



## Endoscopic Excision of Benign Breast Lesions: Zagazig University Study

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### ABSTRACT

**Background:** Over the course of a woman's lifetime, benign breast conditions are a frequent pathology finding. A new minimally invasive approach has been devised since cosmesis should be the primary goal of its procedures when excision is necessary. Recent analysis of the application of novel endoscopic surgical techniques to breast lumps suggests that this approach may develop into a viable option with favourable clinical and cosmetic outcomes. **Objective:** to assess the functionality, safety, duration of the procedure, discomfort following surgery, length of hospital stays, and cosmetic outcome of the method.

**Patients and methods:** Twelve female patients with benign breast lumps who visited the surgical oncology unit of the general surgery department of Zagazig University Hospital were included in this study. Individuals who were at least eighteen years old and had one or more benign breast lumps in any breast quadrant.

**Results:** With a mean age of  $33.16 \pm 9.7$  years, the patients ranged in age from 18 to 49. The upper outside quadrant accounts for 41.6% of all breast lumps. In 50% of the patients, fibroadenoma was the most prevalent finding, and 75% of the patients had several lumps. The average operating duration was  $58.6 \pm 19.9$  minutes, with a range of 35–90 minutes. 83.3% of the patients thought the cosmetic result looked very good. **Conclusion:** Benign breast lesions can be safely removed via endoscopy, and the procedure produces great cosmetic results that are highly satisfactory to patients.

**Keywords:** Benign Breast Lesions, Cosmesis, Endoscopic Surgery

### INTRODUCTION

Given the prevalence of benign breast problems from the earliest phases of a woman's reproductive life to the

postmenopausal stage, many women may be concerned about their health [1]. Benign breast lesions can be treated with a variety of

approaches, from conservative non-operative therapy to surgical excision. The objective of surgically excising benign breast lesions is to remove the lesion completely, leaving only a narrow margin of healthy tissue [2].

Better cosmetic outcomes led to the creation of oncoplastic breast conserving surgery, where glandular replacement or rearrangement and strategically timed incisions became the standard procedure for breast conserving surgery. Over the past 20 years, minimally invasive or minimum access breast surgery has gained a lot of attention as patients and breast surgeons seek more aesthetically desirable results [2].

A minimal number of axillary and/or periareolar incisions is required for endoscopically assisted breast surgery. was first developed to help with breast augmentation, but benign breast tumour removal is increasingly adopting it. This procedure maximises cosmetic effects, although it is increasingly being used to eliminate benign breast cancers. It is given through small wounds to allow for breast augmentation. The cosmetic outcome is maximised since the treatment is applied through tiny wounds [3].

Thus, the purpose of this study was to evaluate the viability and safety of endoscopic removal of benign breast lesions. To assess the impact of endoscopic breast lumpectomy on the reduction of complications following surgery. to evaluate the aesthetic outcome of using endoscopic excision as a substitute procedure for traditional surgical methods for the removal of benign breast lesions.

#### **PATIENTS AND METHODS**

This study was carried out on 12 female patients presented with benign breast lump

who had been managed and treated in the surgical oncology unit at the surgical department, in zagazig University Hospital during the period from December 2022 to August 2023.

#### **Inclusion criteria**

The study involved patients who were at least eighteen years old, with benign breast lesions ranging in size from 2 to 3 cm in zones II or III, or, depending on the patient's preferences, lesions less than 2 cm in any breast quadrant. Every patient had their medical history taken, had a general and local breast examination, and, if necessary, underwent mammography and breast ultrasonography if they were older than 35. If necessary, tru-cut biopsy was used for histological study.

#### **Ethical considerations**

Written informed consent was obtained from all participants, the study was approved by the research ethical committee of Faculty of Medicine, Zagazig University (IRB #10368/24-1-2023). The study was done according to The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

#### **Operative details**

Patients were put to sleep in a supine position and the procedure was carried out under general anaesthesia. Two more marks are for two 5 mm ports along the anterior axillary fold, two finger breadths above and below the first port. The first mark is for a 10 mm port in the mid axillary line, at a level opposite to the nipple. The ipsilateral upper limb is extended and abducted while the patient is in the supine posture, with the arm resting on the side of the head. A sandbag is placed beneath the ipsilateral scapular region to elevate the side that is slated for surgery. The 10-mm port

is inserted via the skin incision and advanced towards the breast, staying superficial to the anterior axillary fold muscles. The surgeon uses his left hand to stabilise the lump as the trocar is guided towards the location of the lump. Two more 5 mm openings were built once a sufficient amount of room had been produced. Ligasure is used during dissection around the lump until it is completely free of the surrounding tissue (**Figure 1**).

