Original Article

Perceptions and attitudes toward unusual complications following breast implant surgeries among Saudi female patients: How knowledgeable are our patients?

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Abstract

Background: The number of breast implant-related procedures has rapidly increased. Given the current increase in social media coverage and its influence on the decision to undergo breast implant surgeries, it is critical to identify patients' misinformation about unusual complications related to breast implants. Therefore, the present study aimed to assess the perceptions and attitudes toward unusual complications related to breast implants among patients who underwent breast implant surgeries. **Methods:** In the present cross-sectional study, a questionnaire was distributed between April 2021 and May 2021 among patients who had undergone breast implant surgeries between 2016 and 2021 at King Saud University Medical City in Riyadh, Saudi Arabia. The 26-item questionnaire was distributed online to assess the participants' perceptions about breast implant illness (BII), capsular contracture, and breast implant-associated anaplastic large-cell lymphoma (BIA-ALCL). Data were analyzed using Statistical Package for the Social Sciences (SPSS), version 23.0. **Results:** In total, 106 patients who underwent breast implant surgeries were included in the present study (response rate: 73.6%). Their mean age was 43.68 ± 10.69 years. The reason for undergoing breast implant surgery was cosmetic in 41.5% of the participants and reconstructive in 58.5%. Moreover, 22.6%, 23.6%, and 24.5% of the participants had knowledge about BIA-ALCL, BII, and capsular contracture, respectively. **Conclusions:** The present findings indicate that it is important for plastic surgeons to discuss unusual complications related to breast implants with patients on a regular basis. Despite the obscurity of these complications, such discussions are important to provide best available information to patients.

Keywords: Anaplastic large-cell lymphoma, breast implant illness, breast implant surgeries, capsular contracture, complications, Saudi female patient

Introduction

Over the last few years, the number of breast implant-related procedures has rapidly increased, with approximately 10 million women having undergone breast implant surgeries. Approximately 75% of these surgeries were for cosmetic purposes, while 25% were for reconstructive purposes following mastectomy.[1,2] Since their discovery, breast implants have been

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subjected to numerous controversies. They have been linked to various side effects, which can be divided into three categories: systemic illnesses, such as connective tissue diseases or neoplasia; nonspecific symptoms, such as fatigue; and localized implant complications, such as implant rupture, capsular contracture, and infection.[3] Breast implant illness (BII) is a syndrome that describes a set of symptoms and indicators that are thought to be associated with breast implants.[4] No pathophysiological reason has been identified for many of these symptoms, and no specific diagnostic test is available. Therefore, patients tend to focus on the surgical removal of breast implants instead of trying to determine the cause of their symptoms through a comprehensive medical check-up, thereby resulting in unreasonable treatment decisions.[5] Another documented risk of breast implants is a rare type of non-Hodgkin's lymphoma (NHL) known as anaplastic large-cell lymphoma (ALCL), which accounts for approximately 1% of all NHL cases.[6] ALCL is linked to textured implants, and no cases of cancer in patients with smooth breast implants have been documented so far.[7] Local complications related to breast implants may be attributed to indolent infection after surgery, with infection being the leading cause of rehospitalization following breast implant.[8] Given the current increase in media coverage and social media influence on the decision to undergo breast implant surgeries, it is critical to understand patients' concerns and identify any misinformation in order to provide a higher quality of health care. In addition, as patients who undergo breast augmentation or reconstructive surgery do not usually receive long-term follow-up care from their plastic surgeons, it is essential for primary care physicians to be aware of these complications to be able to address patients' concerns. In addition, given the current rise in media coverage reporting cases of these rare complications, it is crucial for primary care physicians to identify any misinformation to provide a higher quality of health care. Therefore, the present study aimed to assess the perceptions and knowledge about BII, capsular contracture, and breast implant-associated ALCL (BIA-ALCL) among patients who had undergone breast implant surgeries in Saudi Arabia.

