



ORIGINAL ARTICLE

THE PERIAREOLAR INCISION: A VERSATILE APPROACH FOR PALPABLE BENIGN BREAST MASSES

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Abstract

Introduction: This study assessed the periareolar incision as a versatile approach for the removal of palpable benign breast masses and measured objectively its aesthetic outcome.

Methods: This prospective study included 44 adult patients with clinically and radiologically suspected palpable benign breast masses which were excised through the periareolar incision. It was done at the Plastic and General Surgery Departments, Kasr El Eini University Hospital, Cairo University and Sohag University Hospital, Sohag University in the period from February 2006 to May 2009. The diagnostic work-up included clinical examination, breast ultrasonography and/or mammography. The postoperative complications and the aesthetic outcome were recorded.

Results: Forty women (91%) and 4 men (9%) with average age 31.5 (range, 16-47) years were enrolled. The histopathological diagnosis was 24 fibroadenomas (54.5%), 7 duct ectasia (15.9%), 5 chronic breast abscess (11.3%), 4 asymmetric fibroadenosis (9%), 4 gynecomastia (9%). Seven cases were bilateral and 4 were multiple. The cosmetic outcome was excellent in 42 cases (95.5%) and fair in 2 cases (4.5%).

Conclusion: The periareolar incision is a versatile approach for excision of benign breast masses. Its use can improve the aesthetic outcome of breast surgery as the resulting scar is virtually invisible.

Keywords: Circumareolar approach, Aesthetic outcome, Lumps.

INTRODUCTION

A wide spectrum of benign changes may occur within the

breast tissue. These include all non-malignant conditions of the breast such as fibrocystic change, benign tumours, trauma, mastalgia, mastitis, and nipple discharge. Fibrocystic change (disease) is very common in middle-aged and elderly women, while fibroadenomas are common causes of benign breast masses in young women.^(1,2)

In the treatment of patients with benign breast disease, many lesions require only clinical examination and reassurance, and possibly observation. However, persistent breast complaints or worsening symptoms may require biopsy or excision. A prompt evaluation and diagnostic plan are important to minimise any emotional fears and to plan any necessary surgical therapy if indicated.⁽³⁾

The diagnosis of a palpable breast lump should be done by the "triple test" which includes palpation, imaging [mammography and ultrasonography (US)], and percutaneous or nonsurgical tissue biopsy i.e., core (Tru-cut) needle biopsy or fine-needle aspiration cytology (FNAC).⁽⁴⁾

The periareolar incision may be used for both benign and malignant conditions. It is among the most popular incisions used by surgeons to insert implants during breast augmentation. It has a role in skin sparing mastectomy and in breast conserving surgery. Major duct excision, microdochectomy, nipple eversion, and mastopexy operations are also possible by this technique.⁽⁵⁾

Although the surgical scars may affect the quality of life of patients with palpable breast masses, the use of periareolar incision, with its subsequent virtually invisible scar and good cosmetic outcome, to access lesions in different quadrants of the breast is rewarding.

This study was designed to assess the accessibility of the periareolar incision as a versatile approach for the removal of palpable benign breast masses, and to measure objectively its aesthetic outcome.

PATIENTS AND METHODS

This prospective study included 44 adult patients with clinically and radiologically suspected palpable benign breast masses. It was done at Plastic and General Surgery Departments, Kasr El Eini University Hospital, Cairo University and Sohag University Hospital, Sohag

University, Egypt in the period from February 2006 to May 2009.

A written consent was signed by all patients. A detailed history and physical examination were done for each patient to evaluate systematically the entire breast and the chest wall in order to ensure the benign nature of the mass and to rule out any possibility of malignancy. Routine preoperative investigations were done for all patients. Liver and thyroid functions were requested in patients with gynaecomastia. Radiological confirmation of the benign nature of the mass was done mainly by breast US; mammography was additionally required in middle-aged and premenopausal women. Core needle biopsy was carried out in suspicious masses with atypical radiological findings. All excised lumps were submitted for histopathological diagnosis to confirm or rule out their benign natures.