A tiny lump is directed in the direction of the 5-mm port so that it can be forced out of the skin incision. Larger lumps are directed towards the 10-mm port. The extractor is inserted into the 10-mm port and grasps the lump. Every area undergoing surgery is checked for bleeding. Avascular plane dissection assures that there is no bleeding. Following the confirmation of hemostasis, the ports are removed and a wash and lavage with regular saline could be carried out. Next comes gas deflation. A suction drain is introduced. Prolene 3/0 simple sutures are used to close the axillary port sites, and the breast is covered with a compression bandage (**Figure 1**).

#### **Follow - up**

The patients were guided to return to their regular activities, bathing, diet, exercise, and enjoyment (ABCDEF). After that, the patients were monitored in the outpatient clinic, where the suction drain was removed ten days after surgery and the sutures were taken out one week post-operatively. Using the Harvard Scale, patients' comfort level, pain level, and cosmetic satisfaction with their scars were evaluated at follow-up visits. Four categories are used to categorise cosmetic results: superb, decent, fair, and bad.

## **RESULTS**

The age of the studied patients ranged from 18 to 49 years with a mean age  $33.16 \pm 9.7$  years. Out of them 3 patients were unmarried. 3 patients were post-menopausal representing 25% while the other 9 patients were pre-menopausal representing 75%. The left side breast lump represented 66.6% of the patient and the right side represented 33.3% of them. As regard the site of the lump, the upper lesions represented 50%, lower lesions represented 25%, and the retro areolar lesions represented 25%. The lump size ranged from 1.8 to 3 cm with a mean of 2.4 cm. Multiple breast Lumps represented 75% of the patient and single solitary breast lump represented 25% of them (**Table 1**). The upper outer lump represented 41.6% of the cases (5 cases), central supra-areolar lesion represented 33.3% (4 cases), and the same presentation for upper inner, lower outer and lower inner lesions (8.3% each) (1 case each) (**Figure 2**).

In this investigation, ten patients each exhibited a well-defined US lesion; eight of these lesions were oval in shape, one lesion was hypoechoic and lobulated, and one lesion was supra-areolar, with minute cystic degeneration in the absence of complications. There were two heterogeneous lesions (16.6%) with cystic degeneration. Only three patients over the age of 35 who had uncertain ultrasound results were scheduled for pre-operative mammography; two of these patients had well-defined masses, and one patient had an irregularly shaped soft tissue mass that suggested the mass was benign (**Table 2**).

The mean operating time was 58.4 minutes, with a range of 32 to 90 minutes. There was

no nerve damage, subcutaneous emphysema, or intraoperative haemorrhage among the postoperative consequences. During the first two post-operative days, oral analgesia (diclofenac sodium 25 mg tablet twice daily) was required for seven patients (58.3%) with mild post-operative pain, and for five patients (41.6%) with moderate post-operative pain,

the dosage was increased to 50 mg twice daily for three days (Table 3). Due to a hypertrophic scar that was treated with an injection of local steroids, only two patients (16.6%) thought the scar was good, whereas ten patients (83.3%) thought it was unusual (Figure 3,4).

