



# Periareolar Excision of Fibroadenoma Mamma: A Perfect Cosmetic Solution for Benign Breast Tumors in Young Females

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## Abstract

Fibroadenoma is a common benign breast tumor of young unmarried girls. Surgical excision is the treatment of choice. In literature, many surgical approaches have been suggested to deal with this condition and evaluated in terms of patient's satisfaction, esthetic presentation and cosmetic outcome. We herein report a series of thirteen patients who have undergone surgical procedure for the fibroadenoma breast. We applied periareolar incision to excise the fibroadenoma and got satisfactory results in terms of speedy recovery, fine hidden scar mark, no intra/post-operative complication and high level of patient's satisfaction without compromising the primary goal of the surgical procedure i.e. complete excision of the tumor. We strongly recommend that periareolar incision should be applied to excise benign breast tumors especially fibroadenomas with only caveat of large tumors, very thin breast tissues and peripherally situated tumors.

**Keywords:** Benign breast tumor; fibroadenoma; periareolar incision; cosmesis; cosmetic; esthetic; Periareolar approach; Areola; nipple-areola; breast lump; Areola; incision; breast; excision; surgical techniques; Multiple fibroadenoma; breast surgery

**Abbreviations:** FNAC: Fine Needle Aspiration Cytology; BIRADS: Breast Imaging Reporting and Data System; NPO: *nil per os* (Nothing by mouth); OT : Operation Theater; IV: intravenous; ET tube: Endotracheal Tube; BIRADS: *Breast Imaging-Reporting and Data System*

## Introduction

The majority of benign breast tumors are because of fibrocystic disease, which denotes small fluid-filled cysts and moderate epithelial cell and fibrous tissue hyperplasia. It can occur in women of any age, but the peak incidence is during the second and third decades of life [1] and up to 25% of patients present with multiple fibroadenomas [2]. The incidence of fibroadenoma decreases with increasing age and very less in postmenopausal females. Fibroadenoma arises from both stromal and epithelial connective tissue cells which contain receptors for both estrogen and progesterone. That is why they tend to proliferate during pregnancy because of excessive production of estrogen.

As age increases, the risk of malignant changes in fibroadenoma rises [3]. This warrants excision of all such breast tumors. Fibroadenoma with hyperplasia and cellular atypia indicates a higher risk for breast cancer development [4]. Since fibroadenoma is the disease of young females where surgical excision is the treatment of choice, the surgeon often faces dilemma in the mode of surgical intervention because he has to make proper balance in successful excision with preservation of function and acceptable esthetic-cosmetic outcome. Multiple incision techniques are mentioned in literature like periareolar, periareolar overlying, circumareolar etc. we have chosen periareolar skin incision for the access and removal of the fibroadenoma.

## Surgical Technique

Total 13 patients were operated for fibroadenoma breast by periareolar incision method from 201 to 2019 in Om Surgical Center & Maternity Home. Informed consent was obtained from all the patients. Diagnosis of fibroadenoma was confirmed by FNAC. All patients were evaluated properly on various demographic parameters (Table 1). Sonomammography of the breast was performed and all patients revealed either BIRADS I or BIRADS II category. Hematology, biochemistry and serology tests were performed as per hospital surgical norms. PAC was done one

day prior to the operation. Patient was put NPO 12 hours prior to the surgery. For surgical prophylaxis IV 1.5gm Cefoperazone-Sulbactam was given slowly 30-45 minutes preoperatively after skin sensitivity test. In OT, procedure was done under general anesthesia and patients were put in supine position. Pre-anesthetic medication was given as IV glycopyrrolate 0.2mg, midazolam 2.0mg, and butorphanol 1.0mg. After 3-4 minutes of preoxygenation, induction of general anesthesia with IV 100mg propofol and 100mg succinylcholine was given and patient was intubated with cuffed ET tube of 7.0mm inner diameter. GA was maintained with N<sub>2</sub>O+O<sub>2</sub> mixture and Vecuronium plus isoflurane combination.

