Original Article

The Submammary-Evert (Sub-E) Technique for Excision of Benign Breast Lumps in Underdeveloped and Developing Countries - A Case Series

Norlia A[1] (✉), Tan KL[1,2], Kanmani M[1], Adi Syazni M[1]

[1]Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latif, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia
[2]Department of Surgery, Jasin Hospital, Jalan Utama 77000 Melaka, Malaysia

Abstract

The Submammary-Evert (Sub-E) technique is a novel technique for the excision of one or multiple benign breast lumps. It may be performed by surgical trainees and general surgeons. It is best suited for deep seated, medium to large breast lumps. It enables the lump or lumps to be excised through one hidden inframammary scar. As the approach is through the avascular submammary plane, blood loss is minimised. Unlike the endoscopic or percutaneous vacuum assisted biopsy, this procedure is easy to learn with no additional instruments required; thus minimising cost. This makes it feasible to be performed in underdeveloped and developing countries. We describe a series of ten women (age 18-35 years old) with one or multiple breast lumps (1-5 breast lumps) who underwent this procedure. The size of the lumps measured 1-13 cm. All lumps measuring a minimum of 3 cm were located at the upper half or retroareolar region. The duration of surgery for excision of a lump was 50-100 minutes. The surgery to remove 5 lumps took the longest time of 125 minutes. There were no intra or post-operative complications.

Keywords: Benign; breast; excision; evert; submammary; sub-E

Correspondence:

Norlia Abdullah. Department of Surgery, Faculty of Medicine, Universiti Kebangsaan Malaysia, Jalan Yaacob Latiff, Bandar Tun Razak, 56000 Cheras, Kuala Lumpur, Malaysia. Tel: +603-9145 5795 E-mail: norlia@hctm.ukm.edu.my

Date of submission: 24 Feb, 2025 Date of acceptance: 8 Apr, 2025

Introduction

Fibroadenomas affect 10% of women and young girls aged 15-35 years. They may occur during pregnancy and breastfeeding. Most women only have one lump. About 10-15% of those affected have more than one lump, either at the same time or over time in one or both breasts (1). Commonly these lumps will be assessed using ultrasonography. To complete the recommended triple assessment (2), these lumps should undergo investigations such as fine needle aspiration biopsy or percutaneous core needle biopsy (CNB). CNB yields more tissue and the majority are reported as fibroadenoma, the commonest benign breast lump (3). Another common benign condition is fibrocystic disease; also known as fibroadenosis. The major importance of CNB is differentiating fibroadenomas from a less common condition, phyllodes tumours. Phyllodes tumours are more concerning as they are divided into 3 types; benign, borderline and malignant. When the pathologist is unable to differentiate between a fibroadenoma and a phyllodes tumour, the term fibroepithelial lesion (FEL) is stated instead (4). To obtain the final diagnosis, a FEL will need to undergo surgical excision. Lumps measuring 3 cm or more are also commonly excised as they often cause discomfort. In underdeveloped and developing countries, these excisions are commonly made directly over the lump or around the circumareolar margin; the larger the lump, the longer the scar. In cases of multiple lumps, this will often result in multiple scars as well. Such scars are cosmetically less favoured and will be more disfiguring in cases of hypertrophic or keloidal tendencies. With the aim of hiding the scars, the Submammary-Evert (Sub-E) technique would be the

recommended choice. The ease of learning this procedure gives it advantage over the endoscopy or vacuum assisted breast biopsy.

Materials and Methods

Ten women (Table 1) underwent this procedure under general anaesthesia, as a day case. The length of the inframammary incision varied from 8-10 cm. All lumps measuring a minimum of 3 cm were located at the upper half or retroareolar region. Upon incision, the wound was deepened to enter the submammary space (Fig. 1). Through this space, elevation of the breast by the assistant was done using an adult langenbeck retractor. The submammary space was dissected till it was just inferior or deep to the lump. The breast tissue with the lump within it, was then everted by the surgeon's fingers from the skin surface; this eversion may be helped by the assistant. The breast tissue was dissected towards the lump. The lump was enucleated via finger fracture and/or diathermy. Once the lump had been excised, the surgical cavity was inspected carefully to achieve haemostasis followed by normal saline wash. Local anaesthetic was given followed by wound closure and dressing. A non-wired bra was fitted immediately in the operation theatre to achieve good breast support to minimise post-operative pain. The follow-up period ranged from 6 months to 2 years.