**Table (1): Demographic & Clinical data of the studied patients**

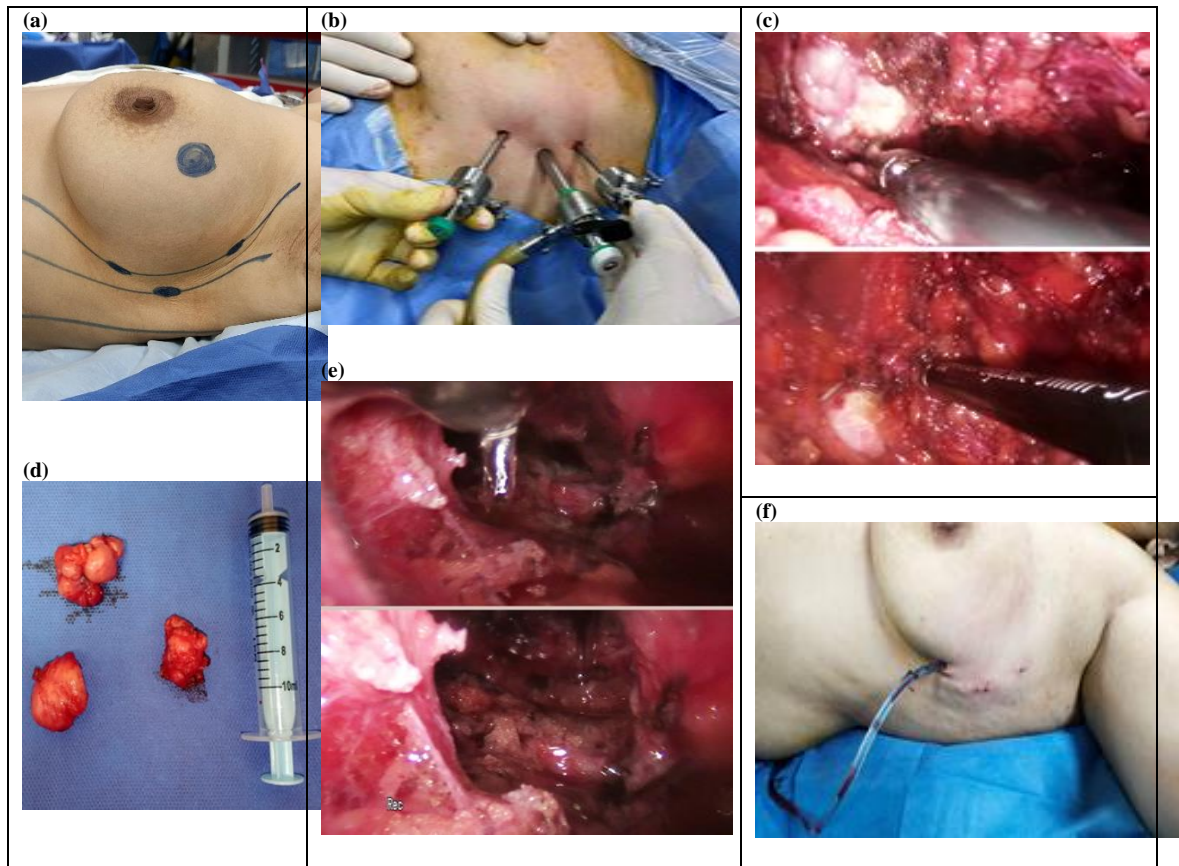
Characteristics		(n=12) n. (%)
<u>Age (in years)</u>	Mean±S.D Range	33.5±9.2 18-49
<u>Marital status</u>	Single Married	3 (25.0%) 9 (75.0%)
<u>Side</u>	Upper Lower Retro areolar	6 (50.0%) 3 (25.0%) 3 (25.0%)
<u>Size (in Cm)</u>	Mean±S.D Range	2.4±0.36 1.8-3
<u>Number</u>	Single Multiple	3 (25%) 9 (75%)

**Table (2): Pre-operative Radiological finding of the studied patients**

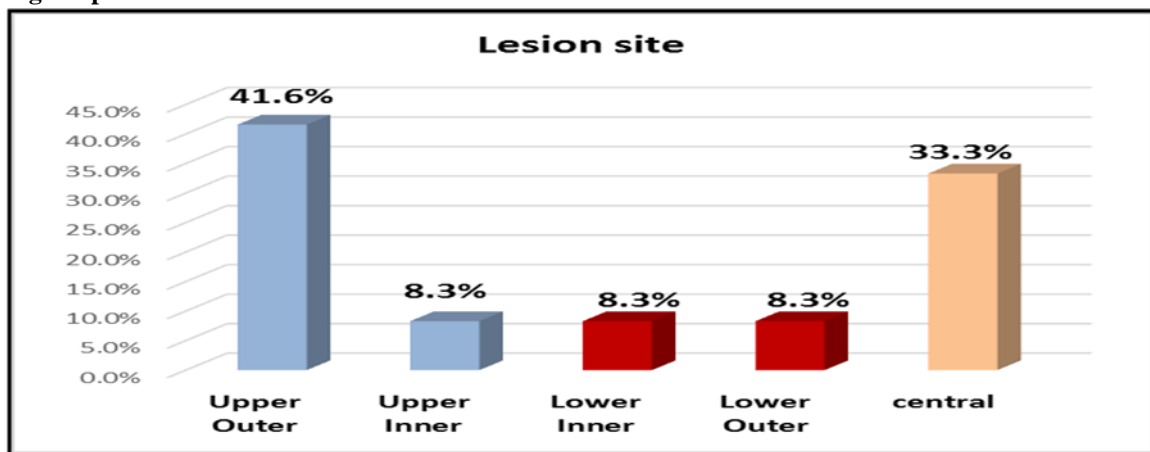
Pre-operative investigation	(n=12)
<b>Pre-operative ultrasound</b>	
Well-defined	10 (83.3%)
Heterogenous	2 (16.6%)
<b>Pre-operative mammography</b>	
Not done	9 (80.0%)
Well defined mass	2 (16.6%)
Irregular shaped soft tissue mass	1 (8.3%)

