

A Narrative Literature Review : Is Cosmetic Breast Implants Safe for Women?

Vina Luthfiana Hasna¹, Salman², Indah Laily Hilmi³ ^{1,2,3} Universitas Singaperbangsa Karawang

ABSTRACT
In order to maintain, obtain, and take care of beauty from day to day, cosmetics have always played an important role in women's lives to overcome these problems. The use of cosmetics used by women is based on a beauty standard which of course varies in each country. The most common beauty standards are physical beauty, character beauty (inner beauty), white skin, and proportional body sizes. The existence of these beauty standards sometimes makes women feel dissatisfied with their physique, even for some people, changing their physique or changing body size by performing plastic surgery is a natural thing. One of the most common plastic surgery procedures worldwide is breast augmentation through implants. The frequency of surgical procedures requiring breast implants in recent years has continued to increase. In the 1980s, when the third generation of silicone implants were introduced, widespread public health concerns began to emerge about the adverse effects of breast implants. The purpose of this review article is to discuss the safety of breast implants in women based on the relevant scientific evidence. Although not all symptoms and effects of breast implants can appear in all users of breast implants, this review can help women to make the right decision regarding breast implant procedures.
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1. INTRODUCTION

If someone asks what is the most important thing for women, most people will definitely answer cosmetics. For the sake of maintaining, obtaining, and caring for beauty from day to day, cosmetics are always the holder of important roles in women's lives to overcome these problems.[1] According to BPOM RI, cosmetics are ingredients intended for the use of the outside, such as skin, hair, nails, teeth, and oral mucosa intended to change, improve, protect, and care for the body in better conditions.

Generally, the use of cosmetics used by women is based on a beauty standard which is certainly different in each country. The most common beauty standards are physical beauty, character beauty (inner beauty), white skin, and proportional body sizes.[2] The existence of these beauty standards sometimes makes women feel dissatisfied with the physical they have, even in some people, changing physical or changing body size by performing plastic surgery is a natural thing.[3]

One of the most common plastic surgery actions in the whole world is breast enlargement through implants.[4] The frequency of surgical procedures that require breast implants over the past few years has continued to increase.[5] Data shows that in 2015, as many as 1.49 million breast enlargement operations were carried out, with an increase of 10.4% from the previous year.[6]

The first breast enlargement procedure was carried out by czerny in 1895 by moving lipomas into the breast in partial mastectomy patients.[7] In the 1950s and 1960s, breast enlargement with solid aloplastic material was carried out using polyurethane, Teflon, and polyvinyl alcohol formaldehyde that were expanded. While the silicone gel breast implant was first introduced by Cronin and Gerow in 1962. That is what started the modern era breast implants and experienced some changes and technical improvements every time.[8]



Based on the guideline published by the Food and Drug Administration (2020), breast implants based on the main composition are divided into 3, namely breast implants containing saline or salt, breast implants containing silicone gels, and alternative breast implants. Saline breast implants have silicone rubber shells made from polysiloxsan, such as polydimeticilsiloxsan and polydifenilsiloxsan, whose shape is inflated according to the desired size with sterile isotonic saline. Silicone gel breast implants have silicone rubber shells made from polysiloxsan, such as polydimethyloxan and polydiphenenilsiloxsan, which are filled with a fixed amount of silicone gel. In the sense of the surface of the shell, shape, profile, volume and thickness of the silicone rubber shells with fillers other than salt or silicone gel. The filler may not be a gel and may also have an alternative shell made from materials other than silicone rubber.[9]

In the 1980s, when the third generation silicon implant was introduced, began to emerge fears of broad public health regarding the effects of adverse breast implants. During this time the FDA (Food and Drug Administration) began to identify the impact of the use of silicon implants. Complications caused by breast implants are included in the classification of high -risk devices.[10] Impacts that usually occur due to the use of breast implants namely, infection, asymmetry, breast pain, vascular contractures, implant rupture, and large anaplastic cell lymphoma related to breast implant (Breast Implant Associated Anaplastic Large Cell Lymphoma (BIA-ALCL).[11] Most carcinogenity due to breast implants is only focused on breast cancer, even though the impact on other cancer has emerged. Women with breast implants are often seen in good health, even though they are more at risk of disease compared to general populations. Inhibited, a comparison of health between women and breast implants with general population is caused by a lack of that information.[12]