Methods and Materials

The present cross-sectional study was approved by the Research Ethics Committee of King Saud University in Riyadh, Saudi Arabia. All patients provided informed consent before participating in the study (Approval No. E-21-5725).

Between April 2021 and May 2021, a questionnaire was distributed among patients who had undergone breast implant surgeries at King Saud University Medical City in Riyadh, Saudi Arabia. The questionnaire was sent once to each participant, and a reminder message was sent 5 days later. The questionnaire was validated, self-administered, and anonymous. Using an online sample calculator (Raosoft®) with a 5% margin of error and a 95% confidence level, the number of participants was estimated to be 95. Thus, the questionnaire was distributed to 106 patients, with an overall response rate of 73.6%.

The authors reviewed the literature and designed and developed a valid and reliable questionnaire by referring to several published studies that used validated questionnaires with similar objectives and aims.[9,10] The 26-item questionnaire was developed using Google Forms® (USA) to capture the perceptions and knowledge about BII, capsular contracture, and BIA-ALCL among patients who had undergone breast implant surgeries. The questionnaire was distributed via WhatsApp® (Mountain View, CA, USA). It consisted of four sections. The first section assessed the participants' demographic characteristics, namely their personal details, social status, nationality, education level, income level, and history of chronic illnesses. The second section included questions on breast implants and BIA-ALCL. The third section included questions on BII, and the fourth section included questions on capsular contracture. The questionnaire consisted of multiple-choice questions assessed using a three-point Likert scale, in addition to yes/no response items. A Cronbach's alpha value of 0.826 confirmed the reliability of the questionnaire. The validity of the questionnaire was confirmed using Spearman's product-moment test. The validated English version of the questionnaire was translated by a bilingual expert and tested for validity; it showed reasonable internal consistency (Cronbach's alpha = 0.662).

Data were checked for completeness, and all errors were rectified. Descriptive statistics were used to present all the variables in tables. Knowledge about BII, BIA-ALCL, and capsular contracture was also presented. The Chi-square test was used to assess the relationship between sociodemographic characteristics and BII, BIA-ALCL, and capsular contracture. Data were analyzed at a 95% confidence interval using Statistical Package for the Social Sciences (SPSS), version 23.0 (IBM, Armonk, NY, USA).

Results

In total, 106 patients who underwent breast implant surgeries were included in the present study. Their mean age was 43.68 ± 10.69 years. Sixty-five (61.3%) participants were married, 98 (92.5%) were citizens of Saudi Arabia, 64 (60.4%) had a university degree, and 33 (31.1%) had a chronic disease [Table 1].

The most frequent chronic disease was hypertension (16%). Eight participants (7.5%) were diabetic.

The reason for undergoing breast implant surgery was cosmetic in 41.5% of the participants and reconstructive in 58.5%. While 32% of the participants knew they had smooth implants, 26.4% knew someone who had previously received breast implants. Most participants were confident about knowing the risks and benefits of breast implant surgery [Table 2].

In total, 22.6%, 23.6%, and 24.5% of the participants had knowledge about BIA-ALCL, BII, and capsular contracture, respectively. Sixteen participants (15.1%) believed that a strong association exists between BIA-ALCL risk and breast implants,

while 20.8% were very worried about ALCL. Moreover, six (5.7%) participants were considering removing their implants, 36.8% were still willing to receive breast implants, and 7.5% were willing to recommend their friends or family members to undergo breast implant surgery.

Only 7.5% of the participants thought that a strong association exists between BII and breast implants, while 18.9% believed that a strong association exists between capsular contracture and breast implants [Tables 3–5].