Postoperative complications were recorded and the patients were followed up at least six months for the cosmetic outcome. Each patient was photographed pre, intra, and postoperatively and also during the follow up visits.

Surgical techniques: Preoperative marking of the lesion was done while the patient was standing and the expected incision was lined. All masses were excised under general anaesthesia. Adrenaline (in a concentration of 1/100,000) mixed with the local anaesthetic xylocaine 20% was then injected within and around the area of the planned incision and around the lump.

The periareolar or circumareolar incision was made around the edge of the areola where it meets the surrounding breast tissue. The dissection proceeded gently through the patient's breast in a radial direction away from the areola and parallel to the milk ducts. The mass was pulled with a grasping forceps, delivered and freed from its bed with sharp dissection. It was removed without a margin of normal breast tissue. As fibroadenomas were encapsulated, the breast tissue was divided down to the mass which could be shelled out with simple finger dissection as they sat in small cavities (Fig. 1).

In cases of patients with minor or moderate gynaecomastia without or with minor skin redundancy

(Simon's grades 1, 2A and 2B respectively),⁽⁶⁾ open subcutaneous mastectomy was carried out through inferior periareolar incisions between 3- and 9-o'clock positions. Length of the incisions varied according to the size of the breast. In cases of massive breast enlargement and skin redundancy (Simon's grade 3),⁽⁶⁾ a complete periareolar approach was done. The nipple-areola complex was left attached to its bed (central pedicle) and the excessive skin and breast tissue were resected en-block (Fig. 2).

In all cases, strict haemostasis of the bed was done and the cavity was closed with interrupted sutures of Vicryl 3/0 (Ethicon®) on a half-circle needle. If the cavity was too large and in all cases of gynaecomastia, a suction or tubal drain was inserted. The subcutaneous tissue was re-approximated with interrupted sutures, and the skin was closed with subcuticular 4/0 monofilament PDS (Ethicon®). Postoperatively, a tight binder or a pressure dressing of adhesive strapping was applied.

Patients' Questionnaire: All patients were asked six subjective and objective questions about breast change after surgery. Table 1

Table 1. Patient questionnaire for assessment of the breast after surgery.

Size of breast	Symmetric	Not symmetric
Shape of breast	Good	Fair
Nipple-areola position	Centred	Not centred
Scar appearance	Hidden	Obvious
Contour deformity	No	Yes
Nipple sensation	Good	Fair

RESULTS

This study included 44 patients of clinically and radiologically suspected palpable benign breast masses, among them 40 were women (91%) and 4 were men (9%), the age ranged from 16 to 47 (average, 31.5) years.

Breast lump or localised lumpiness was the most common clinical presentation in 37 patients (84%). The lumps were single in 33 patients (75%) and multiple in 4 patients (9%), 3 of them (6.8%) were bilateral. The multiple lumps were 18; the largest number of lumps removed in one patient was 7 among both breasts. These 51 lumps located variably among the different breast areas; 20 in upper outer quadrant (UOQ), 12 in upper inner (UIQ), 10 in retroareolar, 6 in lower outer, and 3 in lower inner (LIQ). The left breast was more affected by 29 lumps, while the right breast by 22. The average size of the masses was 3.4 (range, 1-8) cm. The lump was associated with pain (cyclic or non-cyclic) in 9 patients (20.4%), and nipple discharge (black or dark green) in 2 patients (4.5%). Breast asymmetry was encountered in 3 women (6.8%) with giant fibroadenoma; 2 of them affected the left breast. Four men (9.1%) had bilateral idiopathic gynaecomastia; 2 of them had grade 1, one grade 2A, and one grade 3. The axillary lymph nodes were only palpable in 3 cases with nonspecific features. None of the patients had a family history of breast cancer.

