

Preserving Cosmesis in Giant Fibroadenoma Surgery: Circumareolar Swiss Roll Versus Saw-Tooth ApproachShalini TV¹, MP Agrawal², Harleen Bawa³¹Postgraduate Resident, Dept. of General Surgery, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India²Professor, Dept. of General Surgery, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India³Postgraduate Resident, Dept. of General Surgery, Pacific Institute of Medical Sciences, Udaipur, Rajasthan, India

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Abstract**Background:** Giant fibroadenomas are defined as breast fibroadenomas larger than 5 cm—are uncommon benign lesions that often cause significant breast distortion, particularly in younger women. Surgical excision is the treatment of choice; however, traditional approaches may result in undesirable scarring and aesthetic compromise.**Objective:** This study compares two minimally invasive circumareolar surgical techniques—the Saw-Tooth and Swiss Roll methods—for the excision of giant fibroadenomas, with an emphasis on cosmetic outcomes, surgical feasibility, and preservation of breast architecture.**Methods:** Both techniques were performed via a circumareolar incision, offering direct access while minimizing visible scarring. The Saw-Tooth technique involved alternating partial incisions on the mass to facilitate gradual extraction, whereas the Swiss Roll technique employed spiral enucleation through a smaller incision. Intraoperative parameters, cosmetic outcomes, and specimen integrity were compared.**Conclusion:** Both methods proved effective for complete tumor excision with minimal complications. The Swiss Roll technique demonstrated superior cosmetic outcomes and better specimen preservation, making it more suitable for histopathological evaluation. The Saw-Tooth method, while technically easier, involved partial fragmentation of the mass but still achieved satisfactory aesthetic results. Circumareolar approaches offer safe, cosmetically favorable options for managing giant fibroadenomas in young patients. Selection between the Saw-Tooth and Swiss Roll techniques should be based on tumor characteristics and surgeon experience, with both techniques yielding excellent outcomes when appropriately applied.**Keywords:** Giant fibroadenoma, Circumareolar incision, Swiss Roll technique, Saw-Tooth technique, Breast-conserving surgery, Cosmetic outcomes, benign breast tumors, minimally invasive breast surgery.**DOI:** 10.25258/ijcpr.18.1.132This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.**Introduction**

Fibroadenomas are the most common benign, painless breast tumors, typically affecting women between the ages of 14 and 35. Their growth is hormonally influenced, often stimulated by estrogen, progesterone, pregnancy, and lactation, and they tend to regress after menopause.

Histologically, fibroadenomas consist of both glandular and stromal (connective) tissue. It is estimated that approximately 10% of women worldwide will develop a fibroadenoma at some point in their lives.

While most fibroadenomas are small, some may grow to considerable sizes, leading to compression and displacement of normal breast tissue, as well as

stretching of the overlying skin and nipple-areola complex. Lesions exceeding 5 cm in diameter are classified as giant fibroadenomas. Their management can be challenging due to their unpredictable growth patterns and potential symptoms, such as pain or rapid enlargement. [2] In young women, it is crucial to employ surgical techniques that minimize complications including scarring, nipple ischemia, sensory loss, and damage to the ductal system. Aesthetic outcomes are particularly important in this age group, where cosmesis significantly influences surgical decision-making. [3] Accordingly, two cosmetically favorable surgical approaches are discussed for the management of giant fibroadenomas.



Figure 1:

Techniques:

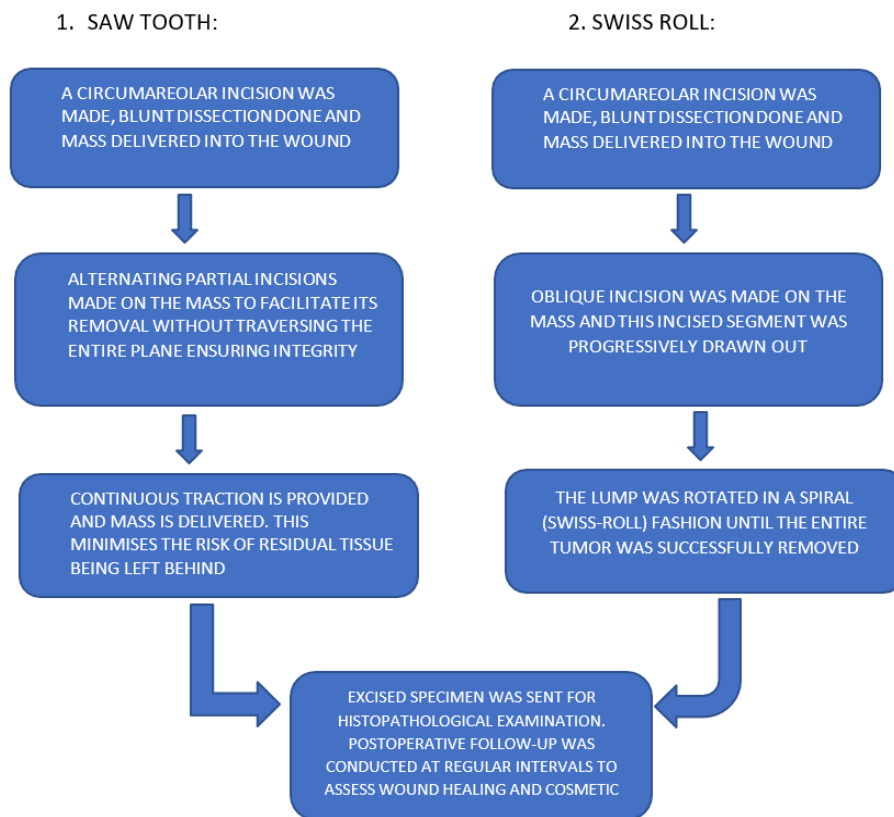


Chart 1:

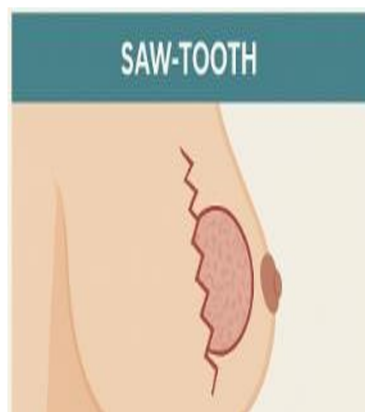


Figure 2:

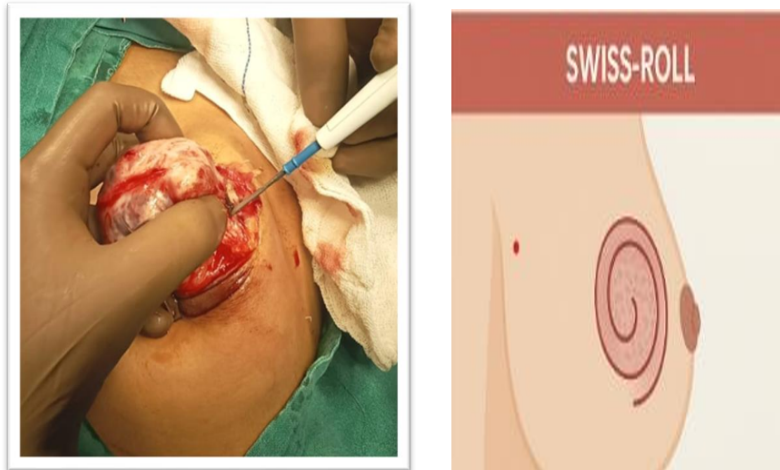


Figure 3:

Materials and Method

This study was conducted in the Department of General Surgery at PIMS, Udaipur, over a period of 3 months from February 2025 to April 2025.

Inclusion criteria:

- All women in the age group of 18-30 years with giant fibroadenomas (>5 cm)
- Willing for follow up of minimum 6 weeks post-surgery.

Exclusion criteria:

- Women with small fibroadenomas (<5cm)
- Previously operated
- Lactating women

- Who failed to follow up.

