

Breast Implant Rupture: Causes, Diagnosis and Treatment

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ABSTRACT

Breast implant rupture is a rare event that can occur at any time after breast augmentation surgery. The most common causes of rupture are natural aging of the implant, traumatic injury, and failure of the implant material. Symptoms of breast implant rupture can range from mild discomfort to total loss of breast shape and size.

Diagnosing a ruptured breast implant can be challenging, as the condition can be asymptomatic in some cases. However, imaging tests such as MRI and ultrasound can help detect the presence of ruptured implants. Treatment options for ruptured breast implants vary depending on the type of implant, the duration of rupture and the presence of symptoms. In general, treatment involves surgical removal of the ruptured implant and replacement with a new one or complete removal of the implant and surrounding silicone material.

Regular checkups with a board-certified plastic surgeon and being aware of any changes in the shape or feel of the breasts are crucial for early detection and treatment of breast implant rupture. Women considering breast augmentation surgery should carefully weigh the potential risks and benefits of the procedure before undergoing surgery.

Breast implant rupture is a rare but important complication that requires prompt diagnosis and treatment to avoid potential complications. Understanding the causes, symptoms, diagnosis and treatment options for breast implant rupture can help women make informed decisions about breast augmentation surgery and maintain the health of their breasts.

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INTRODUCTION

Breast implants are prostheses used in breast augmentation surgery to improve the size and shape of the breasts in female patients. These medical devices are designed with a silicone or saline shell, and are filled with a cohesive silicone gel or sterile saline.¹

Breast augmentation surgery, also known as augmentation mammoplasty, is a surgical procedure performed under general anesthesia or deep sedation. The primary goal of the surgery is to improve the size and shape of the breasts, with the use of breast implants.¹

In breast augmentation surgery, an incision is made in the skin, either in the areola, inframammary fold or armpit, through which the breast implant is inserted. The implant may

be placed under the breast tissue or under the pectoralis muscle, depending on the case.²

Once the implant has been inserted, it is adjusted to achieve the desired shape, and the incision is sutured. After surgery, a recovery period may be required that may include wearing a compression garment and avoiding strenuous physical activity.²

Breast augmentation surgery is a safe and effective procedure to improve the size and shape of the breasts in female patients. However, it is important to discuss the risks and benefits of the surgery with a board-certified plastic surgeon to determine if it is the right procedure for each individual case. Some of the undesirable effects of surgery is the rupture of the implants themselves.³

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EPIDEMIOLOGY

Rupture of breast implants is an uncommon event, but may occur in some cases. The rate of rupture varies depending on the type of breast implant and the time that has elapsed since implant placement.^{1,4}

Breast implants may rupture due to factors such as aging, material fatigue, trauma or normal wear and tear. The rupture rate of silicone breast implants is estimated at about 1% to 2% in the first year after surgery and gradually increases over time, reaching 10% within 10 years. On the other hand, the rupture rate of saline breast implants is slightly higher than that of silicone implants, and is estimated at about 5% within 10 years of surgery.^{5,6}

ETIOLOGY

Rupture of breast implants can have several causes, some of which may be inherent to the implant itself or may be due to external factors.

In the case of silicone breast implants, rupture can be caused by material fatigue due to wear and degradation of the silicone gel over time, which can result in spontaneous rupture of the implant. In addition, mechanical pressure exerted on the implant, as a result of trauma or shocks, can cause rupture.⁷

In the case of saline breast implants, the most common cause of rupture is implant deflation due to perforation of the implant shell by biopsy needles, for example, or rupture of the filling valve during or after surgery.⁸

There are also external factors that can contribute to breast implant rupture, such as exposure to radiation or the use of certain types of medical equipment, such as the prolonged use of compression devices, which can put excessive pressure on the implant.⁹

It is important to note that most of the time, breast implants are uncomplicated and have a long life span. However, women with breast implants should be aware of symptoms that may indicate implant rupture and have regular checkups for any signs of rupture or complication.⁹

CLINIC

The clinical manifestations of breast implant rupture can vary depending on the type of implant and the severity of rupture. In some cases, rupture may be asymptomatic and only detected by routine imaging tests, while in other cases, rupture may cause noticeable symptoms.¹⁰