Results

This procedure has successfully been done under general anaesthesia, as a day case procedure in 10 women; age 18-35 years old. All had only one lump except for two patients with multiple lumps; the most were 5 breast lumps. The size of the lumps measured 1-13 cm. The duration of surgery for excision of a lump was 50-100 minutes. The surgery to remove 5 lumps took the longest time of 125 minutes.

These lumps were all fibroadenomas except for one borderline phyllodes in a 20 year old nullipara. This case had involved margins. She was given the option of undergoing re-excision of margins or even a mastectomy, or close follow-up; she opted for the latter. Unfortunately, she presented 7 months later with a new ipsilateral lump and needed to undergo more surgery (5).

Post-operative pain score was 2-3/10 with oral analgesics consisting of ibuprofen 400mg TDS for 5-7 days. The patients were advised to wear a bra day and night for 3-4 weeks post-operatively. There were no intra or post-operative complications.

Discussion

The Sub-E technique is an innovative technique for the excision of one or multiple benign breast lumps. It is best suited for deep seated, medium to large breast lumps. This procedure is easy to learn and may be performed by surgical trainees and general surgeons without the need for additional instrumentations; thus there are no added costs incurred. It is feasible to be performed in general and district hospitals in underdeveloped and developing countries.

TABLE 1: The patients who had undergone breast lump excisions through the Submammary-Evert (Sub-E) technique. All the lumps larger than 3 cm were located at the upper half or at the retroareolar region

No.	Age	Race	Number of lumps	Size (cm)	Duration of surgery (min)	Surgeon
1	35	Malay	1	4 x 4	50	Consultant
2	24	Malay	1	7 x 7	65	Consultant
3	35	Malay	1	4.5 x 4	75	Consultant
4	34	Malay	1	3 x 3	50	Specialist
5	20	Malay	1	12 x 10	100	Specialist
6	25	Malay	1	12 x 13	60	Specialist
7	23	Malay	5	5 x 5	125	Consultant
				4 x 4		
				2 x 2		
				1 x 1		
				1 x 1		
8	18	Malay	2	6 x 5	85	Consultant
				2 x 2		
9.	35	Malay	1	6 x 3.5	54	Consultant
10.	31	Malay	2	2.8 x 1.7	60	Consultant
				1.5 x 1.5		

