

Case Report

A tissue-saving strategy for removing giant breast fibroadenoma using the modified Swiss roll method: theoretical foundations – a case report

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ABSTRACT

It may be difficult to remove giant fibroadenomas (5 cm or more) using conventional techniques. Large lesions can distort breast shape, and in young women the cosmetic effect of the incision and the preservation of breast contour are important considerations. The Modified Swiss-roll procedure allows removal of a large, mobile, encapsulated tumour through a relatively small circumareolar incision while minimizing manipulation of the surrounding breast tissue. This case describes a 19 year old woman with a rapidly enlarging right breast mass diagnosed as a giant fibroadenoma. The tumour was carefully mobilized and delivered through a small circumareolar incision using a modified Swiss-roll manoeuvre, with initial fixation using 2-0 Vicryl sutures and minimal tissue handling.

Keywords: Breast surgery, Minimally invasive extraction, Modified Swiss-roll method, Giant fibroadenoma

INTRODUCTION

Fibroadenoma is a common benign breast lesion occurring predominantly in adolescents and young women and is regarded within the spectrum of aberrations of normal development and involution (ANDI) disorders.¹ Most fibroadenomas can be managed conservatively when clinically and radiologically appropriate, but rapidly enlarging or symptomatic lesions may require excision.² Young women and adolescents require particular attention to preservation of breast tissue and cosmesis because the breast is still developing and a large surgical scar or loss of volume can produce deformity.³ Giant fibroadenoma is generally defined as a lesion measuring more than 5 cm and may produce breast asymmetry or distortion, making an aesthetically acceptable excision desirable.⁶ The Swiss-roll technique was originally described to permit removal of a large fibroadenoma through a small circumareolar incision by progressively rotating the tumour out of the wound.⁴

CASE REPORT

A 19 year old woman presented to the outpatient department with a painless lump in the right breast that had been progressively increasing in size for eight months. She had no family history of breast cancer, no nipple discharge, and no history of trauma.

A single, well-defined, firm, mobile and pliable lump measuring approximately 8×7 cm was present in the outer quadrants of the right breast. The overlying skin was normal, with no inflammatory changes, and bilateral axillary lymph nodes were not palpable.

Investigations

Ultrasonography

A fibroadenoma is characterised by a well-defined, oval 6*5 cm lobular end mass, hypoechoic and shows uniform internal echoes in lower outer quadrant of right breast.

The lump is wider than taller oriented parallel to skin. Features suggestive of Giant Fibroadenoma.

FNAC

Tightly cohesive mono layered sheets of bimodal cell population and abundant scattered bare bipolar nuclei, few macrophages and sheets of apocrine metaplastic cells. Suggestive of fibroadenomatous disease of the breast.

Histopathology

The specimen showed a well-circumscribed tumour with glandular hyperplasia, intracanalicular and paracanalicular growth patterns, and stromal fibrosis. The ducts and acini showed an intact myoepithelial layer, consistent with fibroadenoma. The broad range of epithelial and stromal changes described in fibroadenomas in larger histopathologic series provides context for these findings.⁵

Diagnosis

Giant fibroadenoma of the right breast (>6 cm).

Operation procedure

The principle of the modified Swiss-Roll method is to reduce the effective bulk of a large, mobile fibroadenoma by progressively folding and rotating it through a small circumareolar incision. The original Swiss-roll technique was described as a method of delivering giant fibroadenomas through a small cosmetic circumareolar incision.⁴



Figure 1: Fibroadenoma at 3 o clock position of right breast.

Steps in the procedure included step 1) cut where a scar is concealed by a small approximately 4 cm, circumareolar incision and step 2) dissection using sing both sharp and dull instruments, the tumor is removed from the

neighbouring tissue (Figure 1), and step 3) which involved capsular identification: It is simple to separate the fibroadenoma due to its clear outer layer. and fixing the lump using vicryl 2-0 (Figure 2). which minimises tissue handling unlike allies forceps and other instruments used which leads to crushing of the tissue.



Figure 2: Fixing of breast lump using vicryl 2-0 sutures.

Step 4 involved rolling manoeuver in which the tumor is then softly pulled and folded inside upon itself, advancing the fixation and dissection simultaneously. The entire mass may be moved by using slow deliberate motions (Figure 3).

