

# A case report of fibroadenoma of the breast with characteristic cystic change on a cut surface

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Kazuya Miyoshi<sup>1</sup>, Hirotohi Takahashi<sup>1</sup>, Masaru Inagaki<sup>2</sup>,  
Jiro Watanabe<sup>3</sup>, Sohsuke Yamada<sup>3,4</sup>  and Kenichi Mizutani<sup>4</sup> 

## Abstract

Fibroadenoma with remarkable cystic change is very unusual. Opinions differ as to the interpretation of this lesion. Furthermore, there have been few reports focusing on its macroscopic view. We herein report a case of fibroadenoma in a 43-year-old woman. The patient presented herself to a medical doctor's office due to a rapidly growing breast tumor. Based on a core needle biopsy, a benign lesion was suspected, and the tumor was surgically resected. On a macroscopic study, the cut surface of the tumor revealed a remarkably cystic and well-circumscribed lesion with an intracystic polypoid component. Microscopically, a variety of findings of epithelial and stromal proliferation were observed. This is an interesting case not only because a fibroadenoma with prominent cystic change is unusual but also because the breast tumor showed a characteristically cystic appearance on its macroscopic view.

## Keywords

Fibroadenoma, cystic, macroscopic view, cystic fibroadenoma, intraductal fibroadenoma, intraductal fibroadenomatosis

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## Background

Fibroadenoma of the breast is a well-circumscribed benign tumor with epithelial and stromal growth. It usually occurs in young women, with an incidence of 18.5%,<sup>1,2</sup> except for complex fibroadenoma, which is an unusual variant of fibroadenoma occurring in elderly women.<sup>3</sup> Although cystic changes are sometimes present, fibroadenoma with predominant cystic change is very unusual,<sup>3–5</sup> and the interpretation of the lesion seems to be unclear. While the exact incidence of the lesion is unclear, in 2015, Bhat et al.<sup>3</sup> reported that only one case had been described thus far. When the tumor is obviously cystic, it resembles an intraductal papilloma.<sup>4,6</sup> Some papers have stated that fibroadenoma with remarkable cystic change is called cystic fibroadenoma and classified under complex fibroadenoma.<sup>3,5,7</sup> There are also a few reports describing benign fibroepithelial lesions with cystic features and intracystic or intraductal components as intraductal fibroadenoma or intraductal fibroadenomatosis.<sup>2,8,9</sup> Most previous reports have focused on the microscopic view of these lesions.

We herein report an unusual case of fibroadenoma with remarkable cystic change and intracystic growth showing a characteristic macroscopic view.

## Case presentation

A 43-year-old woman presented herself to a medical doctor's office due to a rapidly growing tumor of the right breast. Ultrasonography revealed a middle- to high-echoic mass. A core needle biopsy was performed showing hypocellular myxoid stroma with small spindle cells and mammary ducts without atypia (Figure 1(a)). Based on the core needle biopsy findings, a benign lesion, such as phyllodes tumor or fibroadenoma, was suspected, and the tumor was surgically resected about 2 weeks after the biopsy. On a macroscopic study, the

<sup>1</sup>Department of Breast Surgery, National Hospital Organization, Fukuyama Medical Center, Hiroshima, Japan

<sup>2</sup>Department of Surgery, National Hospital Organization, Fukuyama Medical Center, Hiroshima, Japan

<sup>3</sup>Department of Laboratory of Pathology, National Hospital Organization, Fukuyama Medical Center, Hiroshima, Japan

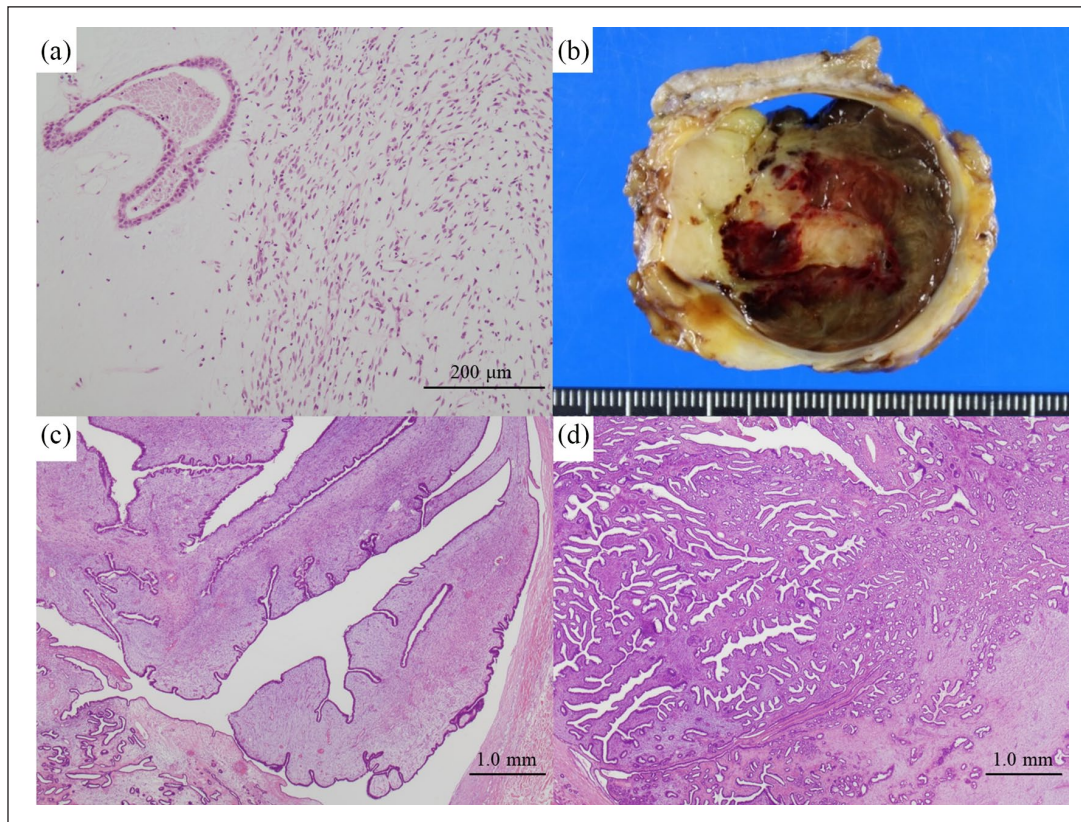
<sup>4</sup>Department of Pathology and Laboratory Medicine, Kanazawa Medical University, Ishikawa, Japan

