluation system we are proposing, SN–IMF$_2$ for the High Five System, and SN–IMF$_3$ for the Randquist system

	Age	Height (cm)	Weight (kg)	Bra size	SN–IMF$_1$	SN–IMF$_2$	SN–IMF$_3$
1	24	172	54	32A	17.25	17.5	17.5
2	23	175	58	34B	21	20.5	20.5
3	19	170	54	34C	21.5	20.3	21
4	21	168	52	34B	20.5	21	21
5	23	171	58	36C	22	20	20
6	23	169	59	34B	19.5	20.5	20
7	20	170	53	34B	20.5	20	20.5
8	26	176	65	36B	22.5	25	25
9	23	162	52	34B	19	19	19.5
10	22	168	55	34B	20	19	18.7
11	23	163	48	36B	20.5	18	19.5
12	23	177	67.5	34C	20	21	21.5
13	26	157	51	34B	19	18.5	19.5
14	18	174	58	36A	21	19.5	21
15	18	169	49	34B	20	18	18.5
16	19	165	61	34B	22	21	22
17	20	169	59	32C	20	20.5	21.5
18	24	169	57	34B	21	20.5	21
19	23	165	53	34B	20	19	19
20	22	165	52	34C	20.5	18	19
21	23	156	53	34A	17.5	17	17
22	22	158	51	34B	18	18	17.5
23	22	169	70	32B	21	21	21.5
24	23	173	67	36B	22	21	21.5
25	25	169	57	34B	20.5	21	21

Table 3 Variations in SN–IMF measurements between the three evaluation systems

	SN–IMF$_1$–SN–IMF$_2$	SN–IMF$_1$–SN–IMF$_3$	SN–IMF$_2$–SN–IMF$_3$
1	−0.25	−0.25	0
2	+0.5	+0.5	0
3	+1.2	+0.5	−0.7
4	−0.5	−0.5	0
5	+2	+2	0
6	−1	−0.5	+0.5
7	+0.5	0	−0.5
8	−1.5	−1.5	0
9	0	−0.5	−0.5
10	+1	+1.3	+0.3
11	+1.5	+1	−1.5
12	−1	−1.5	−0.5
13	+0.5	+0.5	−1
14	+1.5	0	−0.5
15	+2	+1.5	−0.5
16	+1	0	−1
17	−0.5	−1.5	−1
18	+0.5	0	−0.5
19	+1	+1	0
20	+1.5	+1.5	−1
21	+0.5	+0.5	0
22	0	+0.5	+1.5
23	0	−0.5	−0.5
24	+1	+0.5	−0.5
25	+0.5	−0.5	0

the High Five System, the Randquist formula, and our proposed simplified measurement system. For the sake of simplification, only implants with a round profile were considered. Because different manufacturers provide various volumes for similar implant diameters, product charts from Mentor® (Santa Barbara, CA, USA), Natrelle® (Irvine, CA, USA), Silimed (Santa Monica, CA, USA), and Cereform® (Cereplas, Sailly-lez-Cambrai, France) round implants constituted a wide range of volumes to make the most appropriate choice. Following estimation of the most appropriate implant volume and determination of the IMF position following the guidelines set by the three assessment tools, projection of the IMF positions of the three systems over the midsternal line were recorded as SN–IMF$_1$ for the evaluation system we are proposing, SN–IMF$_2$ for the High Five System, and SN–IMF$_3$ for the Randquist system.

Results

SN–IMF$_1$ (simplified evaluation system we are proposing), SN–IMF$_2$ (High Five System), and SN–IMF$_3$ (Randquist system) measurements for each of the 25 volunteers are given in Table 2. Variations in SN–IMF measurements among the three evaluation systems are summarized in Table 3. For most subjects the differences were minimal.