**Table 1:** Clinical Presentation of the Patients.

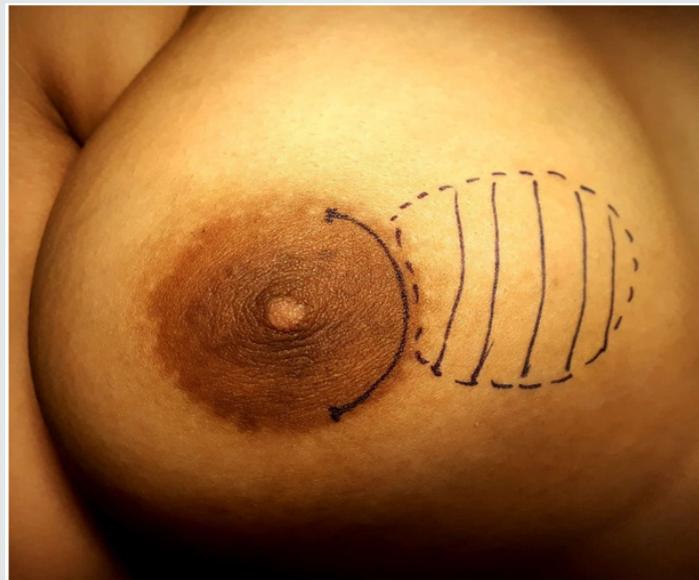
Clinical Characteristics	Value (n)	Percentage (%)
Total patients	13	-
Mean age ± SD, years	24.46±6.17	-
<b>Marital Status</b>		
Unmarried	8	61.5
Married	5	38.5
<b>Parity</b>		
Nulliparous	9	69.2
Multiparous	4	30.8
<b>Affected Breast</b>		
Right	8	61.5
Left	5	38.5
<b>Number of Tumors</b>		
1	8	61.5
2	4	30.8
3	1	7.7
>3	0	0
<b>Location of the Tumor</b>		
RUQ	6	46.2
RLQ	2	15.4
LUQ	4	30.8
LLQ	1	7.6
<b>Tumor size by HR-USG (cm) (n=19)</b>		
1-2	0	
2-4	6	31.6
4-6	8	42.1
>6 -<8	5	26.3
<b>BIRADS Category</b>		
I	7	53.8
II	6	46.2
SD : standard deviation; RUQ: right upper quadrant; RLQ: right lower quadrant; LUQ: left upper quadrant; LLQ: left lower quadrant; BIRADS: Breast Imaging-Reporting and Data System; HR-USG: high resolution ultrasonography		

Patient was painted and draped in supine position with well-exposed operated side breast. Breast mass was then palpated thoroughly and marked with skin pen (Figure 1). The periareolar incision of that side was then marked and size of the incision was assessed with that of mass so that during dissection and extraction

of the tissue; margins of the incision line must be preserved and should not get ragged (Figure 2). Otherwise subcuticular suturing will not be as effectively approximate the wound margins as it should have. The periareolar incision should not be more than 50% of the perimeter of the areola. The subcutaneous tissue and fat

planes were dissected by monopolar electrocautery by pulling the edges of the incision upward with skin hooks taking care that skin margins should not get cauterized. Dissection was continued in the deeper plane downward toward the mass. The position of the mass was determined again by palpation. After sidewise mobilization of the mass, the parenchyma over the mass was divided to expose and enucleate the lump (Figure 3). We usually apply bipolar electrocautery at this place to avoid unnecessary hemorrhage due to small feeding vessels. Hemostasis was meticulously maintained. The dead space was not obliterated, and drain was not required in any of the cases. The skin incision was closed with subcuticular running nonabsorbable prolene 3-0/4-0 suture on cutting needle (Figure 4) and sometimes with absorbable monocryl 4-0/5-0 suture where stitch removal is not required (Figure 5). Patient was then

extubated after giving IV myopyrolate 5ml supported with oxygen by mask. Ball bandage was applied over the wound for compression immediately and retained for 5-7 days. Patient was shifted to the recovery ward after getting full consciousness. Breast support was given to each patient with appropriate size brassiere. The wound was inspected on the 8th postoperative day when the patients came for stitch removal (Figure 6). The patients were followed up on two weekly visits for a minimum of 3 months. Clinical photographs were taken on routine follow-up visits (Figure 7). Histopathologic examination revealed benign breast ducts with surrounding stromal proliferation; epithelial proliferation in pericanalicular and intracanalicular patterns; areas of duct adenosis; dilatation; areas of fibrosis and no stromal overgrowth, atypia or significant mitoses (Figure 8).



**Figure 1:** Breast mass marked with skin marking pen.



**Figure 2:** The periareolar incision just at the edge of the areola and skin (see the incision applied is short than the marking).