The benign nature of the palpable lumps was supported by the benign morphology at US which was done for all patients, while mammography was additionally required in women above the age of 35 years. Six women (15%) of 40 underwent US-guided core needle biopsy to obtain tissue diagnosis in suspicious masses, but all were negative for malignancy (2 lesions were ductectasia, 2 were chronic abscesses, 1 fibroadenoma and 1 asymmetric fibroadenosis).

All the lumps (wherever located in the breast) including cases of gynaecomastia were easily accessible through the periareolar approach and were excised completely (Figs. 3-5), but there was some difficulty in excising multiple small masses.

No malignancy was diagnosed in any of the excised lumps. The histopathologic diagnoses were fibroadenoma in 24 patients (54.5%), including 3 giant, 3

multiple bilateral and one multiple unilateral lesions; ductectasia in 7 (15.9%); chronic breast abscess in 5 (11.3%); asymmetric (localised) fibroadenosis in 4 (9%); and idiopathic gynecomastia in another 4 (9%).

No major complications were encountered in any of the patients. In 2 patients (4.5%) with pendulous breasts and large lumps confirmed histopathologically to be chronic breast abscess and ductectasia respectively, the wounds were closed without drainage (Figs. 6,7). Both patients had postoperative large seroma; one of them failed to respond to repeated aspiration for two weeks and tubal drain under sonographic guide was then inserted for 5 days with complete recovery thereafter, while the other improved by repeated aspiration. Both patients had fair cosmetic outcome. Mild infection was encountered in one patient (2.2%) who resolved by repeated dressings and antibiotics. One of the earliest patients of the study who had juvenile-onset diabetes mellitus and was operated for multiple bilateral fibroadenoma had recurrent 3

fibroadenoma of the right breast two years later. The recurrent masses were also removed through the periareolar incision with very good cosmetic result.

The result of patient questionnaire:

The shape of the breast was good with symmetric size in 42 cases (95.5%) and fair in 2 cases (4.5%); both had recurrent seroma formation.

In all cases (100%) the nipple-areola complex was central and the nipple-areola sensation was intact. The scar was hidden in 42 patients (95.5%) one month after operation, but after 6 months it was totally hidden in all patients (100%).

There was no contour deformity except in two women (4.5%) aged more than 38 years who had large pendulous breasts.

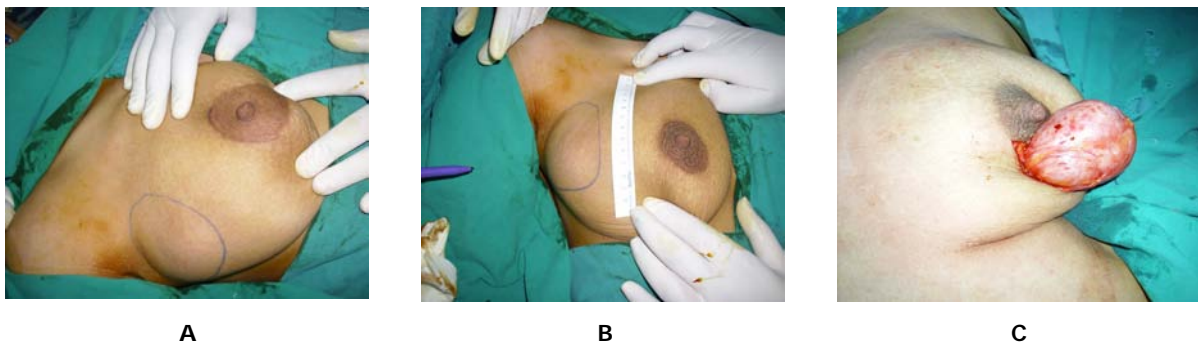


Fig 1a,b,c. (a & b) A giant fibroadenoma at UOQ of the right breast, (c) a periareolar incision with shelling out of the mass.