Discussion

Breast augmentation is certainly not simply inserting an implant into a pocket [3]. It aims at the creation of symmetric, aesthetically pleasing, and natural-appearing breasts characterized by a straight or slightly convex upper pole, a nipple-areola complex positioned over the point of maximal anterior projection, a well-proportioned lower pole, and an attractive medial cleavage [8, 24].

Beauty of the breast is highly dependent on aesthetic proportions; however, trying to define the ideal breast may

be unrealistic [8, 25]. A pleasant breast augmentation outcome may be achieved only if the implant size and shape are chosen while respecting the natural boundaries of the breast and its aesthetic proportions in relation to the chest wall and the rest of the body [3, 8, 24]. This necessitates advanced plastic surgery skills characterized by good artistic assessment, design, and execution [7, 26].

Contrary to the inference that there is only one "best" implant for any given patient, there is a certain tolerance or range in each of the measurements used. For every patient there are a number of different implant sizes and shapes that could provide a pleasing outcome [12, 27]. Moreover, for the same implant footprint dimensions, a larger or smaller implant might be chosen depending on the amount of existing breast tissue and the degree of skin laxity [12]. For tight soft tissues, a low-profile implant is probably a good choice; on the other hand, higher profiles are best suited when tissue laxity is present. In case the patient wishes greater breast size enhancement, we feel that a one-size increment in implant width and volume can be easily tolerated. Conversely, one size lower applies to patients wishing a moderate augmentation. The desired upper-pole profile determines whether a round or an anatomical implant is best suitable. Failure to adhere to these principles can lead to a poor outcome and an unhappy patient [3, 9].

Due to elastic and plastic deformation, stiffness, compliance, resilience, and creep deformation, final breast contour and volume are usually reached 3 months after augmentation mammoplasty. In particular, large implants tend to lower the IMF and cause stretching of the fibrous adherence bands even when it has not been violated [12]. Thus, it is important to position the IMF conservatively, slightly higher than what may be dictated, even though this may appear to initially result in a shorter than desired nipple–inframammary distance.

Tebbetts and Teitelbaum [6, 28] have warned against using high and extra-high projecting implants to avoid mastopexy in patients with moderate ptosis. However, to account for excessive laxity, guidelines formulated by implant selection systems based on skin stretch measurements may lead to choosing oversized implants. For any given patient, the BBW limits the footprint dimensions of the implant that can be appropriately used [7]. If the implant does not completely fill the lax envelope despite the highest available volume and projection, the patient needs additional mastopexy, not a larger implant with larger dimensions as this may lead to disastrous unavoidable creep deformation months or years after surgery [6]. In fact, the need for mastopexy can be easily anticipated preoperatively. When compared to the ideal sternal notch to nipple (SN–N) distance, an actual SN–N distance of greater than 2 cm in the presence of good soft tissue tone
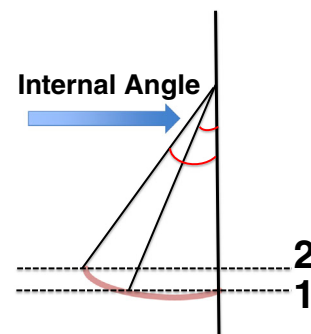

Fig. 4 With increased breast internal angle and anterior projection, the nipple tends to get elevated

and support may be easily corrected by implanting a moderate- to high-projection prosthesis. A larger discrepancy is an indication for mastopexy.

Respecting the patient's breast implantation base is the one most important principles in breast augmentation [8]. BBW is a fixed measurement and is the single most important dimension on which the choice of the most appropriate implant is based [3, 7, 8, 29]. Moreover, the implant's vertical dimensions are the major determinants of IMF position, not the implant's fill volume, anterior projection, or base width as proposed by the various existing assessment tools. At present, most manufacturers provide a wide range of fill volumes for each implant diameter or height and width dimensions. Some manufacturers provide larger fill volumes than others for the same base dimensions. Thus, for each implant footprint dimension the surgeon has a wide range of shapes and volumes from which to choose.