**Figure 3:** Entire fibroadenoma taken out of the periareolar incision after dissection (see the intact capsule).



**Figure 4:** Periareolar incision was subcuticular sutured with nonabsorbable prolene 3-0 or 4-0.



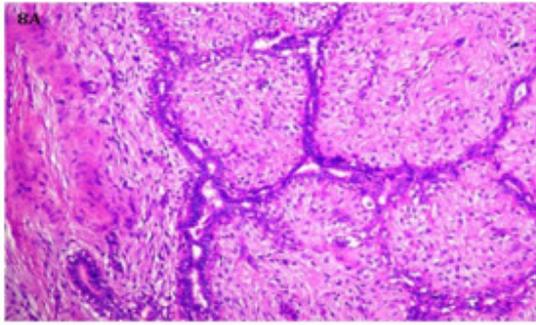
**Figure 5:** Periareolar incision was subcuticular sutured with absorbable monocryl 4-0 or 5-0.



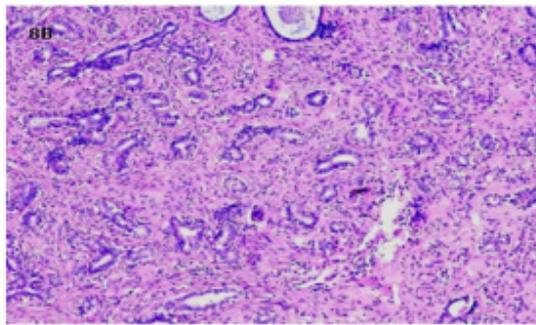
Figure 6: Periareolar scar mark on postoperative day-8.



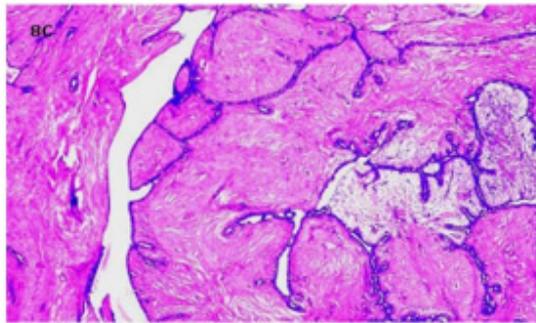
Figure 7: Periareolar scar marks in variable follow-up visits

**HISTOPATHOLOGIC PICTURES OF FIBROADENOMA BREAST**

**Figure 8A**  
Sections reveal a well circumscribed tumor composed of stromal proliferation and epithelial proliferation in pericanalicular and intracanalicular patterns. No stromal overgrowth, atypia or significant mitoses seen.  
Diagnosis : Fibroadenoma



**Figure 8B**  
Lesion composed of benign breast ducts with surrounding stromal proliferation and areas of duct adenosis, dilatation and areas of fibrosis.  
Diagnosis : Cellular Fibroadenoma with fibrocystic Changes



**Figure 8C**  
Breast tissue with ducts and lobules arranged in pericanalicular and intracanalicular pattern  
Diagnosis: Fibroadenoma

**Figure 8:** Histopathologic characteristics of Fibroadenoma Breast.

## Clinical Presentation

Total thirteen patients were taken for the study that underwent operation for the fibroadenoma of the breast using periareolar incision. The age of the patient ranged from 18 to 36 years with mean of around 25 years. Most of the patients were unmarried whereas five were married and having 1 to 3 children. Right breast was more often affected than the left in which upper quadrant of the breast was predominantly involved. We encountered single tumor in majority of cases; four cases had two and one had three tumors. In cases with multiple fibroadenomas, all were present in the same quadrant. Tumor was the presenting feature in all the cases. Pain was present in more than half of the cases. We did not find any other associated complain like nipple discharge etc. All the patients were having BIRADS I or II category lesions. None of the patient had any history of previous breast ailment or any surgery. Follow up time ranged from minimum of 3 months to even 10 years. Detailed clinical presentation have been summarized in Table 1.

## Discussion

The traditional method of benign breast tumor resection used widely, is a radial or arc incision along the langer's lines on the skin above the pathological changes of the breast, in order to minimize damage to the mammary ducts [5], whereas ugly postoperative scar significantly affects the appearance of the breast with this approach (Figure 9, red encircled). If there are multiple lesions, there will be more scars left after removal of the tumors and the bilateral breasts will be asymmetrical. This can cause the patient much psychological pressure and affect their quality of life. Many incision techniques have been used to give better cosmetic outcome to the breast after operation. Fibroadenoma excision through periareolar incision or through an overlying incision [6,7]. Circumareolar Incision and dissection through subdermal tunnel has also been tried successfully for excision of multiple breast fibroadenoma [8]. Multiple fibroadenoma of the breast can safely be removed by the Ribeiro technique modified by Rezai [9].