Table 1: Sociodemographic characteristics of all participants (*n*=106)

Characteristics	*n*	%
Marital status		
Single	14	13.2
Married	65	61.3
Divorced	27	25.5
Nationality		
Saudi	98	92.5
Non-Saudi	8	7.5
Area of residence		
Central	90	84.9
Eastern	6	5.7
Northern	4	3.8
Western	6	5.7
Education level		
No formal education	2	1.9
High school or less	10	9.4
Diploma	14	13.2
Bachelor's degree	64	60.4
Master's degree/PhD	16	15.1
Occupation		
Employed	68	64.2
Unemployed	38	35.8
Income level (SR)		
<5000	23	21.7
5000-10000	24	22.6
10000-14999	25	23.6
15000-19999	30	28.3
20000-24999	4	3.8
Presence of a chronic disease		
Yes	33	31.1
No	73	68.9

Participants who were single ($P = 0.005$), had a bachelor's degree ($P = 0.015$), had an income level of 15000–19999 SR ($P < 0.001$), and had no chronic disease ($P < 0.001$) had more knowledge about BIA-ALCL. Participants who were divorced ($P = 0.001$), were Saudi nationals ($P = 0.004$), had a bachelor's degree ($P = 0.003$), and had a chronic disease ($P = 0.003$) had more knowledge about BII. Participants who were single ($P < 0.001$), were non-Saudi nationals ($P = 0.004$), and had no chronic disease ($P < 0.001$) had more knowledge about capsular contracture. Details of the relationship between the participants' sociodemographic characteristics and their knowledge about BIA-ALCL, BII, and capsular contracture are presented in [Tables 6, 7, and 8], respectively.

Discussion

The demand for breast implants has increased over the last 20 years. While BIA-ALCL is a well-studied disease associated with breast implants,[1,6] it involves a vague group of symptoms with no scientific explanation. Given the recent wave of and concerns regarding BII, the present study assessed the knowledge and perceptions about unusual complications related to breast implants in patients who underwent breast implant surgeries in Saudi Arabia.

Participants' perceptions about BII

In total, 23.6% (n = 25) of the participants were aware of BII, and 66% (n = 70) of the participants thought that there is an association between BII and breast implants. Moreover, 73.6% (n = 78) of the participants were less likely to recommend breast implants to their family members or friends. Most participants (66%, n = 70) had no intention to remove their implants. Patient stratification based on preexisting health issues is essential to determine the chances of occurrence of BII and to identify whether there is any overlap between the patient's comorbidities instead of the occurrence of BII alone. People generally search for information from online sources and social

Table 2: Breast implant-related general knowledge

Questions	Responses	*n*	%
Have you previously received any breast implants?	Yes, for cosmetic purposes	44	41.5
	Yes, for reconstructive purposes	62	58.5
If yes, what type of implants did you receive?	Textured	0	0
	Smooth	34	32.1
	I don't know	72	67.9
Do you know someone who has received breast implants?	Yes	28	26.4
	No	78	73.6
Rate your confidence about knowing the risks and benefits associated with breast implants.	Very Poor	10	9.4
	Poor	18	17.0
	Acceptable	35	33.0
	Good	20	18.9
	Excellent	23	21.7

Table 3: Knowledge about BIA-ALCL

Questions	Responses	*n*	%
Have you heard of BIA-ALCL?	Yes	24	22.6
	I'm not sure	11	10.4
	No	71	67.0
If yes, through which source have you heard of it before?	My physician	2	7.5
	Someone I know	2	9.4
	Social media	3	14.2
	TV programs	1	3.8
	Others	16	65.1
How strong is the association between BIA-ALCL risk and breast implants?	Strong	16	15.1
	Weak	10	9.4
	I don't know	80	75.5
Are you worried about getting ALCL if you receive an implant?	Not worried	51	48.1
	Slightly worried	33	31.1
	Very worried	22	20.8
Are you considering removing your implants?	Yes	6	5.7
	No	70	66.0
	I'm not sure	30	28.3
Are you still willing to get breast implants?	Yes	39	36.8
	No	37	34.9
	I'm not sure	30	28.3
Are you more or less likely to recommend breast implants to a family member or friend?	Less likely	78	73.6
	Just as likely	20	18.9
	More likely	8	7.5
Should plastic surgeons inform their patients about the risk of BIA-ALCL before breast implant surgeries?	Yes, as there is a risk, they should	100	94.3
	No, because it is rare	6	5.7