Contrary to what has been repeatedly reported, that breast augmentation lengthens the SN–N distance [3, 24, 26], although this may occur gradually with time, a properly performed breast augmentation elevates the nipple–areola complex in relation to the chest wall [15]. Thus, the SN–N distance does not accurately reflect nipple position. It is not difficult to see that for the same SN–N distance, the nipple position of breasts with greater anterior projection and internal angle would be higher on the chest wall than that of breasts with lower projection (Fig. 4). Lack of nipple position determination in relation to the chest wall is a deficiency of most currently applied measurements and evaluation tools. The importance of proper positioning of the implant in relation to the nipple–areola complex has only lately been recognized; thus, the limit of the lower implant pole and IMF position must be determined based on the projected new nipple position.

The IMF is a relatively fixed zone of firm fibrous attachments; it is a landmark of great significance that is largely responsible for the contour of the mobile breast
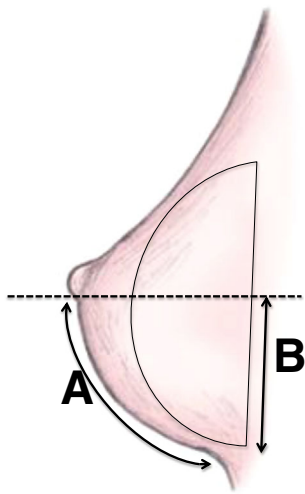
Fig. 5 *Distance B* is fixed and determined by implant dimensions while *distance A* is a function of the tension applied to the lower pole skin which could vary among surgeons

tissue, preventing its gravitational descent [11, 12, 26]. Although the IMF is ideally at or above the level of the sixth rib, the IMF position in fact is quite variable from person to person [26]. Though many factors, including soft tissue stretch, which is beyond the surgeon's control, can affect the long-term IMF position [18], respecting the important IMF configuration and determination of the optimal IMF position at the time of breast augmentation are major factors affecting final outcome. Not infrequently, lengthening of the lower-pole skin is required either by compliance-dependent expansion exerted by the implant or by surgical recruitment of the submammary upper abdominal skin. When indicated, lowering of the IMF is a critically important maneuver [6, 8, 11]. However, excessive undermining of the lower breast pole with aggressive disruption/lowering of the IMF combined with imbalanced implant-breast tissue dynamics leads to creep bottoming and upward tilt of the nipples [6]. Furthermore, with the periareolar approach that necessitates subcutaneous undermining of the lower pole, the detached breast tissue tends to retract cephalad. Reconstruction of IMF anatomy is not possible with the transaxillary or the periareolar approach. It is possible only with the IMF incision [26].

Postoperative N–IMF distance is certainly influenced by implant volume. With every 100 ml of added implant volume, the N–IMF distance increases by 0.8 cm; a larger increase is observed with anatomic implants [24]. As determined by the High Five System, the recommended intraoperative N–IMF for the planned implant is often greater than the patient's preoperative N–IMF$_{MaxStr}$ [11]. However, planning the inframammary incision with this system is an approximation greatly influenced by the

tension applied to the lower-pole skin and may vary with different surgeons' measuring techniques [5]. Moreover, areolar contraction, usually very noticeable when a female breast is being examined, can be associated with substantial measurement inconsistency [8]. Obviously, reliance on constant implant measurements and fixed landmarks and reference points on the anterior chest wall would make determination of the IMF position more reliable, consistent, predictable, and reproducible (Fig. 5).