2. METHOD

The method used in writing this article is to use narrative reviews (narrative literature review). Narrative reviews are a type of journal review that is useful in gathering some literature in a particular topic and presenting it in an article.[13] Narrative Literature Review, generally written in a format that is easily read by the wider community.[14] In collecting literature materials, searches were conducted using the keywords "Breast Implant", "Impact of Breast Implant", "Silicone breast Implant", "Breast Implant Illness", manuscripts published in the last 10 years, and searched from pubmed and ScienceDirect databases. Data analysis was carried out by summarizing and integrating these findings in the literature presented in the form of information about the impact of cosmetic breast implants on the user population.



Figure 1. Data analysis

3. RESULTS AND DISCUSSION Breast Implant Illness (BII)

Breast implant disease remains a complication due to unclear and controversial cosmetic breast implants. Breast Implant Illness is a collection of symptoms that begin after the placement of cosmetic breast implants. The pathophysiology of Breast Implant Illness is most likely due to autoimmune or inflammatory reactions that occur in response to a stimulant (silicon). Based on research conducted by

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Wee et al (2020), Breast Implant Illness has 11 symptoms that often occur, such as numbness and tingling, joint or muscle pain, hair loss, memory loss or cognitive problems, dry eyes or blurred vision, chronic fatigue, breast pain, rashes or itching, sensitivity or intolerance of food, fever, and sulfurness. As many as 752 patients who carry out breast implants, 55% of them have several degrees of capsular contractures. The mechanical properties of contractures can cause significant physical symptoms, such as breast pain, joint pain and muscles, as well as difficulty breathing.[15]

From the results of the case report received by the FDA from January 1, 2008 to 31 October 2019. Data shows that the FDA has received 2,497 medical case reports that contain symptoms that are consistent with BII. The most common symptoms that have been coated to the FDA include fatigue (49%), memory loss (25%), joint pain (25%), anxiety (24%), hair loss (21%), depression (19%), rash (18%), autoimmune disease (18%), inflammation (18%), and weight problems (18%).[16]

Biofilm

Biofilm is a microbial attached to a surface, including living tissue, implants, and medical devices. Infections associated with microbial biofilm are a significant amount of all microbial infections in humans. Biofilm is very resistant to antibiotics. This infection is difficult to treat, and as a result it becomes chronic and persistent. It seems that the biofilm of microbes is formed in chronic breast implants and thus can cause other diseases such as capsular contractures. [17]

Capsular Contractures

Capsular contractures are one of the most common complications after breast implant surgery. Capsular contractures are caused by leukocyte infiltration and fibroblast proliferation that are around implants that have 4 degrees or stages based on significant breast pain, deformity, and induration.[18]



Figure 2. capsular contraction due to breast implants [18]

Capsular contractures are produced from the proliferation of scar fibrous tissue in adjacent fibrous capsules. This network can suppress and change the form of implants. The degree or stage of capsular contractures based on baker classification, consisting of: [19]

- Stage 1: Soft breasts with normal visual appearance
- Stage 2: Breast a little stiff, with a normal visual appearance
- Stage 3: Breasts begin to harden, with an abnormal visual appearance
- Stage 4: Breast hardened, accompanied by significant pain and visual deformity

Reduction of Breast Milk Production

Based on research conducted by Robert et al (2015), of 378,389 women giving birth, which 902 of them had a history of breast enlargement. Among women with breast enlargement, most do not give breast milk when their babies come out, with the sense that women with cosmetic breast implants have

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lower levels of breastfeeding. The consistency of the discovery strengthens the case that there is an effect of breast implants, although the mechanism is still not found with certainty.[20]

Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL)