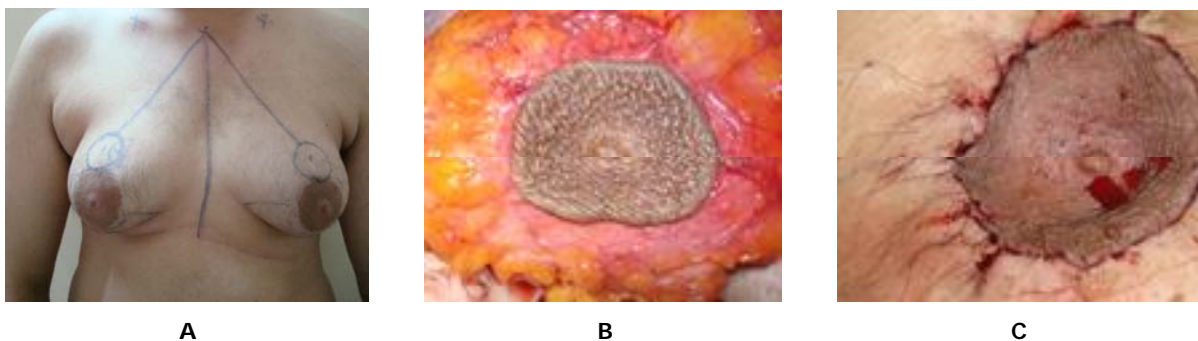


Fig 2a,b,c. (a) Bilateral massive gynecomastia (grade 3), (b) the nipple-areola complex attached to its bed and excess breast tissue before removal, (c) immediate post operative view.



A



B



C

Fig 3a,b,c. (a) Fibroadenoma at UIQ of the right breast, (b) the mass excised through a periareolar incision, (c) immediate postoperative view with subcuticular closure.



A



B



C

Fig 4a,b,c. (a) Retroareolar small fibroadenoma of the right breast, (b) the mass removed through a periareolar incision, (c) late postoperative photo with invisible scar.

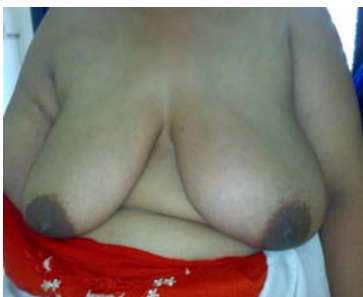


A



B

Fig 5a,b. (a) Grade 1 gynaecomastia, (b) early postoperative view of bilateral open subcutaneous mastectomy through a periareolar approach with drains still present.



A



B



C

Fig 6a,b,c. (a) A big chronic breast abscess at LIQ of a multiparous pendulous left breast, (b) the mass approached through a periareolar incision, (c) immediate postoperative view and the excised mass.

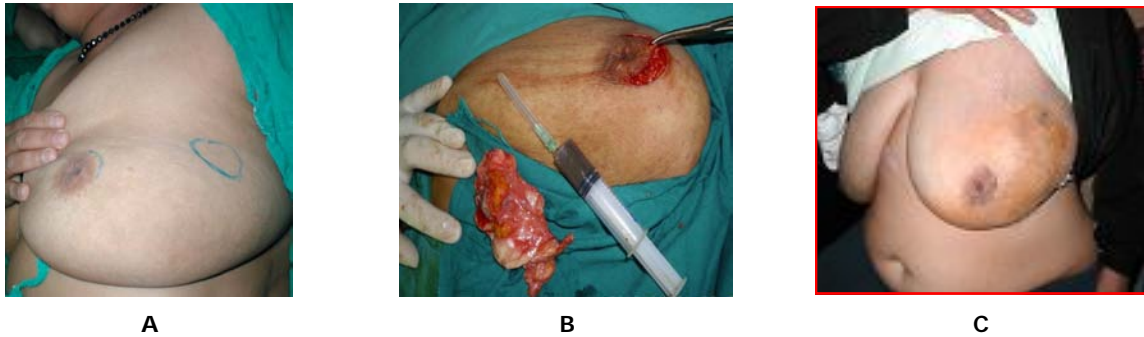


Fig 7 a,b,c. A big mass of ductectasia at UOQ of a pendulous left breast, (b) the resected mass and dark green aspirate, (c) late postoperative view.