Table 4: Knowledge about BII

Questions	Responses	N	%
Have you heard of breast implant illness (BII)?	Yes	25	23.6
	I'm not sure	8	7.5
	No	73	68.9
If yes, through which source have you heard of it before?	My physician	2	8.5
	Someone I know	2	9.4
	Social media	4	15.2
	TV programs	1	2.8
	Others	16	64.1
How strong is the association between BII and breast implants?	Poor	70	66.0
	There is no relationship between them	28	26.4
	Strong	8	7.6

Table 5: Knowledge about capsular contracture

Questions	Answers	*n*	%
Have you heard of capsular contracture?	Yes	26	24.5
	I'm not sure	18	17.0
	No	62	58.5
If yes, through which source have you heard of it before?	My physician	8	31.8
	Someone I know	4	13.6
	Social media	10	38.6
	TV Programs	2	9.1
	Others	2	6.8
How strong is the association between capsular contracture and breast implants?	Poor	60	56.6
	There is no relationship between them	26	24.5
	Strong	20	18.9

Table 6: Relationship between the participants' sociodemographic characteristics and knowledge about BIA-ALCL

Characteristics	Heard of BIA-ALCL			*P*
	Yes, *n* (%)	Not sure, *n* (%)	No, *n* (%)	
Marital status				0.005
Single	8 (33.3)	0 (0.0)	6 (8.5)	
Married	8 (33.3)	8 (72.7)	49 (69.0)	
Divorced	8 (33.3)	3 (27.3)	16 (22.5)	
Nationality				0.116
Saudi	20 (83.3)	11 (100.0)	67 (95.4)	
Non-Saudi	4 (16.7)	0 (0.0)	4 (4.6)	
Education level				0.015
No formal education	0 (0.0)	2 (2.8)	0 (0.0)	
High school or less	2 (8.3)	8 (11.3)	0 (0.0)	
Diploma	2 (8.3)	12 (16.9)	0 (0.0)	
Bachelor's degree	12 (50.0)	41 (57.7)	11 (100.0)	
Master's degree/PhD	8 (33.3)	8 (11.3)	0 (0.0)	
Occupation				0.140
Employed	16 (66.7)	4 (36.4)	48 (67.6)	
Unemployed	8 (33.3)	7 (63.6)	23 (32.4)	
Income level (SR)				<0.001
<5000	0 (0.0)	3 (27.3)	20 (28.2)	
5000-10000	2 (8.3)	2 (18.2)	20 (28.2)	
10000-14999	4 (16.7)	2 (18.2)	19 (26.8)	
15000-19999	16 (66.7)	2 (18.2)	12 (16.9)	
20000-24999	2 (8.3)	2 (18.2)	0 (0.0)	
Presence of a chronic disease				<0.001
Yes	8 (33.3)	4 (36.4)	21 (29.6)	
No	16 (66.7)	7 (63.6)	50 (70.4)	

Table 7: Relationship between the participants' sociodemographic characteristics and knowledge about BII