In the case of silicone breast implants, rupture can be intracapsular or extracapsular. Intracapsular rupture occurs when the silicone gel leaks out of the implant and accumulates within the fibrous capsule that naturally forms around the implant. In this case, symptoms may be mild or non-existent, and may include slight hardening of the breast, a change in breast shape or size, and mild pain. On the other hand, extracapsular rupture occurs when the silicone gel extends outside the fibrous capsule and can cause localized

swelling, hardening of the breast, pain, migration of the silicone gel and possible breast deformity.^{11,12,13.}

In the case of saline breast implants, rupture is easier to detect, as the affected breast rapidly loses its shape and size and deflates within hours or days. Symptoms of rupture may include a change in breast shape or size, pain, swelling and possible migration of saline fluid to other nearby tissues.¹³

It is important to note that breast implant rupture does not always cause noticeable symptoms and can be detected by routine imaging tests. Therefore, it is recommended that women with breast implants undergo regular check-ups and evaluate the implants by imaging tests, such as MRI, for any signs of rupture or complication. If rupture is suspected, medical attention should be sought immediately.¹⁴

DIAGNOSIS

Diagnosis of ruptured breast implants can be challenging, as in some cases it may be asymptomatic with no obvious signs of rupture. However, there are several imaging tests that can be used to detect and confirm breast implant rupture.¹⁵

Magnetic resonance imaging (MRI) is considered the most accurate and reliable test for detecting breast implant rupture. MRI uses magnetic waves and a magnetic field to create detailed images of the breast tissue and the breast implant in question. If the implant is ruptured, MRI can detect the leakage of silicone gel or saline fluid into the surrounding breast tissue.¹⁶

Mammography can also be useful in detecting breast implant rupture, although it is less accurate than MRI. Mammography uses X-rays to create detailed images of the breast tissue and breast implant. If the implant is ruptured, mammography may show a change in the shape or contour of the implant, a possible decrease in breast tissue density, or a mass or calcium clumping in the surrounding breast tissue.¹⁷

Ultrasound can also be used to detect ruptured breast implants, although it is less accurate than MRI. Ultrasound uses sound waves to create detailed images of the breast tissue and breast implant. If the implant is ruptured, ultrasound can detect the leakage of silicone gel or saline fluid into the surrounding breast tissue.¹⁷

In general, it is recommended that women with breast implants undergo regular check-ups and evaluate the implants by imaging tests, such as MRI, for any signs of rupture or complication. If rupture is suspected, medical attention should be sought immediately.¹⁷

TREATMENT

Treatment of ruptured breast implants depends on the type of implant, the duration of rupture and the presence or absence of symptoms.¹⁸

In the case of saline implants, rupture is usually evident, as the implant will deflate rapidly and the body will safely absorb the saline fluid. The treatment in these cases is

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surgical removal of the ruptured implant and placement of a new implant.¹⁸

In the case of silicone gel implants, rupture may be asymptomatic and undetected for some time. If rupture is confirmed, treatment will depend on the duration of rupture, the amount of silicone gel that has leaked and the presence or absence of symptoms. If the rupture is recent and the amount of silicone gel that has leaked is limited, it may be possible to perform an implant repair and preserve the existing implant. If the rupture is more extensive and there has been significant leakage of silicone gel, complete removal of the ruptured implant and removal of the silicone gel from the surrounding breast tissue is recommended. In some cases, additional reconstructive surgery may be required to restore the shape and appearance of the breast.^{17,18}

It is important to note that breast implant rupture does not always require immediate treatment and in some cases it may be necessary to simply observe and monitor the situation. Each case is unique and should be evaluated individually by an experienced, board certified plastic surgeon.^{19,20}

CONCLUSIONS

In conclusion, breast implant rupture is a rare event, but can occur at any time after breast augmentation surgery. The most common causes of rupture are natural aging of the implant, traumatic injury, and implant material failure.

It is important to note that breast implant rupture can be asymptomatic, meaning that patients may not realize that their implant has ruptured for some time. Therefore, it is crucial that women who have had breast augmentation surgery have regular check-ups with their plastic surgeon and be aware of any changes in the shape or feel of their breasts.

Treatment of ruptured breast implants varies depending on the type of implant, the duration of rupture and the presence or absence of symptoms. In general, treatment involves surgical removal of the ruptured implant and placement of a new implant or, in some cases, complete removal of the implant and silicone material from the surrounding breast tissue.

It is important for women to carefully consider the potential risks and benefits of breast augmentation surgery before undergoing the procedure. While breast implants are safe and effective in most cases, it is important to remember that any surgical procedure carries certain risks.

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