Procedure: A total of 20 patients were eligible for our study. After written and informed consent by the patients, data was collected, which included –

- clinical findings
- ultrasound report
- fine needle aspiration cytology (FNAC) report

Variables Assessed:

1. Cosmetic Outcome
2. Specimen Integrity
3. Surgical Duration
4. Post-op Complications

Histopathological Adequacy

Table 1:

Technique	Adequate	Inadequate
Saw-Tooth	7	3
Swiss Roll	10	0

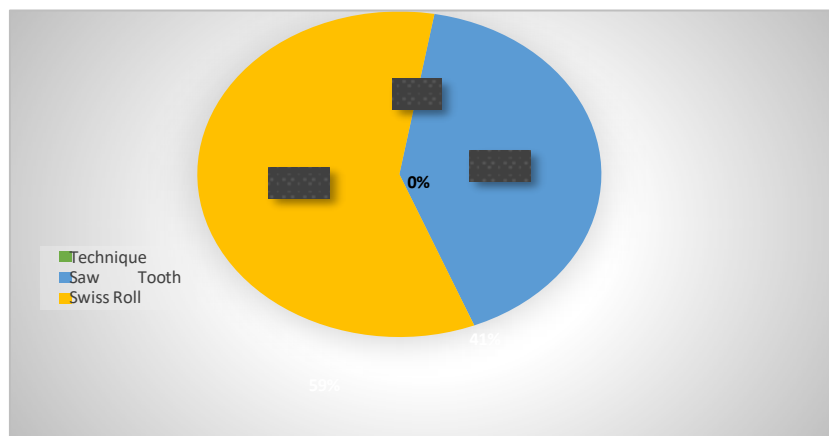


Figure 4: Technique

Table 2:

Technique	Mean Score	SD
Saw-Tooth	3.8	0.6

Swiss Roll	4.6	0.4
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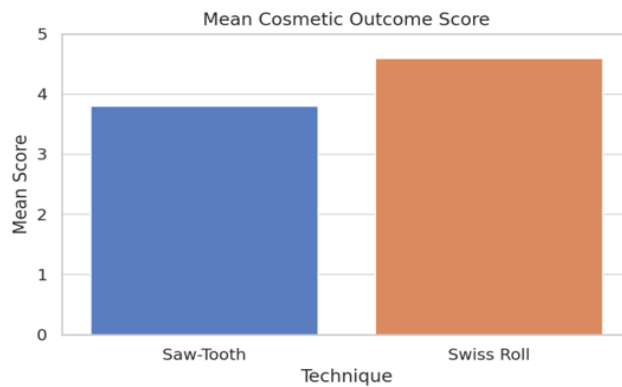


Figure 5: Mean cosmetic outcome score

Table 3:

Technique	Mean Duration	SD
Saw-Tooth	32 min	6
Swiss Roll	38 min	4

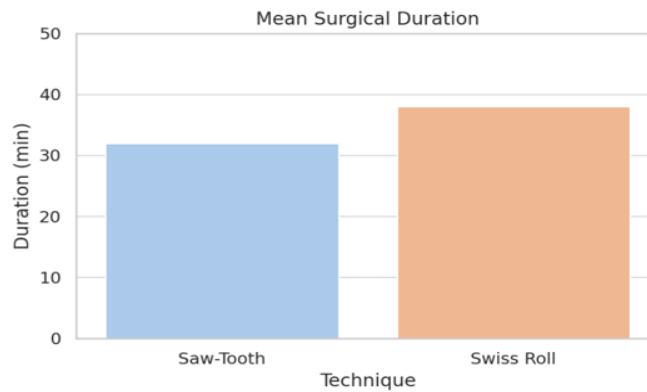


Figure 6: Mean surgical duration

Table 4:

Integrity Status	Saw-Tooth	Swiss Roll
Preserved	3	10
Fragmented	7	0

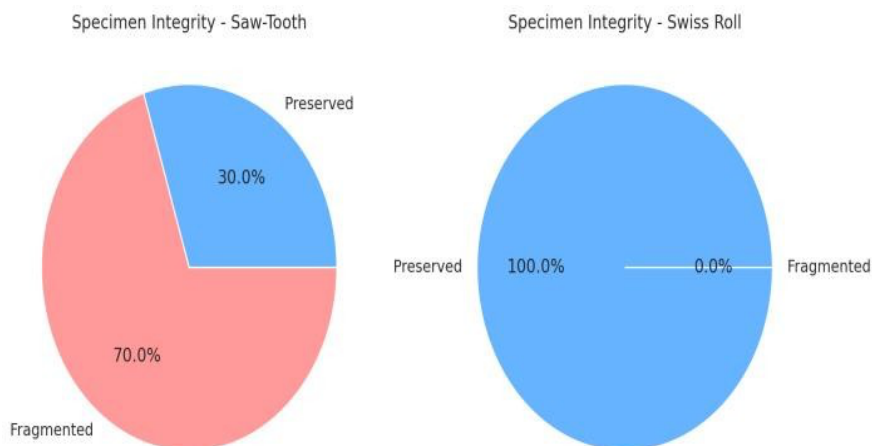


Figure 7:

Parameter Comparison Summary:

- Cosmetic Outcome: Swiss Roll superior ($p = 0.002$)
- Specimen Integrity: Swiss Roll preserved 100% ($p = 0.0025$)

3. Surgical Duration: Swiss Roll longer (p = 0.036)
4. Post-op Complications: Low overall (NS)
5. Histopathology Adequacy: Better with Swiss Roll (p = 0.068)

In conclusion: With P value < 0.05, it indicates that the Swiss Roll Technique is much more superior in terms of the assessed parameters.

Discussion

Differential diagnoses for large breast masses in adolescents include virginal hypertrophy giant fibroadenoma and cystosarcoma phyllodes. These conditions share similar histological features, characterized by proliferation of epithelial and stromal elements. While the exact etiology remains unclear, hormonal influences are considered a contributing factor.

Fibroadenomas are the most common benign breast lumps encountered in young women. Surgical management of these lesions must balance considerations of the benign nature of the disease, the need for cosmesis, and the preservation of breast structure and function. A subset of these tumors, known as giant fibroadenomas, are defined as lesions exceeding 5 cm in diameter, weighing over 500 grams, or replacing more than 80% of the breast volume.

Giant fibroadenomas present unique challenges. Their removal, particularly in young women, carries the risk of significant cosmetic and functional complications. Various surgical approaches have been described for excision, including vertical, inframammary, round block, and

inverted T incisions.

However, these techniques are often associated with visible scarring, longer operative times, and a higher risk of complications compared to the circum- areolar 'Saw Tooth' and 'Swiss-roll' technique.

The circum-areolar 'Saw Tooth' technique offers several advantages. It allows direct access to the mass while minimizing damage to the surrounding parenchyma and preserving the ductal system, which is preoperatively identified. The approach is less invasive, associated with fewer complications, and results in more acceptable cosmetic outcomes.

The Swiss-roll technique involves enucleation of the mass followed by spiral excision, allowing the tumor to be removed entirely through a small circum- areolar incision. This method is advantageous in preserving cosmetic appearance and is effective in avoiding residual tumor fragments, a risk with in-situ fragmentation. As the mass is delivered, the skin stretches to accommodate removal but returns to normal post-operatively, maintaining aesthetic integrity. We compare two successful techniques used to manage giant fibroadenomas. These methods prove highly effective and cosmetically acceptable in young female patients with giant fibroadenomas.

Emerging techniques like percutaneous excision and cryoablation are promising but currently limited to smaller fibroadenomas. As minimally invasive technologies advance, they may become more applicable to a broader range of benign breast lesions. [1,3]

Table 5:

Feature	Saw-Tooth	Swiss-Roll
Incision size	Small	Small
Cosmetic outcome	Good	Excellent
Specimen integrity	Fragmented	Preserved
Technical difficulty	Moderate to high	High
Suitable for large tumors	Yes, with effort	Yes, based on consistency
Ideal for histopathology	Less ideal	Better

Conclusion

Giant fibroadenomas of the breast can be both physically and emotionally distressing for young women, presenting significant diagnostic and management challenges. Early surgical excision is generally recommended to avoid complications such as rapid enlargement, breast asymmetry, and psychological impact.

The circum-areolar approach offers a cosmetically favorable and effective route of excision, especially given the encapsulated nature of these lesions, which facilitates dissection from the surrounding breast parenchyma. These techniques are simple

and involves less handling of breast tissue while preserving breast contour and symmetry, making it particularly suitable for young women concerned with aesthetic outcomes.

The use of drains can further minimize the risk of postoperative hematoma, and the procedure can often be safely performed as a day-care surgery, contributing to reduced hospital stay and quicker recovery. Given its simplicity, safety, and excellent cosmetic results, the circum-areolar approach should be considered the preferred method in appropriate cases. [4]

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