Characteristics	Heard of BII			*P*
	Yes, *n* (%)	Not sure, *n* (%)	No, *n* (%)	
Marital status				0.001
Single	0 (0.0)	0 (0.0)	14 (19.2)	
Married	14 (56.0)	8 (100.0)	43 (58.9)	
Divorced	11 (44.0)	0 (0.0)	16 (21.9)	
Nationality				0.004
Saudi	8 (100.0)	71 (97.3)	19 (76.0)	
Non-Saudi	0 (0.0)	2 (2.7)	6 (24.0)	
Education level				0.003
No formal education	2 (8.0)	0 (0.0)	0 (0.0)	
High school or less	0 (0.0)	0 (0.0)	10 (13.7)	
Diploma	4 (16.0)	0 (0.0)	10 (13.7)	
Bachelor's degree	19 (76.0)	8 (100.0)	37 (50.7)	
Master's degree/PhD	0 (0.0)	0 (0.0)	16 (21.9)	
Occupation				0.365
Employed	14 (56.0)	4 (50.0)	50 (69.5)	
Unemployed	11 (44.0)	4 (50.0)	23 (30.5)	
Income level (SR)				0.086
<5000	7 (28.0)	0 (0.0)	16 (21.9)	
5000-10000	4 (16.0)	2 (25.0)	18 (24.7)	
10000-14999	2 (8.0)	2 (25.0)	21 (28.8)	
15000-19999	10 (40.0)	4 (50.0)	16 (21.9)	
20000-24999	2 (8.0)	0 (0.0)	2 (2.7)	
Presence of a chronic disease				0.003
Yes	10 (40.0)	2 (25.0)	21 (28.8)	
No	15 (60.0)	6 (75.0)	52 (71.2)	

Table 8: Relationship between the participants' sociodemographic characteristics and knowledge about capsular contracture

Characteristics	Heard of capsular contracture			*P*
	Yes, *n* (%)	Not sure, *n* (%)	No, *n* (%)	
Marital status				<0.001
Single	10 (38.5)	0 (0.0)	4 (6.5)	
Married	10 (38.5)	18 (100.0)	37 (59.7)	
Divorced	6 (23.1)	0 (0.0)	21 (33.9)	
Nationality				0.004
Saudi	20 (76.9)	18 (100.0)	60 (96.8)	
Non-Saudi	6 (23.1)	0 (0.0)	2 (3.2)	
Education level				0.051
No formal education	0 (0.0)	0 (0.0)	2 (3.2)	
High school or less	2 (7.7)	4 (22.2)	4 (6.5)	
Diploma	2 (7.7)	0 (0.0)	12 (19.4)	
Bachelor's degree	18 (69.2)	14 (77.8)	32 (51.6)	
Master's degree/PhD	4 (15.4)	0 (0.0)	12 (19.4)	
Occupation				0.417
Employed	16 (61.5)	14 (77.8)	38 (61.3)	
Unemployed	10 (38.5)	4 (22.2)	24 (38.7)	
Income level (SR)				0.063
<5000	2 (7.7)	4 (22.2)	17 (27.4)	
5000-10000	6 (23.1)	4 (22.2)	14 (22.6)	
10000-14999	6 (23.1)	2 (11.1)	17 (27.4)	
15000-19999	10 (38.5)	6 (33.3)	14 (22.6)	
20000-24999	2 (7.7)	2 (11.1)	0 (0.0)	
Presence of a chronic disease				<0.001
Yes	6 (23.1)	6 (33.3)	21 (33.9)	
No	20 (76.9)	12 (66.7)	41 (66.1)	

media and usually depend on these sources; this also applies to health-related information. Therefore, it was essential to know from where the participants of the present study got information about BIA-ALCL and BII. In total, 7.5% and 13.2% of the participants reported being enlightened about BIA-ALCL and BII, respectively, by their surgeons. Therefore, surgeons must discuss these complications with each patient at an early stage before the procedure. They must also conduct a psychological analysis of the patient as recent research has suggested that BII could be psychosomatic; it can be caused by the psychological fixation on common symptoms attributed to the presence of a foreign body and increased by the wave of shared experiences across social media.[3,9] The relationship between the clinical and pathophysiological aspects of BII and the lack of scientific data should be clearly communicated to patients.