**Table (3): Post-operative pain assessment of the studied patients**

Post-operative pain	(n=12)
No pain	0 (0.0%)
Mild pain	7 (58.3%)
Moderate pain	5 (41.6%)
Severe pain	0 (0.0%)



**Figure (1):**Endoscopic surgical technique showing (a) marking of the port and lump sites; (b) port placement; (c) creating space for access to the site and for working around the lump; (d) the removed multiple breast lumps from the same patient ; (e) washing of the operative site with normal saline; and (f) introducing suction drain and suturing the port sites.



**Figure (2):** Site of the lump of the studied patients.



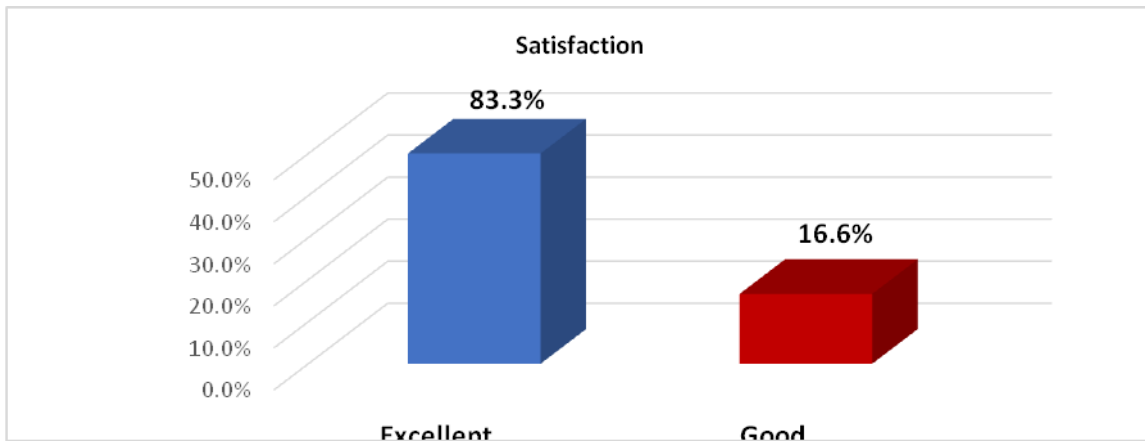


Figure (3):Patients' satisfactions after operation.

