Fibroadenomas are benign breast tumors that arise in young women. Histological examination of these lesions usually reveals lobular hyperplasia. Known risk factors for breast cancer, such as early age of menarche or nulliparity, do not increase the risk of fibroadenomas. The diagnosis of fibroadenomas is based on the physical finding of a mobile, non-tender breast mass, which is slightly hypoechoic on ultrasonography and that has cell clusters in fine-needle aspiration. Fibroadenomas that are asymptomatic and small in size should be treated conservatively, while ones that are growing rapidly in size and are symptomatic should be surgically excised.

Definition of Fibroadenoma

Fibroadenomas are **benign breast masses** that are usually **mobile on palpation**. They are commonly identified in young women and they represent a diagnostic challenge for the surgeon.
Epidemiology of Fibroadenoma

Fibroadenomas are believed to be under-reported with an estimated incidence of 13% in women examined in a clinic. Additionally, fibroadenomas are encountered in approximately 50% of breast biopsies, especially in adolescent women.

In contrast to breast cancer, fibroadenomas are not linked to the age of menarche, menopause or to the use of oral contraceptive pills. Fibroadenomas are unlikely to be hereditary and they seem to be negatively correlated with tobacco smoking. Afro-Americans seem to be at an increased risk of developing fibroadenomas.

Pathophysiology of Fibroadenoma

Fibroadenomas arise from the lobular structures of the breast; hence they are usually formed during menarche. During menarche, distinct areas of lobular hyperplasia form, which is a normal physiological change. Histologic examination of fibroadenomas shows lobular hyperplasia as the dominant histological pattern, hence linking them to the normally formed lobular hyperplasia during menarche.

Fibroadenomas also have hormonal sensitive epithelium, and they change in size during pregnancy and lactation, or when the patient uses oral contraceptive pills. Due to being hormonal sensitive, fibroadenomas usually regress in menopause.

On the other hand, some postulate that fibroadenomas are in fact abnormally growing tumors that also express growth hormone and epidermal growth factor receptors. Despite this, fibroadenomas are not known to be associated with an increased risk of breast cancer and are not considered as a precancerous lesion.

Clinical Presentation of Fibroadenoma

Fibroadenomas are usually identified during routine breast examinations at the clinic. Additionally, patients with family history of breast cancer tend to present to the clinic earlier for routine breast examinations, and this explains why fibroadenomas are more commonly found in this group of patients.

During an examination, a mobile solitary breast mass is usually identified that rarely goes above 3 cm in diameter, but can be as large as 10 cm. Larger fibroadenomas result in breast asymmetry and the patient usually presents to the clinic complaining of a breast mass, rather than being an incidental finding.

Fibroadenomas are usually found in the upper-outer quadrant of the breast and they are usually asymptomatic. Few women complain of pain and a cyclic increase in size due to the fibroadenomas’ sensitivity to hormonal changes during the normal menstrual cycle.

Juvenile fibroadenomas present in younger patients that are usually of Afro-American origin and grow fast in size. These tumors usually cause skin ulceration. Fibroadenomas that are more than 5 cm in diameter are called giant fibroadenomas. While juvenile fibroadenomas are usually giant in size, the term giant fibroadenoma is reserved for unilateral tumors.
Diagnostic Work-up for Fibroadenoma

Fibroadenomas’ diagnosis is largely a clinical one. Patients are too young to suspect malignant disease and the masses identified in physical examination do not have malignant features, i.e. they are mobile, non-tender, slow-growing and without significant skin changes.

![Image: "Fibroadenoma of the Breast. Ultrasound Image." by © Nevit Dilmen. License: CC BY-SA 3.0](image)

**Ultrasonography** is the mainstay imaging modality to diagnose fibroadenoma. The preference of breast ultrasound over mammography is due to the high density of breast tissue in young women that renders mammographic assessment inconclusive. In addition to that radiation exposure is avoided at all costs in young patients.

Fibroadenomas usually have **smooth and regular boundaries** and have a **weak echo signal**. Up to 25% of fibroadenomas have **irregular borders**, a **malignant feature**, and a **biopsy** is usually indicated to confirm that such lesions are indeed benign.

**Fine needle aspiration** is the method of choice for **biopsy** of a breast mass. Cytology examination shows **clusters of spindle cells**, **antler horn clusters**, and **honeycomb sheets**. These features are found in more than 90% of fibroadenomas. Fine needle aspiration, when combined with physical examination findings and ultrasonography, can successfully **differentiate benign from malignant breast lesions** in up to 95% of the cases.

**Treatment of Fibroadenoma**

A **wait-and-see approach** is recommended in most women with fibroadenomas that are confirmed to be benign by imaging and biopsy studies, and that are asymptomatic and small lesions. A significant number of other benign breast lesions, such as **cystic breast changes**, are known to regress with time and, if the mass does not regress in three years, then the likelihood of it being a true fibroadenoma increases significantly.

Small but symptomatic fibroadenomas can be treated with **cryoablation**. Surgical intervention for small fibroadenomas in adolescents is not recommended because the risk of injuring the normally developing breast is way higher than the possible benefits of the procedure.
Small fibroadenomas that are tender, associated with skin changes, have irregular borders on ultrasonography or identified in women who are older than 35 years of age and who have a family history of breast cancer, should be excised to lower the risk of cancer misdiagnosis. **Rapidly growing fibroadenomas**, such as juvenile fibroadenomas and giant fibroadenomas, should be treated **surgically**.

Patients with giant fibroadenomas can develop breast asymmetry after the excision of the tumor. Whether to go for reconstructive breast surgery right after the excision of the giant fibroadenoma or to wait is still under debate.

For unknown reasons, the affected breast tends to grow in size after the excision of the fibroadenoma and can become larger than the unaffected breast. Early correction of breast asymmetry can result in one breast that is significantly larger than the other in the long-term, and the patient could eventually need another reconstructive surgery in the future. Because of this, there is currently no consensus on when to go for reconstructive surgery after the excision of a fibroadenoma.

Surgical intervention for fibroadenoma can be under local or general anesthesia and care should be taken to make the incision-less visible and more cosmetic.

**References**


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