DISCUSSION

The vast majority of women presenting with breast symptoms will have an underlying benign aetiology.⁽⁷⁾ the major presenting symptoms of breast disease are lump, nipple discharge and pain. Approximately 60% of referrals are for a lump and less than 10% of these will be diagnosed to have breast cancer.⁽⁸⁾

The most common presenting symptom in our study was breast lump or localised lumpiness that affected 37 women (84%), 9 of them (20.4%) were associated with pain and 2 (4.5%) with nipple discharge. Three women (6.8%) presented with breast asymmetry due to giant fibroadenoma. Four men (9%) had bilateral idiopathic gynaecomastia.

Fibroadenoma is the most common breast tumours in adolescent and young women. It typically presents as a rubbery, discrete, nontender mass, and may be lobular, bilateral (10%), or multiple (10-15%). The average size is 2-3 cm, but a solitary fibroadenoma can be as large as 10-15 cm (giant fibroadenoma).^(9, 10)

In our study, fibroadenoma was the commonest cause of palpable breast masses and affected 24 women (60%) of 40; four of them (16.6%) were multiple, 3 (12.5%) were bilateral and another 3 (12.5%) were giant.

Ductectasia usually presents with nipple discharge, noncyclical breast pain, a subareolar mass, abscess, mammary duct fistula and/or nipple retraction.⁽¹¹⁾

Seven (17.5%) of 40 women in this study were diagnosed to have breast lumps due to ductectasia, 2 of them had associated nipple discharge.

Chronic intramammary abscess which follows inadequate drainage or injudicious antibiotic treatment can be presented with a painless irregular firm breast lump when encapsulated within a thick wall of fibrous tissue.⁽¹²⁾

In this work, 5 women (12.5%) of 40 had breast lumps caused by chronic breast abscess resulting from inappropriate antibiotic treatment.

Fibrocystic disease of the breast accounts approximately for 35% of the total cases of benign breast disease diagnosed in women under the age of 30 years, whereas it is more common after the age of 30 and accounts for about 76%. Diffuse symmetrical lumpiness or nondiscrete nodules of the breast is commonly found on clinical examination.^(13, 14)

Four women (10%) of 40 in our study presented with asymmetric fibroadenosis necessitating surgical intervention.

Idiopathic gynaecomastia has no underlying cause and constitutes 25% of cases of gynaecomastia in men. One-half of patients have bilateral and symmetric gynaecomastia.^(15, 16)

In our study, 4 men (9%) had bilateral idiopathic gynaecomastia; 2 of them had grade 1, one grade 2A, and one grade 3.

The sensitivity and specificity of the clinical breast examination are estimated to be 54 % and 94 %, respectively, and depend on thoroughness and technique of the examiner.⁽⁷⁾ Mammography, often in conjunction with ultrasonographic examination, is required for

evaluation of discrete palpable lesions in women more than 35 years of age; but UltraSound is the diagnostic test of choice among younger women and adolescents.^(4,17) Different criteria were used to define a probably benign solid breast masses on UltraSound or mammogram.^(18,19)

In 34 women (85%) of 40 in this study the palpable masses were diagnosed probably benign on clinical and radiological bases. None of the palpable breast masses that were deemed probably benign proved to be malignant on histopathological examination. Only 6 women (15%) required core needle biopsy to confirm the benign nature of their suspicious masses.

After establishing a firm diagnosis of benign disease, reassurance and an appropriate plan of management will need to be instituted. If the clinical and radiographic data are consistent with a small fibroadenoma, the treatment options are observation versus excision. Although some authors report spontaneous resolution of small fibroadenomas, this seems debatable.⁽¹⁰⁾ Operation is indicated for symptomatic, large, or rapidly growing masses, if the patient wishes, or for solid masses that have atypical UltraSound characteristics. Most fibroadenomas can be excised under local anaesthesia, conscious sedation with local anaesthesia, or general anaesthesia through a periareolar incision which is cosmetically acceptable.⁽³⁾

In our study, all fibroadenomas (24/40 women) including the giant (3/24), multiple (4/24), bilateral (3/24) and recurrent (1/24) lesions were adequately excised through a periareolar incision under general anaesthesia.