Participants' perceptions about BIA-ALCL

The new classification of lymphoid neoplasms established by the World Health Organization (WHO) in 2016 includes a rare type of T-cell lymphoma related to breast implants, known as BIA-ALCL.[11] In the present study, most participants (67%) were unaware of BIA-ALCL. In contrast, in a similar study conducted by Bouhadana *et al*.,[9] only 16% of the participants were unaware of BIA-ALCL. This indicates the lack of awareness among the Saudi population and the importance of raising awareness. Moreover, in the present study, only 6% of the participants were considering removing their breast implants. In contrast, in a study conducted by Lee *et al*.[10] 35% of the participants were thinking about removing their implants when asked about BIA-ALCL. This can be attributed to the lack of knowledge about BIA-ALCL. Almost all participants in the present study (94.6%) agreed that plastic surgeons should inform their patients about the risk of BIA-ALCL before breast implant surgeries. These findings strongly suggest the importance of informing patients about the risks associated with breast implants, including BIA-ALCL. According to a study conducted by Park *et al*.,[12] the group seminar format is one of the most efficient ways of informing patients about BIA-ALCL. This format facilitates information transfer to several patients simultaneously, particularly when most patients have similar concerns.

Participants' perceptions about capsular contracture

Capsular contracture is a complex process with multiple factors involving inflammatory responses that lead to an increase in fibrotic reactions in tissues surrounding silicone breast implants.[13] It is a common complication and can have significant negative impacts on patient satisfaction with both reconstructive and cosmetic breast implants.[14,15] Unfortunately, when capsular contracture occurs, surgery is required to remove the implant. In previous studies, breast implant removal has been reported to be responsible for 38.9% of breast implant revisions.[16,17] Surgical revisions following capsular contracture

can have a more unsatisfactory esthetic outcome and a high rate of recurrence of capsular contracture.[18,19] There are various presentations of capsular contracture and BII. Thus, it is essential to educate patients about the common signs and symptoms of complications associated with breast implants.[9] In the present study, most participants (59%) were not aware of capsular contracture. Of the participants who were aware of capsular contracture, most had heard about it from social media (39%), followed by their physician (32%). This indicates the lack of awareness among the Saudi population and the importance of social media as a source of spreading awareness; people can acquire more information from social media if they use the right source. The impact of social media has also been illustrated in a recent survey conducted in the United States; the study showed that (56%) of their patients knew about breast-implant-related complications from social media, while only (2%) learned about them from their surgeons.[20] This highlights the importance of primary care physicians to educate their patients and correct any misconceptions regarding these complications. In the present study, most participants (57%) had insufficient knowledge about the association between capsular contracture and breast implants; only 19% of the participants knew about the association despite it being one of the most common complications. Therefore, it is necessary to raise awareness about this condition. Given the lack of studies highlighting the knowledge of patients about capsular contracture and BII, this needs to be addressed in future research.

The role of primary care physicians

Due to the recent surge in demand for breast reconstructive and breast augmentation surgeries, rare complications that can arise from these surgeries are being widely covered by the media. Primary care physicians play a critical role in the modern healthcare system, especially with the significant activation of their role in Saudi Arabia. Patients will continuously seek advice from their primary care physician. Therefore, physicians must be aware of these complications to address patients' concerns and worries. Moreover, primary care physicians should actively screen for breast implant-related pathology when patients present with nonspecific signs or symptoms suggesting these complications and refer them to a specialized clinic when needed, especially considering the fact that BIA-ALCL has a favorable prognosis when discovered early.[21]

Limitations and future recommendations

The present study was conducted in a single hospital; the study population may not represent all patients in Saudi Arabia, thereby restricting the generalizability of the findings. However, it is one of the few studies in Saudi Arabia to assess patients' perceptions about BII. The authors think that similar studies need to be conducted with more participants in multiple hospitals and cities to estimate the perceptions about BII in Saudi Arabia.

Conclusion

There is an increase in studies about unusual complications related to breast implants and a rise in social media users who discuss various symptoms that they feel are related to their breast implants. However, physicians and surgeons must conduct further research on these complications to further educate patients and the society and to minimize misinformation regarding these complications and potentially unrealistic fears. The present findings emphasize the importance of discussing these unusual complications with patients before surgery; this should be done by the surgeon despite the ambiguity of BII in order to offer the best available information to patients.

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Conflicts of interest

There are no conflicts of interest.

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