**Figure 9:** Big and unsightly post-operative scar after radial incision approach for excision of fibroadenoma almost after 10 years of operation.

Dufourmentel in 1928 first time used this incision for operation on breast [7]. Later on, the periareolar incision was widely used in gynecomastia [10,11] and in breast augmentation [12,13] for a long time because of having cosmetic benefit. Shrotria considered the periareolar incision as the gateway to the breast [14].

Post-operative scarring in periareolar incision is almost negligible close to no scar mark after 2-3 months period (Figure 7). In one study, authors have reported only 3 patients with scar diathesis out of 153 operated patients [6]. Certain studies reported that there are no difference in duration of surgery and the amount of bleeding when comparing periareolar and traditional radial/arc incisions [6]. In our patients we also found very good results in terms of short operation time, very less or negligible bleeding, preserved nipple-areola sensations, and most importantly cosmesis.

In literature, certain studies described several disadvantages of periareolar incision (Table 2), such as longer operation time, larger volume of intraoperative blood loss, prolonged exposure, more damage to breast tissue specially in creating subcutaneous tunnel, nipple ischemia, scar diathesis, disruption of lactation, and hypertrophic scars & keloids in Caribbean women [6,7,15,16]. Fortunately we had not experienced any of the above in our all patients except negligible skin loss at wound margin in one patient (Figure 7B).

The nipple-areola complex is always innervated by the lateral and anterior cutaneous branches of the 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> intercostal nerves. These cutaneous branches traverse superficially within the subcutaneous fat and reached the nipple from the lateral side, terminating at the medial border of the areola. Surgeons must keep in mind that the nerves innervating the nipple and areola are best protected if skin incisions at the lateral border of areola are avoided [17]. It has been reported that a periareolar incision is not suitable for the tumor of >5 cm in diameter or when the distance between the tumor and the areola is >34cm, as there is chances of potential

damage to the lactiferous ducts [7]. However, Kong *et al* used periareolar incision even when the distance between the tumor and the areola was 7.5cm and ensured good patient outcomes [6]. Our series also supported that tumor at periphery of the breast may also be successfully approached through the periareolar incision. We did operate on tumors up to 7.0 cm with favorable results without any complications.

In order to avoid damaging lactiferous ducts, one has to make plane of dissection very carefully between thick layer of subcutaneous fat and breast tissue. If breast is not bulky, dissection should be directed directly to the tumor by deepening the plane of dissection without disrupting surrounding soft breast tissue so as to minimize tissue damage and successful excision of fibroadenoma. Surgeon may use both blunt and sharp dissection to achieve the target. In our practice we usually do maximum blunt dissection by the finger and use bipolar electrocautery whenever deemed necessary. The another disadvantage of the periareolar incision is the flattening or collapse of the nipple-areola complex reason being thin fatty layer, excessive dissection and resection of the subcutaneous breast tissues underneath the nipple-areola complex, large mass occupying almost whole breast and tumor located just beneath the areola. To avoid this unwanted outcome, surgeon must evaluate the case properly regarding the surgical approach and once decided for the periareolar incision then do minimal sharp dissection and ensuring minimal use of electrocautery under the nipple-areola complex.

Despite all as most of the fibroadenomas occur in young unmarried females in whom scar marks on their breast not only impose blot to their beauty but also create psychological insult. Therefore, cosmetically acceptable scar or camouflaged scar is of paramount importance to them with removal of the disease i.e. fibroadenoma. The periareolar incision scar motivates them to accept the operative procedure readily and fulfill further their desire.

## Conclusion

The treatment plan of benign breast lesions including fibroadenoma should be chosen according to the location and size of the tumor because the primary aim should be the complete excision of the disease i.e. fibroadenoma with best possibility of keeping the cosmetic appearance of the breast intact. The cosmetic results of excision of fibroadenoma by a periareolar incision are very promising in young patients with palpable tumor. The added advantages of speedy recovery, small incision and hidden scar mark make the periareolar incision as main surgical technique for the excision of the fibroadenoma having caveat of multiple fibroadenomas, large tumor and tumors situated deep in peripheral breast tissue. However, periareolar incision warrants higher technical requirements from the surgeons because careful search of proper plane of dissection, meticulous hemostasis, adequate soft tissue handling and minimal disruption of normal surrounding breast tissue are the keys to successful outcome.

## Acknowledgements

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## Conflict of Interest

No conflict of interest declared by the authors

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