Ultrasound Study of the Natrelle 410 Anatomical Silicone Breast Implant Rupture: Over a 5-year Follow-up

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PURPOSE: The incidence of breast implant rupture, an important complication, is on the increase. Ruptures usually start as shell rupture, gradually progress into intracapsular rupture, and finally progresses into extracapsular rupture or silicone granuloma. It is recommended that ruptured implants are exchanged before they progress into silicon granuloma. However, since a lower rate of lifetime reoperations is desirable, it is important to ascertain the appropriate time to undergo the operation. Although magnetic resonance imaging is the golden standard for detecting ruptures, ultrasonography is lately recognized as a fast and convenient option. The aim of this study is to reveal rupture rates and to define typical signs of shell rupture and intracapsular rupture.

METHODS: This study included 345 women with 460 implants (379 breast reconstruction and 81 contralateral breast augmentation, all of them were Natrelle 410 breast implants) who had undergone breast reconstruction surgery after mastectomy from 2005-2010 in our institute. From 2014, the authors started ultrasonography on annual visits. Plastic surgeons or ultrasound technicians evaluated implants with high frequency linear probe(12MHz) and classified them into 5 signs (normal, minor shell split, isolated liquid sign, hyperechoic gel between capsule and shell, and hyperechoic inner silicone gel). Magnetic resonance imaging and implant exchange were performed on possibly ruptured implants.

RESULTS: Follow-up rate was 86%. Overall rupture rate at over 5 years was 3.3%(15 of 460 implants). Of those, 9 implants had intracapsular rupture (all of them were exchanged) and 6 implants had shell rupture (2 were exchanged and 4 were put on continuous follow-up). Two explanted implants which had shell rupture showed the ultrasonographic signs of minor shell split or isolated liquid sign. Even though there were very small holes in the shell, shell ruptured implants kept their form and cohesiveness. Nine implants which had intracapsular rupture no longer kept their original form so it was difficult to remove their leaked gel completely. Intracapsular ruptured implants showed both signs of hyperechoic gel between capsule and shell, and hyperechoic area in silicone gel.

CONCLUSIONS: Overall rupture rate was similar to the Natrelle 410 Core Study. In this study,

we could distinguish between shell rupture and intracapsular rupture using ultrasound. And implants that had shell rapture were put on careful follow-up until they progress into intracapsular rupture.