Mammary ductectasia may resolve with conservative measures and does not require excision. Clear, serous, green-black, or nonbloody multiductal discharge requires only reassurance of the patient. If ductectasia is associated with a discharge and a palpable mass with positive results on mammography or US, the mass should be evaluated.^(11,20)

Seven women (17.5%) of 40 in this series had ductectasia-related lumps which were removed successfully through the periareolar approach.

The painless lump of chronic breast abscess can closely simulate a carcinoma and cannot be distinguished from it without the histological evidence from a biopsy.⁽¹²⁾

Five women (12.5%) of 40 in our study had lumps due to chronic breast abscesses. These lumps were removed surgically through the periareolar incision.

In women with asymmetric nodularity, thickening or vague nodularity, the practice guidelines of the Society of Surgical Oncology recommended re-examination of the breast at midcycle after one or two menstrual cycles. If the abnormality disappears, the patient should be reassured, and if it does not, the patient should undergo surgical evaluation and breast imaging.⁽¹⁴⁾

In this study 4 women (10%) of 40 presented with asymmetric nodularity of the breast due to asymmetric fibroadenosis. All of them were excised through the periareolar incision.

Patients with gynaecomastia seek medical advice because of anxiety, social embarrassment and fear of cancer.⁶ Most gynaecomastia regress spontaneously, but after the inactive stage is reached, gynaecomastia is neither unlikely to regress spontaneously nor respond to medical therapies.^(21,22)

All the 4 male patients (9%) with gynaecomastia in our study underwent open subcutaneous mastectomy through the periareolar incision.

The importance of good cosmesis in breast surgery is paramount and needs to be met in the management of benign or malignant disease. With malignancy this must be balanced against the radical clearance and oncologic safety. Because benign disorders of the breast are a source of considerable anxiety for the patient and a potential source of medico-legal problems, the obvious deforming scars after their excision are unacceptable. They may affect the quality of life of these patients and add to their psychological morbidity. Good cosmesis after breast surgery can be achieved by meticulous preoperative planning.^(13,5)

In this series, a total of 57 palpable benign lumps of variable sizes and affecting different areas of the breast, in addition to 4 cases of bilateral gynaecomastia, were excised successfully and safely through the periareolar incision.

We think that the use of general anaesthesia for excision of breast masses is much better than local anaesthesia even for small lumps as it allows clear definition of the smaller masses and smooth dissection of the larger ones.

It also permits extension of the incision if desired, good retraction and secured haemostasis especially at deeper cavities. Also, injection of diluted adrenaline with local anaesthesia around the mass was found to minimise the intraoperative bleeding, facilitate the dissection and decrease the postoperative pain.

Although the cosmetic results of the periareolar approach are gratifying, it has some problems like intraareolar incision that produces an ugly scar which is difficult to correct, keloids, hypopigmentation and altered nipple sensation. In susceptible people for keloids, periareolar incision may be a preferred site for entry into the breast. Hypopigmentation can be corrected by tattooing. Periareolar incision is not suitable for excision of lumps which lie closer to the other natural skin crease incisions of the axilla or the inframammary sulcus.⁽⁶⁾

The surgical morbidity associated with the periareolar incision in this series was minimal. There were no major complications; only 3 cases (6.8%) had minor postoperative complications, two seroma formation and one mild wound infection that were resolved with appropriate treatment.

The overall cosmetic outcome in our series was excellent. Position of the nipple-areola complex was central with intact nipple sensation in all patients (100%). The shape of the breasts was good with symmetric size and resulting hidden scar in 42 patients (95.5%). The scar became invisible in all patients after 6 months.