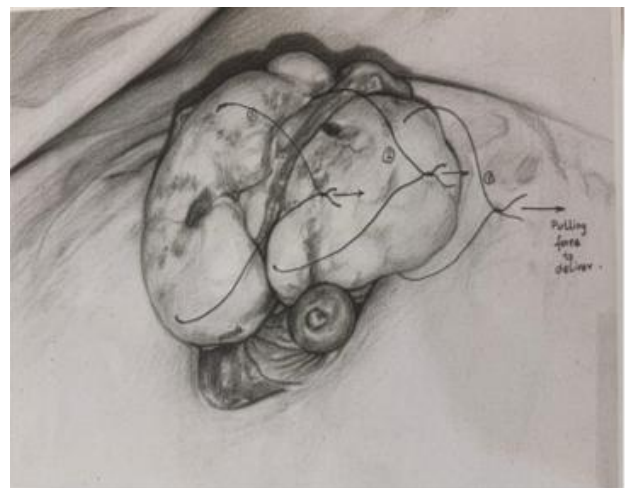


Figure 3: Diagrammatic representation of Modified Swiss roll technique to remove giant Fibroadenoma.

This is followed by step 5) namely delivery in which the entire mass is removed without increasing the size of the incision (Figure 4 and 5).



Figure 4: Removal of fibroadenoma from the breast tissue.



Figure 5: Giant breast fibroadenoma of right breast.

The final step involved haemostasis and closure: Haemostasis was achieved and wound closed in layers. Skin was approximated using subcuticular sutures.

Gross

Tumour dimensions: 8 cm×7cm×5 cm; length of incision: 3.5 cm; operative time: approximately 45 minutes.

Postoperative outcome

The breast contour remained uniform and well maintained, with minimal visible scarring. No postoperative complication was reported.

DISCUSSION

The present case demonstrates the feasibility of removing a giant fibroadenoma measuring 8×7×5 cm through a 3.5 cm circumareolar incision, with a reported operative time

of approximately 45 minutes and preservation of breast contour with minimal visible scarring.

The patient was 19 years old, which is within the young-adult age group in which fibroadenomas are commonly encountered. This is comparable with the 18–30-year age range reported in the 2023 Swiss-roll case series by Kulkarni et al.⁷ The emphasis on cosmesis is particularly relevant in this population because breast-conserving surgery should minimize avoidable scarring and distortion.

A 3.5 cm circumareolar incision was used for an 8 cm tumour. This is consistent with the small-incision principle of the Swiss-roll approach. Soomro et al. used 3 cm incisions for tumours ≤6 cm and 4 cm incisions for tumours >6 cm, while Kulkarni et al. similarly used 3 cm and 4 cm incisions according to tumour size.^{6,7} The 3.5 cm incision in the present case therefore falls between the incision sizes commonly reported for these lesions. The technique also parallels the original description by Naraynsingh et al, in which a large fibroadenoma was progressively rotated out through a 4 cm circumareolar incision.⁴ The present modification differs technically in using 2-0 Vicryl sutures to fix the tumour and reduce reliance on grasping instruments, with the intention of minimizing crushing and unnecessary manipulation of breast tissue.

The postoperative breast contour was reported as uniform and well maintained, with minimal scarring. Other minimally invasive approaches have also demonstrated favorable cosmetic results: Cheng et al. reported excellent cosmetic outcomes in all three patients treated with an endoscopic specimen-pouch technique for giant fibroadenomas.⁸ These comparisons support the importance of minimizing the skin incision and preserving breast parenchyma when operating on large benign tumours in young women, although the present case does not include a formal patient- or surgeon-rated cosmetic score.

Table 1: Comparison with alternative techniques.

Open excision	Large	Moderate	Moderate
Endoscopic removal	Small	Excellent	Good
Modified Swiss-roll technique	Small	Excellent	Excellent

Comparison with alternative techniques

Conventional open excision can require larger incisions and may produce more conspicuous scars or contour changes. Endoscopic techniques can also achieve minimal-access removal and good cosmetic results, but they require additional equipment and technical expertise; Cheng et al. demonstrated this approach successfully in three patients.⁸ Other circumareolar methods, such as the

'Saw Tooth' technique, have likewise been described for large fibroadenomas and were used in five consecutive young patients with 4 cm circumareolar incisions and satisfactory cosmetic outcomes.⁹ The Modified Swiss-roll method therefore fits within a broader group of tissue-sparing, minimal-incision approaches rather than representing the only method capable of achieving a favorable cosmetic result.

CONCLUSION

The Modified Swiss-roll technique provided a small-incision route for removal of a giant fibroadenoma in this patient while preserving the breast contour and producing minimal visible scarring.

The present case supports the technical feasibility of this tissue-sparing approach in selected patients with a well-circumscribed benign fibroadenoma, while larger comparative studies with standardized cosmetic and perioperative outcomes are required before broader conclusions can be drawn.

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