In 2020, the FDA has renewed the latest statements related to the case report of side effects from the use of cosmetic breast implants. There are 733 cases of BIA-AlCL and 36 patients' deaths globally, which results have increased from 2019 tofu of 160 cases and 30 deaths. Bia-alCL is not breast cancer, but non-Hodgkin lymphoma cancer (immune system cancer). In some cases, BIA-AlCL is found in scar tissue and fluid near the implant, but in some cases, it can spread throughout the body. At this time, the overall incidence of the development of BIA-AlCL is low, but the diagnosis of BIA-alCL is serious and can cause death, especially if not diagnosed early or treated immediately. In most patients, BIA-AlCL is treated with surgery to remove implants and scarring around the implant, but some patients may require treatment with chemotherapy.[9] Increased cases of BIA-AlCL are likely to be caused by Natrelle Biocell-textured breast implants, so that the FDA withdraws the Natrelle Biocell-textured breast implants.

Silicone-Induced Granuloma of Breast Implant Capsules (SIGBIC)

Silicone-Induced Granuloma of Breast Implant Capsules (Sigbic) or granuloma that is induced by silicone from breast implant capsules is a result of inflammation caused by silicon. This disease is also associated with autoimmune and slightly similar to BIA-AlCL. The similarity can be seen in events, such as silicone leaky from the inside of the normal implant into the intrakapsular; Particles containing silicon are captured by macrophages, producing traps in the lysosomes; This macrophage is activated, producing cytokine production, for example Interleukin-1B, reactive oxygen species, and reactive nitrogen species; And macrophage apoptosis produces the release of particles that contain silicon which can be taken once again by other macrophages.[19]

4. CONCLUSION

Based on the results and discussion above, the process of breast augmentation with implants is a cosmetic procedure that may be satisfactory for some women, but keep in mind that the procedure can have undesirable effects, such as Breast Implant Illness (BII), the onset of biofilms, capsule contractions, BIA-ALCL, SIGBIC, reduction of breast milk, and there are many other effects besides those written in this article. Due to the lack of the latest research on the impacts of breast implants on their users, further research is needed, especially in Indonesia.

REFERENCES

- [1] Rizka Asri Briliani, Diah Safitri, and Sudarno, "Analisis Kecenderungan Pemilihan Kosmetik Wanita Di Kalangan Mahasiswi Jurusan Statistika Universitas Diponegoro Menggunakan Biplot Komponen Utama," *Jurnal Gaussian*, vol. 5, no. 3, pp. 545–551, 2016.
- [2] Ellitte Millenitta Umbarani and Agus Fakhruddin, "Konsep Mempercantik Diri Dalam Prespektif Islam Dan Sains," *Dinamika Sosial Budaya*, vol. 23, no. 1, pp. 115–125, Jun. 2021.
- [3] J. Cherish Wiharsari and P. S. Studi, "Konsep Kecantikan Dan Pemanfaatan Produk Kosmetik Wajah Pada Mahasiswi Surabaya."
- [4] M. Schiff, C. S. Algert, A. Ampt, M. S. Sywak, and C. L. Roberts, "The Impact Of Cosmetic Breast Implants On Breastfeeding: A Systematic Review And Meta-Analysis," *Int Breastfeed J*, vol. 9, no. 1, Dec. 2014, doi: 10.1186/1746-4358-9-17.
- [5] R. Danciu, C. Marina, V. Ardeleanu, R. Marin, R. Scăunaşu, and L. Răducu, "Breast Implant Illness: A Step Forward In Understanding This Complex Entity And The Impact Of Social Media," *Journal of Mind and Medical Sciences*, vol. 6, no. 2, pp. 351–355, Oct. 2019, doi: 10.22543/7674.62.p351355.
- [6] F. Cheng, S. Dai, C. Wang, S. Zeng, J. Chen, and Y. Cen, "Do Breast Implants Influence Breastfeeding? A Meta-Analysis Of Comparative Studies," *Journal of Human Lactation*, vol. 34, no. 3, pp. 424–432, Aug. 2018, doi: 10.1177/0890334418776654.