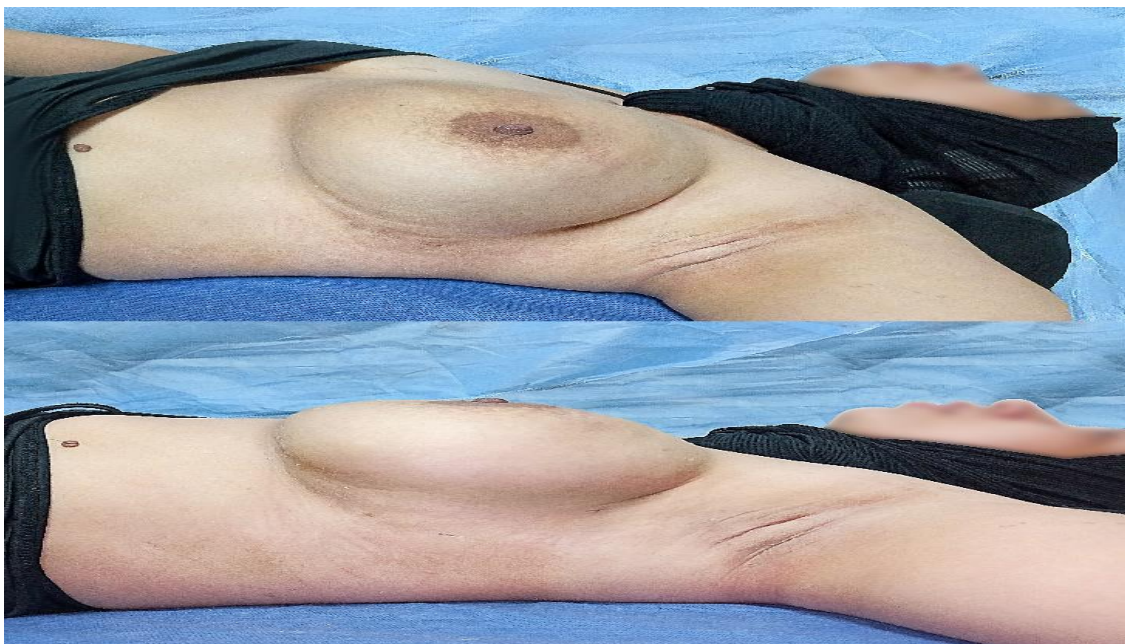


Figure (4): A post-operative follows up picture six months post-operative.

### DISCUSSION

Breast benign lesions are more common than malignant ones, which peak in frequency in the second and third decades. Histological study is the method used to accurately diagnose breast lesions following clinical evaluation. The lesion can be distinguished from malignant lesions with the help of early removal, evaluation, and histopathological confirmation [6].

Kitamura et al. [7] reported the first case of trans axillary endoscopic surgery for the excision of benign breast lesions. While Osanai et al. [8]illustrated a comparable technique with a detailed dissection of the

retromammary area. They also noted the necessity of maintaining perforator vessels.

In our technique, we have dissected the avascular planes. Every quadrant can have breast masses resected. Any risk of axillary insult was reduced by restricting the dissection to the anterior axillary fold.

In this study, twelve female patients who were scheduled for endoscopic lump removal were included. With an average age of 33.5 years, the patient ranged in age from 18 to 49. This agrees with the results of the study done by Kitamura et al. [7]involved 36 female patients ranging in age from 18 to 47 years old, with a mean age of 32.6 years.

Also, Agrawal et al. [9] who carried out the surgery on 14 female patients, ages 19 to 44 on average (mean age of 35.78 years). In comparison with another study done by Kitamura et al. [10] who carried out the surgery on 14 female patients, ages 19 to 44 on average (mean age of 35.78 years).

In terms of marital status, three patients were single, and nine patients (or 75%) were married. According to Agrawal et al.'s study [9], five patients were single, while nine patients (or 65%) were married. In contrast, Kitamura et al.'s study [10] reported that all six study participants were single.

Regarding the site of the lump, 4 patients reported right side breast lump and only 8 patients reported left side lump, this is coincided with the study done Kitamura et al. [10] noted that only one patient had a breast lump on the right side and that five patients had lumps on the left side. The upper outside quadrant (5 patients) accounts for 41.6% of all breast lumps. This agrees with the study carried out by Agrawal et al. [9] who reported having breast lumps in all four breast quadrants, with 44% of the lumps being in the upper outer region (8 out of 18 lumps).

Regarding the size of the lump, it ranged from 1.8 cm to 3 cm with a mean of 2.5 cm. Despite Kitamura et al. [7] revealed that the breast lumps had a mean size of 3.6 cm and varied in size from 2.5 to 11 cm. the study of Kitamura et al. [10] stated that the breast lump had a mean measurement of 5.25 cm and ranged in size from 4 to 6.5 cm.

In our study, three patients (or 25% of the total) had a single breast lump, while nine individuals (or 75%) had numerous lumps. With a mean of 58.6 minutes, the operating duration varied from 35 to 90 minutes. This is consistent with the research conducted by Agrawal et al. [9], which found that the

operation duration ranged from 40 to 110 minutes, with an average of 66.78 minutes. A mean operation time of 3 hours and 12 minutes, with a range of 2.5 to 6 hours, was reported by Kitamura et al. [10], but this finding disagree with Kitamura et al. [7]. With a range of 55 minutes to 6 hours and 5 minutes, the mean recorded operating time was 2 hours and 27 minutes.

