


# Synchronous silicone-induced granuloma (SIG) of breast implant capsule (BIC) and gluteal implant capsule (GIC): What to learn

Caio Castro MD  | Mario Sergio Dantas do Amaral Campos MD | Décio Roveda Jr PhD | Eduardo de Faria Casto Fleury PhD 

Radiologia e Diagnóstico por Imagem, Irmandade da Santa Casa de São Paulo, São Paulo, Brazil

**Correspondence:** Caio Castro, Radiologia e Diagnóstico por Imagem, Irmandade da Santa Casa de São Paulo, São Paulo, Brazil.  
Email: caio.vcastro@gmail.com

A 52-year-old female patient underwent an aesthetic procedure with gluteus and breast placement of a silicone implants in mid-2017.

After 6 months of the procedure, she claimed feeling pain in her gluteus and lower limbs. She also noted that the right gluteal implant was harder than usual. After undergoing magnetic resonance imaging (MRI), it could be noted bilateral folds of elastomer and capsular thickness (Figure 1). She was diagnosed with capsular contracture, and the patient made use of non-steroidal anti-inflammatory drugs (NSAIDs) and analgesics.

In 2020, she returned to our service complaining of pain, hardening of the right breast implant, and worsening of gluteal complaints. Once again, she was submitted to MRI and she was diagnosed with magnetic findings suggested silicone-induced granuloma in the gluteus and in the breast (Figure 2,3).

At a first moment, the case reports of BIA-ALCL were exclusive to breast. Recently, it has been reported cases in gluteal implants—gluteal implant-associated ALCL (GIA-ALCL). As a result, the

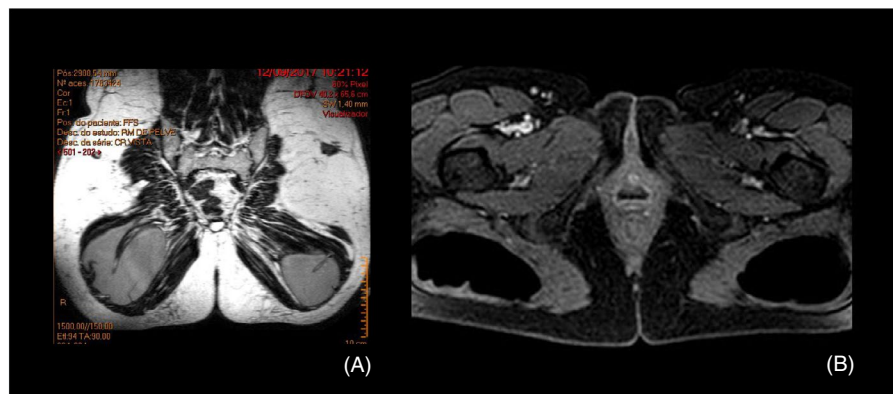
hypothesis that the disease development may not be organ dependent has been discussed.

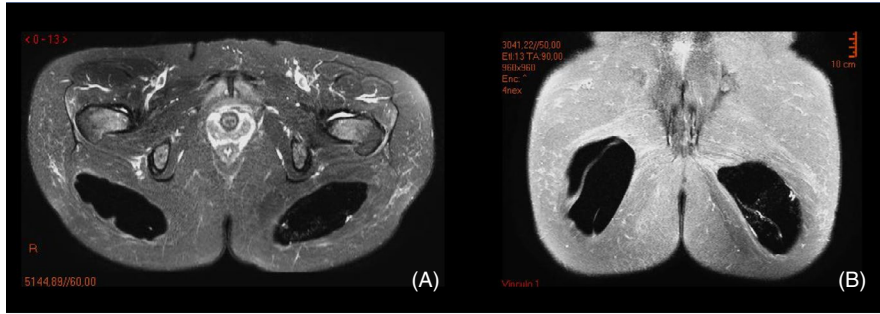
Meanwhile, we have developed a prospective study to evaluate breast implants and their complications since 2017. Our results have showed changes similar to those described by the BIA-ALCL, but without malignant cells to histology.

The ALCL is a rare subtype of non-Hodgkin lymphoma of T cells characterized by monoclonal proliferation of anaplastic cells. Although the BIA-ALCL's lymphomagenesis has not been completely elucidated, some authors have proposed that it stems from a complex process, which includes bacterial biofilm (*Ralstonia sp*) and the textured surface of the implant, an immunogenic response and chronic inflammation.

