Safety & imaging of modern silicone breast implants
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A new, Simple Method to Describe Magnetic Resonance Imaging of Silicone Breast Implants: Silicone Implants Reporting and Data System

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ABSTRACT

MRI silicone breast implant screening studies have been criticized for not using a uniform terminology on implant condition or status. For more simple, uncomplicated and uniform reporting of the condition of in situ silicone breast implants the authors developed a new reporting protocol with two categories. These categories are (A) implant status and (B) signs of extracapsular silicone leakage. The multiple choice answers to these two categories were inspired by the BI-RADS methodology in breast oncology. We found an improved sensitivity and specificity of MRI screening in asymptomatic women with PIP breast implants when using this new reporting system of MRI findings, called SI-RADS, compared to previous MRI reporting.
Sir,

We would like to share with colleagues a newly designed method to record radiologist’s magnetic resonance imaging findings on silicone breast implant condition in two categories, to avoid subjective interpretation of inconclusive text, called Silicone Implants Reporting and Data System (SI-RADS). We designed this tool to re-evaluate magnetic resonance images in our ongoing studies of women previously implanted with Poly Implant Prothèse implants. Magnetic resonance imaging silicone breast implant screening studies have been criticized for not using a uniform terminology on implant condition or status. We also found a somewhat disappointing accuracy of magnetic resonance imaging screening in asymptomatic women with Poly Implant Prothèse breast implants when compared with a recent magnetic resonance imaging validation study. Validation studies, however, use multiple radiologists, who are assigned to the sole task of evaluating the images for research purposes, which improves sensitivity and specificity but is not often applicable to common daily practice. In our daily clinical practice, we noticed a broad spectrum of terminology used by individual radiologists to describe implant condition. Terms such as “leaking”, and “fluid seen” or “released” provided by radiologists are left to plastic surgeons to interpret as implants being ruptured or not. The decision to advise explantation is often based on these, at times not conclusive, Magnetic resonance imaging reports.

Unlike the diagnosis of a bone fracture, the radiologic diagnosis of a ruptured implant is subject to different degrees of confidence of the reporting radiologist. In breast cancer, one has an identical problem regarding the confidence in the interpretation of the radiologic findings in individual patients. The Breast Imaging Reporting and Data System (BI-RADS) was developed and introduced by the American College of Radiology to solve this problem and to provide a clear and simple radiologic describing system; it improved communication between physicians and can be used in the daily practice of decision making by the oncologic surgeon. This Breast Imaging Reporting and Data System methodology has been used successfully in the Dutch national breast cancer screening program for many years. Why not use an analogous system to screen silicone breast implant condition?

The simple and structured Silicone Implants Reporting and Data System tool was developed with two categories: (A) implant status and (B) signs of extracapsular silicone leakage. The multiple-choice answers as a

<table>
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<tr>
<th>Category</th>
<th>Description</th>
<th>Clinical*</th>
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<tbody>
<tr>
<td>0</td>
<td>Incomplete**</td>
<td>Ad imaging**</td>
</tr>
<tr>
<td>1</td>
<td>Intact</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>Probably intact</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>Probably ruptured</td>
<td>Referral</td>
</tr>
<tr>
<td>4</td>
<td>Ruptured</td>
<td>Referral</td>
</tr>
</tbody>
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<table>
<thead>
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<th>Category</th>
<th>Description</th>
<th>Clinical*</th>
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<tbody>
<tr>
<td>0</td>
<td>Incomplete**</td>
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<tr>
<td>1</td>
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<tr>
<td>2</td>
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<td>Referral</td>
</tr>
<tr>
<td>4</td>
<td>Extracapsular leakage</td>
<td>Referral</td>
</tr>
</tbody>
</table>

*Clinical Management; **the MRI is inconclusive, either additional imaging or second opinion from colleague radiologist should be sought; ***extracapsular leakage
measure of confidence, inspired by the Breast Imaging Reporting and Data System methodology, left no room for inconclusive or descriptive text (Table 1). This Silicone Implants Reporting and Data System methodology was then applied to re-evaluate the 2 year old magnetic resonance images of 214 implants completed by two of the three original radiologists. The radiologists found the silicone implants tool easy to use and time sparing. An example of a clearly ruptured and partially collapsed silicone implant in the left breast is shown in Figures 1 and 2.

We compared the magnetic resonance imaging reports with the explantation results and found an improved sensitivity and specificity from 80 and 91 percent to 93 percent and 93 percent, respectively, of magnetic resonance imaging screening in asymptomatic women with Poly Implant Prothèse breast implants when using the silicone implants tool, compared with the previous magnetic resonance imaging reporting. We would advise colleagues to implement this new Silicone Implants Reporting and Data System (SI-RADS) methodology of simple, uncomplicated, and uniform reporting of silicone implant in their daily practices, as we believe this would improve communication between radiologists and plastic surgeons.
REFERENCES