Determination of the implant's dimensions and IMF incision location using our method which is based on BBW and the nipples' position measurements is simple, fast, and straightforward. We have been using it routinely for more than 25 years and it is somewhat comparable to what has been recently described in conjunction with 3D simulation based on optical body scans and biomechanical modeling [9, 15]. However, widespread clinical application of this costly technology has not materialized [30, 31] and its clinical significance is still controversial, particularly in the absence of any reliable correlation between virtual simulation and real surgery [9, 14, 15, 24, 30, 32]. With 3D simulation, the new nipple position is determined by elevating the arms 45° above the horizontal plane. A horizontal line is then drawn from the nipple to the sternum. The implant's lower pole is determined from this line based on the vertical dimensions of the implant. The amount of skin needed between the nipple and the IMF is equal to the distance between the nipple position and the implant's lower border plus 0.5–2 cm depending on the amount of existing breast tissue [15]. We feel that the distinction between the implant's lower border and the IMF, which may be logically justified, is an unnecessary confusing element of the proposed evaluation system; moreover, adding more or less 2 cm to the lower implant position to determine the IMF level adds a highly subjective dimension to what is presented as an objective 3D simulation tool. It is our experience that by elevating the arms to only the horizontal level to determine nipple position in relation to the chest wall, the proper IMF position may be simply determined based on the vertical dimension of the implant without the addition of a correcting factor.

The access incision has been judged to be the least important of the critical decisions a surgeon must make during breast augmentation planning [11, 33]. However, we believe that the planning of the incision is a basic and important step in the artistic design that determines the final outcome of any aesthetic procedure. In breast augmentation, the access incision is largely a matter of patient and surgeon preference [34]. However, due to the growing data in support of the subclinical infection theory of capsular contracture (CC), incision location and its possible influence on CC rates is emerging as a critical factor [31, 33, 35]. The incision as a determinant of the degree of

implant exposure to bacterial contaminants is more prevalent when located in the axilla [11]. Although to date there is little objective evidence to support the use of one incision location over another, and despite conflicting reports about the lower incidence of complications with inframammary incisions, recent evidence shows that the inframammary approach is overwhelmingly most popular [12, 31, 33–37].

Hidalgo [22] has mentioned that closure of the inframammary incision may be more precarious in terms of either implant puncture during closure or exposure postoperatively. The use of a malleable retractor to protect the implant when suturing the incision and incorporating a soft tissue flap with the cephalad edge of the incision firmly anchored to the chest wall, as we are described, help not only to secure safe incision closure but also, most importantly, to restore the IMF zone of adherence and fix the incision to the chest wall at the most appropriate level.

As demonstrated by the measurements we have performed on 25 volunteers, determination of optimal implant volume and IMF position using the High Five System, the Randquist formula, and our proposed measurement system yielded almost equivalent results in most subjects, with minor variation that is probably clinically not significant. Statistical analysis is not applicable to this type of study because the comparison is not between three separate groups of measurements but between three separate measurements for each single subject. It is worth mentioning also that there is a certain tolerance or range in each of the measurements used. Our preoperative assessment tool is easily applicable whether round or anatomical implants are used. For anatomical implants, the IMF position is determined based on the vertical dimension and not the horizontal width of the implant [4].