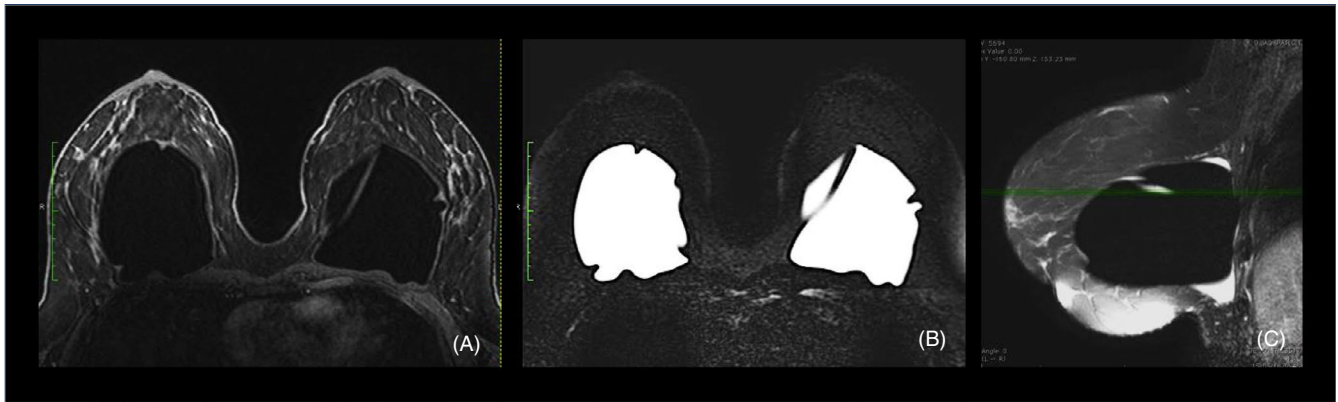
On the other hand, according to our radiological findings, we proposed the silicon-induced granuloma of breast implant capsule (SIGBIC) as a differential diagnosis to BIA-ALCL. This complication is defined by an immune-mediated response caused by leakage of silicone particles from an intact silicone implant, secondary to the

**FIGURE 1** A, Coronal T1-weighted and B, axial T1-weighted MRI image with fat saturation demonstrates bilateral folds of elastomer and capsular thickness





**FIGURE 2** A, Axial and B, coronal T1-weighted postgadolinium image with fat saturation demonstrates the thickness of the fibrous capsule and intracapsular mass, both with contrast enhancement



**FIGURE 3** A, Axial T1 postgadolinium and B, axial STIR water suppression C, sagittal silicone suppressed T1-weighted image with fat saturation demonstrates the thickness of the fibrous capsule and intracapsular mass, as well as late seroma C

elastomers' frailty (gel bleeding). The leakage particle, when in contact to fibrous capsule, triggers a variable chronic inflammatory/immune response that clinico-radiological present as lymphoma. There are few studies that point to silicone bleeding as one of the possible causes of the disease.

In this study, we report the case of a patient that at first evolved with complaints of the gluteus implant, followed by rheumatological symptoms and, currently, with breast findings. The set of clinical and radiological presentation leads us to infer that everything is related to the silicone.

It was believed that ALCL was exclusive to breast, but recent case studies have shown the pathology in gluteal implants. These results are in line with our findings; however, we believe that the reaction to silicone is not organ-dependent but is due to bleeding gel. And we also presume that cases of granuloma, owing to similar clinico-radiological, might be overdiagnosed as ALCL.

The difference between granuloma and lymphoma probably is the exacerbated/uncontrolled immune response fostered by silicone particles. In some rare situations, the immune-mediated response is so intense that it meets the criteria for lymphoma, while in most of them it is only silicone-induced granuloma—with a mild to moderate inflammatory response.

Therefore, SIG does not appear to be an organ dependent but a result of gel bleeding. The knowledge of this pathology is of utter importance for diagnosis and therapeutic management.

#### ORCID

Caio Castro  <https://orcid.org/0000-0001-8398-3214>

Eduardo de Faria Casto Fleury  <https://orcid.org/0000-0002-5334-7134>

[org/0000-0002-5334-7134](https://orcid.org/0000-0002-5334-7134)