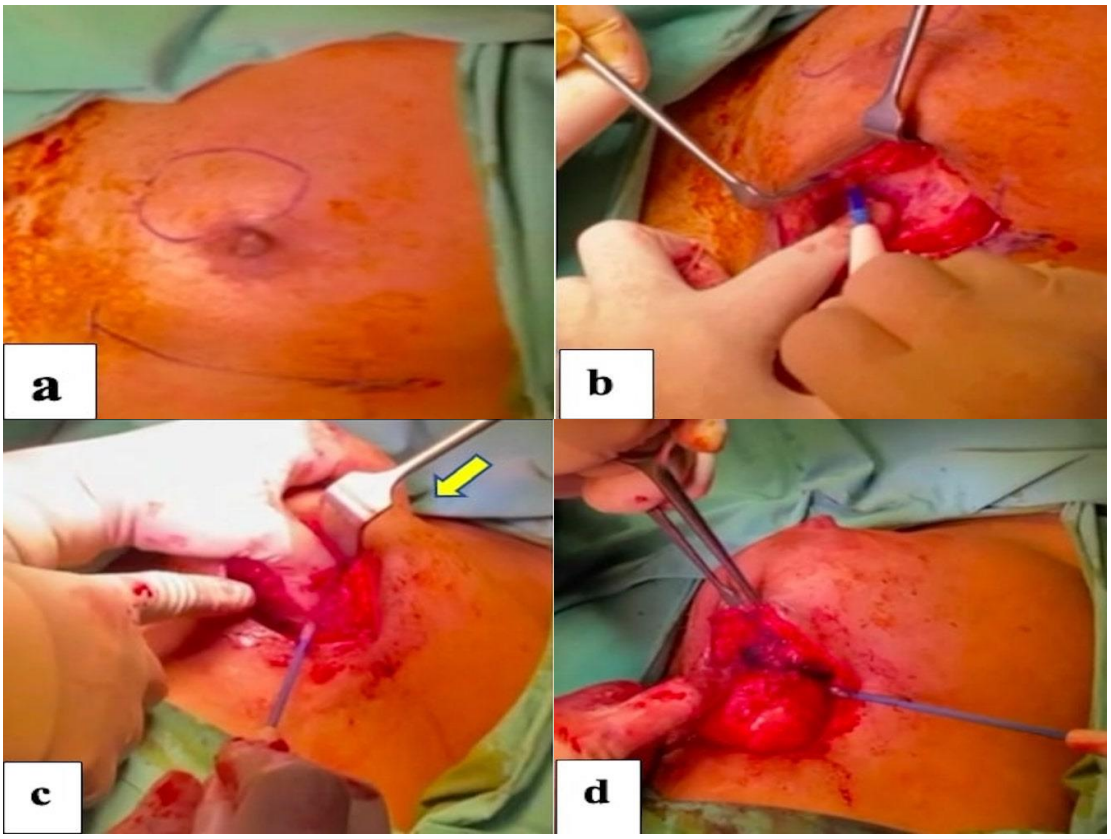

FIGURE 1: Figures (a-d) showed the surgical steps. (a) The lump and inframammary crease were marked; (b from the inframammary crease incision, dissection was done until the submammary space was identified and entered; (c) the breast and lump within, were everted by applying pressure on the overlying skin (arrowed). The breast tissue was cut gradually towards the everted lump; (d) the lump was enucleated by using cautery and finger fracture

This technique enables the lump or lumps to be excised through one hidden inframammary scar, it is cosmetically more acceptable. This is because the scar is hidden when the patient is in the upright position. This approach is beneficial especially in those with more than one lump as it is able to remove multiple lumps through one incision; hence avoiding multiple scars.

As the approach is through the avascular submammary plane, blood loss is minimised. The estimated blood loss is 20-50 ml in each case. The submammary approach has the potential to minimise lactiferous duct and both general and pleasurable sensorineural damage when compared to a circumareolar incision. This is important as the majority of women with fibroadenomas are in the child bearing age and are sexually active. Furthermore, our population has significant keloidal tendencies (6). Compared to incising directly over the lump, this procedure may increase operative time by 15-30 minutes. The incidence of post-operative ecchymosis and discomfort is slightly increased due to the intraoperative breast elevation/traction and eversion, plus tunnelling from the inframammary crease. This is especially for lumps located at the superior or cephalic pole of the breast. Analgesia is adequately achieved with oral non-steroidal anti-inflammatory drugs (NSAIDS) such as ibuprofen 200-400 mg tds for 5-7 days and wearing a non-wired bra day and night for 3-4 weeks. Additionally, oral aescin (Reparil) 40 mg tds for a week, may minimise or prevent significant post-operative ecchymosis.

The Sub-E technique may be performed in developed countries too. However, comparatively, in developed countries, there is often a higher quality of medical care (7). With demand for aesthetically smaller scars, there is the option or tendency of undergoing the more expensive endoscopic surgery or percutaneous vacuum assisted breast biopsy (VABB) (8).