### Corresponding Author:

Kenichi Mizutani, Department of Pathology and Laboratory Medicine, Kanazawa Medical University, 1-1 Daigaku, Uchinada, Kahoku, Ishikawa 920-0293, Japan.

Email: kmupalm@gmail.com





**Figure 1.** Microscopic findings of the biopsy specimen and macroscopic and microscopic findings of the surgical specimen. (a) In the biopsy specimen, myxoid stroma with low cellularity and mammary ducts without atypia were observed. (b) The cut surface of the surgical specimen revealed a remarkably cystic and well-circumscribed lesion with an intracystic polypoid component, measuring  $4.0 \times 3.0 \text{ cm}^2$  in diameter with a whitish to tan color and hemorrhage. (c) and (d) On a microscopic study of the surgical specimen, the intracystic component showed a variety of findings of epithelial and stromal proliferation. (c) A pericanalicular pattern, an intracanalicular pattern, and a leaf-like structure with stromal growth, and (d) proliferation of small tubular structures were observed. (a) Bar =  $200 \mu\text{m}$  (H&E staining; original magnification:  $\times 100$ ). (c) and (d) Bar =  $1.0 \text{ mm}$  (H&E staining; original magnification:  $\times 12.5$ ).

cut surface of the tumor revealed a remarkably cystic and well-circumscribed lesion with an intracystic polypoid component, measuring  $4.0 \times 3.0 \text{ cm}^2$  in diameter with a whitish to tan color and hemorrhage (Figure 1(b)). Microscopically, a variety of findings of epithelial and stromal proliferation, such as a pericanalicular pattern, an intracanalicular pattern, and a polypoid or leaf-like structure with stromal growth, and proliferation of small tubular structures were observed (Figure 1(c) and (d)). The stromal component had mild to moderate cellularity, showing myxoid change in some areas. The mitotic activity was low. Infarction and hemorrhage were also observed, but there were no findings of malignancy.

Although phyllodes tumor was considered as a differential diagnosis, she was ultimately diagnosed with fibroadenoma (intraductal fibroadenoma) based on these findings.

## Discussion

The most unique point of this case is the remarkable cystic change in the tumor; however, the cyst was filled with intracystic polypoid component. Retrospectively, the mass with middle to high echo intensity on ultrasonography was likely

the intracystic component, and the cystic change in the lesion might be unremarkable.

One of the differential diagnoses of an intracystic mass is a phyllodes tumor. It can be difficult to distinguish fibroadenoma with an intracanalicular pattern from phyllodes tumor.<sup>8</sup> In the present case, the microscopic study revealed an intracanalicular pattern or a leaf-like structure with stromal growth; however, the lesion showed not only interstitial growth but also growth of the epithelial component, which led to the diagnosis of fibroadenoma. This is because fibroadenoma is characterized by biphasic proliferation of epithelial and stromal components; on the other hand, phyllodes tumor mainly shows stromal growth.<sup>1</sup> While carcinoma was another differential diagnosis, as the tumor had shown rapid growth, there were no malignant findings microscopically. No second opinion was obtained in this case.

## Conclusion

This case is interesting not only because fibroadenoma with remarkable cystic change is unusual but also because the breast tumor showed a characteristically cystic appearance

on its macroscopic view. Opinions differ as to the interpretation of fibroadenoma with prominent cystic change, and another fibroepithelial lesion may be one of differential diagnoses, so further investigations will be required to better understand this entity.

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### Author contributions

K.M., H.T., and M.I. made a substantial contribution to the acquisition of data for the article and were associated with revision of the article. J.W., S.Y., and K.M. made histopathological interpretation and diagnosis and were associated with drafting or revising the article. All authors approved the version to be published and agreed to be accountable for the work of the article.

### Availability of data and materials

The data set supporting the findings and conclusions of this case report is included within the article.

### Consent for publication

Consent was obtained for the publication of this case report.

### Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Ethical approval

Our institution does not require ethical approval for reporting individual cases or case series.

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Written informed consent was obtained from the patient for her anonymized information to be published in this article.

### ORCID iDs

Sohsuke Yamada  <https://orcid.org/0000-0003-2662-0024>

Kenichi Mizutani  <https://orcid.org/0000-0003-2742-5693>

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