Conclusion

All previously described preoperative assessment tools certainly have specific strengths and advantages, but they have also weaknesses. There is no one implant, incision, or pocket plane that is appropriate for every patient. This makes breast augmentation both an art and a science [4]. Choosing the proper implant shape and size for any particular patient is not and should not be an exact mathematically precise decision. Moreover, to optimize outcomes and minimize reoperation and complications, the nonsurgical artistic aspects of breast augmentation are still more important than the surgical procedure itself [7]. However, neither the artistic sensibility alone nor the engineering approach and mathematical analysis is ideal. With the reciprocal stress and strain relationship between breast tissues and the implant in mind [6], an approach that
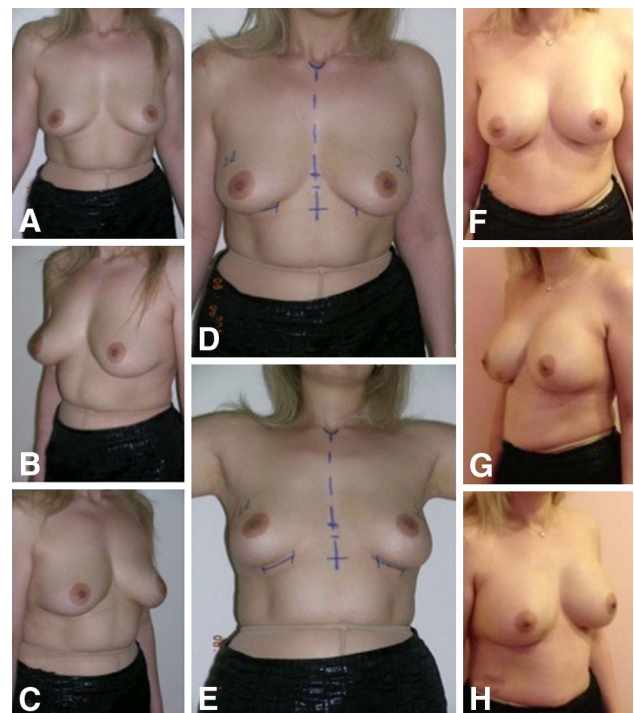

Fig. 6 a–c Preoperative photographs of a patient presenting for breast augmentation. d, e Measurements made and planning of the IMF incision. f–h Immediate result following subglandular insertion of a 295 round implant (Inspira™ TSM, Allergan) 11.75 cm in diameter

Fig. 7 One year postoperative result with good upper- and lower-pole breast contour and well-situated IMF incision in the crease

uses measurements as a guideline would allow optimal expression of the surgeon's artistic sense in adapting the breast mound and borders to the nipple's position [3, 26].

It would naturally be more advantageous to adopt the simplest preoperative evaluation system that does not rely on complex and sophisticated measurements or any complicated tables that are difficult to memorize. Basing the measurements on the midline zone of adherence is another factor to be considered to minimize discrepancies due to the variable degree of skin stretching and areolar contraction. Figures 6 and 7 illustrate a patient after breast augmentation according to the our preoperative planning system.

We believe that determination of the new IMF in breast augmentation cannot be overemphasized; it is the most important factor in achieving a pleasant outcome [8]. The vertical dimension of the chosen implant, not its width, determines the IMF position. Moreover, the fold is best determined from a point over the midline zone of adherence on the anterior chest wall rather than by measurements relying on stretched skin [21]. The fixed point of reference based on the projected new nipple position is best determined by raising the arms to the horizontal plane only. Special caution should be used to place the inframammary incision at or just slightly above the site of the anticipated new fold [4, 8]. The size of the implant is guided by the BBW as well as the degree of soft tissue laxity and compliance. Moreover, the inframammary incision dissection, including a cephalad soft tissue rim, helps to provide a secure skin closure. By fixing this rim to the chest wall, the IMF becomes stabilized in an optimal position, simultaneously reducing inevitable lower-pole skin stretching, sagging, and creep deformation.

In his original report about the TEPID system, Tebbetts [5] stated that his report does not scientifically document the superiority of his system but that what he was presenting was an attempt to quantitatively address critical soft tissue parameters for decision-making and planning of breast augmentation. Even though the system has provided a more logical platform for breast augmentation, it proved to be complicated and was later simplified as the High Five System [8, 11]. Likewise, we are not providing any scientific proof that our method of determining the implant's profile and IMF is more accurate or superior to what has already been described. It is just another, much simpler and practical method that proved successful in our hands for more than 25 years.

Any system designed to help a surgeon and his patient reach an adequate decision must be simple enough to be used and must provide flexible guidelines allowing the determination of a range of implant shapes and sizes that would be tolerated within the norms of body proportions and beauty canons. The final decision is ultimately an expression of the surgeon's artistic judgment and sensibilities, taking into consideration the patient's desires and wishes. We believe that the measurements and decision-making system we are describing provides the elements about anatomical limitations just needed to achieve a pleasant outcome.

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