This added cost makes VABB less accessible in rural and district hospitals, especially so in non-developed countries. VABB has a significant learning curve too. This is because excision becomes more difficult as the lump becomes smaller. The technical challenges are due to space orientation under 2D ultrasonography, visual blurring from local anaesthetic and/or procedural haemorrhage (9). The commonest complication is post-procedure haematoma (10). There has been reports that compression alone could not stop the bleeding; whereby the patient required surgical intervention (11,12). Cutaneous injury or defects have been reported by Fine et al. (2002) (12) and Parker et al. (2001) (13). This would be a more severe adverse outcome especially if it occurred at the nipple areolar complex due to the cosmetic, sensorineural and lactiferous duct damage. Other complications include incomplete excision of lesions. The rate of initial complete excision varies from 22-100%. As the specimen is cut piece by piece, assessment of the size and weight will be inaccurate. More importantly, the surgical margins will not be available for assessment (9); which means absence of important information, especially when managing a phyllodes tumour.

Histologically, atypical ductal hyperplasia (ADH) has some but not all of the characteristics of a ductal carcinoma in situ (DCIS). This is because it only involves a duct or it has all the features of DCIS but its size is less than 2 mm. Due to this, if ADH were found on VABB, surgical excision would be required (14). Other lesions found during VABB that would require surgical excision are papillomatosis, radial scars, lobular hyperplasia and FEL (9).

Conclusion

The Sub-E technique is an innovative technique for the excision of one or multiple benign breast lumps. Due to its ease in learning, no added cost, cosmetic advantage, minimal blood loss risk and minimal lactiferous duct injury risk, it should be introduced to the global surgical fraternity especially in the underdeveloped and developing countries.

Conflict of interest: The authors do not have any conflict of interest to declare.

Consent: The patients have consented to the use of their photography and data for medical publication.

References

1. WebMD Editorial Contributors. Fibroadenoma. https://www.webmd.com/breast-cancer/what-are-fibroadenomas [26 May 2024].

2. Azizah AM, Hashimah B, Nirmal K, et al: Malaysian National Cancer Registry Report 2012-2016. National Cancer Institute. Ministry of Health; Putrajaya, Malaysia. 2019.

3. Cheema HS, Mehta R, Slanetz PJ. Imaging and management of fibroepithelial breast lesions on percutaneous core needle biopsy. Breast J 2020; 26: 1216-20.

4. Gillete DP, He J, Lee AE, Chao C. Indications for the surgical excision of fibroadenomas: Systematic review. AME Surgical J 2023; 3: 3.

5. Balachandran NR, Abdullah N, Ismail MI, Wong YP, Azmi MI. Recurrent and transformation of borderline to malignant phyllodes tumour with osteoid differentiation: A case report and literature review. Front Oncol 2024; 14: 1377074.

6. Robles DT, Berg D. Abnormal wound healing: Keloids. Clin Dermatol 2007; 25(1): 26-32.

7. Key Differences. Difference between developed countries and developing countries (with comparison chart). https://keydifferences.com/ [26 March 2025].

8. Krings G, Bean GR, Chen YY. Fibroepithelial lesions; The WHO spectrum. Semin Diagn Pathol 2017; 34(5): 438-52.

9. Park HL, Kim LS. The current role of vacuum assisted breast biopsy system in breast disease. J Breast Cancer 2011; 14(1):1-7.

10. Simon JR, Kalbhen CL, Cooper RA, Flisak ME. Accuracy and complication rates of US-guided vacuum-assisted core breast biopsy: Initial results. Radiology 2000; 215(3): 694-7.

11. Perez-Fuentes JA, Longobardi IR, Acosta VF, Marin CE, Liberman I. Sonographically guided directional vacuum-assisted breast biopsy: Preliminary experience in Venezuela. Am J Roentgenol 2001; 177(6): 1459-63.

12. Fine RE, Boyd BA, Whitworth PW, Kim JA, Harness JK, Burak WE. Percutaneous removal of benign breast masses using a vacuum-assisted hand-held device with ultrasound guidance. Am J Surg 2002; 184(4): 332-6.

13. Parker SH, Klaus AJ, McWey PJ et al. Sonographically guided directional vacuum – assisted breast biopsy using a handheld device. Am J Roetgenol 2001; 177(2): 405-8.

14. Liberman L, Smolkin JH, Dershaw DD, Morris EA, Abramson AF, Rosen PP. Calcification retrieval at stereotactic, 11-gauge, directional, vacuum -assisted breast biopsy. Radiology 1998; 208: 251-60.