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- [7] K. Ramachandran, "Breast Augmentation.," *Indian J Plast Surg*, vol. 41, no. Suppl, pp. S41-7, Oct. 2008.
- [8] G. Patrick Maxwell and A. Gabriel, "Breast Implant Design," *Gland Surg*, vol. 6, no. 2, pp. 148–153, Apr. 2017, doi: 10.21037/gs.2016.11.09.
- [9] FDA, "Saline, Silicone Gel, and Alternative Breast Implants," Sep. 2020.
- [10] J. Kaplan and R. Rohrich, "Breast Implant Illness: A Topic In Review.," *Gland Surg*, vol. 10, no. 1, pp. 430–443, Jan. 2021, doi: 10.21037/gs-20-231.
- [11] C. D. Varela-Chinchilla, G. Salinas-McQuary, N. de los Á. Segura-Azuara, and P. A. Trinidad-Calderón, "Breast Implant Illness: Surgical, Autoimmune, and Breast Reconstruction Associations," *Surgeries*, vol. 3, no. 2, pp. 111–125, May 2022, doi: 10.3390/surgeries3020013.
- [12] L. A. Brinton, "The Relationship Of Silicone Breast Implants And Cancer At Other Sites," *Plast Reconstr Surg*, vol. 120, no. 7 SUPPL. 1, Dec. 2007, doi: 10.1097/01.prs.0000286573.72187.6e.
- [13] Nurul Ivar Faturahmi, "Peran Lembaga Informasi dalam Era Post-Truth," *Berkala Ilmu Perpustakaan dan Informasi*, vol. 6, no. 2, pp. 239–252, Oct. 2020.
- [14] Ö. Gülpinar and A. G. Güçlü, "How to Write a Review Article," *Turk Uroloji Dergisi*, vol. 39, no. 1, pp. 44–48, 2013, doi: 10.5152/tud.2013.054.
- [15] C. E. Wee *et al.*, "Understanding Breast Implant Illness, Before and After Explanation: A Patient-Reported Outcomes Study," *Ann Plast Surg*, vol. 85, no. S1, pp. S82–S86, Jul. 2020, doi: 10.1097/SAP.00000000002446.
- [16] FDA, "FDA Updates Analysis of Medical Device Reports of Breast Implant Illness and Breast Implant-Associated Lymphoma," Aug. 2020.
- [17] D. Ajdic, Y. Zoghbi, D. Gerth, Z. J. Panthaki, and S. Thaller, "The Relationship of Bacterial Biofilms and Capsular Contracture in Breast Implants," *Aesthet Surg J*, vol. 36, no. 3, pp. 297– 309, Mar. 2016, doi: 10.1093/asj/sjv177.
- [18] C. D. Varela-Chinchilla, G. Salinas-McQuary, N. de los Á. Segura-Azuara, and P. A. Trinidad-Calderón, "Breast Implant Illness: Surgical, Autoimmune, and Breast Reconstruction Associations," *Surgeries*, vol. 3, no. 2, pp. 111–125, May 2022, doi: 10.3390/surgeries3020013.
- [19] E. de F. C. Fleury *et al.*, "Silicone-Induced Granuloma Of Breast Implant Capsule (SIGBIC): Similarities And Differences With Anaplastic Large Cell Lymphoma (ALCL) And Their Differential Diagnosis," *Breast Cancer: Targets and Therapy*, vol. Volume 9, pp. 133–140, Mar. 2017, doi: 10.2147/BCTT.S126003.
- [20] C. L. Roberts, A. J. Ampt, C. S. Algert, M. S. Sywak, and J. S. C. Chen, "Reduced Breast Milk Feeding Subsequent to Cosmetic Breast Augmentation Surgery," *Medical Journal of Australia*, vol. 202, no. 6, pp. 324–329, 2015, doi: 10.5694/mja14.01386.
- [21] M. Singh *et al.*, "Impact of FDA Updates on Public Interest in Breast Implant-associated Anaplastic Large Cell Lymphoma.," *Plast Reconstr Surg Glob Open*, vol. 8, no. 11, p. e3240, Nov. 2020, doi: 10.1097/GOX.00000000003240.