The periareolar incision is underestimated by many surgeons. This study demonstrates that the use of the periareolar incision can improve the aesthetic results of breast surgery as this is usually barely visible and is a suitable approach for most benign breast masses. The scar from a periareolar incision is virtually invisible, as it blends well with the natural change in skin colour.

However the use of a periareolar incision in malignant situations, within limits of safety and good clearance should be adequately addressed.

REFERENCES

1. Milltenburg DM, Speights VO. Benign breast disease. *Obstet Gynecol Clin North Am.* 2008;35:285-300.
2. Bateman AC. Pathology of benign breast disease. *Woman's Health Medicine.* 2006;3:6-8.
3. Fallat ME, Ignacio RC. Breast disorders in children and adolescents. *J Pediatr Adolesc Gynecol.* 2008;21:311-16.
4. Shetty MK, Shah YP, Sharman RS. Prospective evaluation of the value of combined mammographic and sonographic assessment in patients with palpable abnormalities of the breast. *J Ultrasound Med.* 2003;22:263-8.
5. Shrotria S. The peri-areolar incision—gateway to the breast. *EJSO.* 2001;27:601-8.
6. Rateme AH, Mansouri Reza, Keshtgar M. Gynaecomastia evaluation and management. In: Taylor I, Johnson C (eds). *Recent advanced in surgery*, 29. Royal Society of Medicine Press Ltd. 2000.
7. Barton MB, Harris R, Fletcher SW. Does this patient have breast cancer? *JAMA.* 1999;282:1270-80.
8. Pollitt J, Twine C, Gateley CA. Benign breast disease. *Woman's Health Medicine.* 2006;3:1-4.
9. Sewell CW. Pathology of benign and malignant breast disorders. *Radiol Clin North Am.* 1995;33:1067-80.
10. Foxcroft LM, Evans EB, Hirst C. Presentation and diagnosis of adolescent breast disease. *Breast.* 2001;10:399.
11. Sakorafas GH. Nipple discharge: current diagnostic and therapeutic approaches. *Cancer Treat Rev.* 2001;27:275.
12. Sainsbury R. The breast. In: Williams NS, Bulstrode CJK, O'Connell PR (eds). *Bailey and Love's short practice of surgery*, 25 (edn), 2008, Edward Arnold, London. 827.
13. Hislq TG, Elwood JM. Risk factors for benign breast disease: a 30-year cohort study. *CMAJ.* 1981;124:283-91.
14. Morrow M, Bland KI, Foster R. Breast cancer surgical practice guidelines: Society of Surgical Oncology practice guidelines *Oncology.* 1997;11:877-81.
15. Braunstein GD. Gynaecomastia. *N Engl J Med.* 1993;328:490-5.
16. Bannayan GA, Hajdu SI. Gynaecomastia: clinicopathologic study of 351 cases. *Am J Clin Pathol.* 1972;57:431-7.

17. Weinstein SP, Conant EF, Orei SG. Spectrum of US findings in paediatric and adolescent patients with palpable breast masses. *Radiographics* 2000;20:1613.
18. Rahbar G, Sie AC, Hansen GC. Benign versus malignant solid breast masses: US differentiation. *Radiology*. 1999;213:889-94.
19. American College of Radiology. Breast Imaging Reporting and Data System (BI-RADS). 3rd ed. Reston, Va: American College of Radiology. 1998.
20. Santen RJ, Mansel R. Benign breast disorders. *N Eng J Med*. 2005;333:275-85.
21. Treves N. Gynaecomastia; the origins of mammary swelling in the male: an analysis of 406 patients with breast hypertrophy, 525 with testicular tumours, and 13 with adrenal neoplasms. *Cancer*. 1958;11:1083-102.
22. Braunstein GD. Management of gynaecomastia. In: Harris JR, Lippman ME, Morrow M, Osborne CK. (eds) *Diseases of the breast*, 2nd edn. Williams & Wilkins. 2000.