We didn't report the conversion of endoscopic technique into open technique and also neither of Agrawal et al. [9]; Kitamura et al. [7] nor Kitamura et al. [10] reported any conversion rate. No subcutaneous emphysema had occurred, this agrees with the study done by Agrawal et al. [9] who revealed that there was no surgical emphysema in their studied patients. While, Kitamura et al. [10] subcutaneous emphysema in one case and Kitamura et al. [7] showed that a case of excessive carbon dioxide gas inflation was the source of subcutaneous emphysema that extended to the neck. Regardless, no complaints of skin burning have surfaced. This agrees with the study done by Agrawal et al. [9] in which there were no reported cases of skin burn. While Kitamura et al. [10] showed skin burn in one instance due to the lump's strong adherence just beneath the skin and Kitamura et al. [7] reported skin burn in one case.

Regarding subcutaneous bleeding and skin ecchymosis, none of the study patients had any reports of these conditions. While Kitamura et al. [10] found subcutaneous bleeding and skin ecchymosis in every case that resolves seven days following surgery, this finding is consistent with Agrawal et al. [9]. There was no chance of axillary damage because the dissection was restricted to the anterior axillary fold, hence there was no possibility of nerve injury. The fact that there

was no upper limb or axillary morbidity supported this. This agrees with Kitamura et al. [7]; Kitamura et al. [10]; Agrawal et al. [9] who reported the absence of axillary nerve injury at any of operated cases.

Neither post-operative wound infection nor intraoperative hemorrhage occurred. Agrawal et al. [9] and Kitamura et al. [7] both revealed the same findings.

Non-steroidal anti-inflammatory drug (NSAD) intake in the form of diclofenac sodium was sufficient, and the amount of pain following surgery was minimal. and those concur with Agrawal et al. [9], who reported minimal pain after using paracetamol tablets for just two days following surgery.

Regarding the patients' satisfaction with the scar, every single one of them expressed gratitude for the fact that their breast was left intact. Ten patients had exceptional results, but only two have good results. This is consistent with the observation made by Agrawal et al. [9] that all patients were clearly happy and satisfied following treatment. Additionally, Kitamura et al. [10] noted that every patient was content with the size and position of their scars, while Kitamura et al. [7] reported that every patient was extremely happy with the treatment's cosmetic results.

### CONCLUSION

Endoscopic excision of benign breast tumours is a simple, safe, and effective operation that yields excellent cosmetic results and high patient satisfaction, especially in patients with numerous breast lumps, as there are no scars left on the breast. The operating time is comparable to that of traditional operations, and there is no increased risk of complications. These days, we believe that endoscopic surgery is one of the best techniques to treat benign breast tumours.

We recommend conducting studies on a bigger scale with longer follow-up periods to confirm and support the findings.

### REFERENCES

- 1- **Johansson A, Christakou AE, Iftimi A, et al.** Characterization of Benign Breast Diseases and Association With Age, Hormonal Factors, and Family History of Breast Cancer Among Women in Sweden. *JAMA Netw Open.* 2021;4 (6): e2114716.
- 2- **Mok CW, Lai HW.** Endoscopic-assisted surgery in the management of breast cancer: 20 years review of trend, techniques and outcomes. *Breast.* 2019;46:144-156.
- 3- **Lai HW, Lin HY, Chen SL, Chen ST, Chen DR, Kuo SJ.** Endoscopy-assisted surgery for the management of benign breast tumors: technique, learning curve, and patient-reported outcome from preliminary 323 procedures. *World J Surg Oncol.* 2017;15(1):19.
- 4- **Hawker GA, Mian S, Kendzerska T, French M.** Measures of adult pain: Visual Analog Scale for Pain (VAS Pain), Numeric Rating Scale for Pain (NRS Pain), McGill Pain Questionnaire (MPQ), Short-Form McGill Pain Questionnaire (SF-MPQ), Chronic Pain Grade Scale (CPGS), Short Form-36 Bodily Pain Scale (SF-36 BPS), and Measure of Intermittent and Constant Osteoarthritis Pain (ICOAP). *Arthritis Care Res (Hoboken).* 2011;63 Suppl 11:S240-S252.
- 5- **Trombetta M, Julian TB, Kim Y, Werts ED, Parda D.** The allegheny general modification of the Harvard Breast Cosmesis Scale for the retreated breast. *Oncology (Williston Park).* 2009;23(11):954-956.
- 6- **Boral S, Jagtap SV.** Clinicohistopathological study of benign breast lesions in surgically excised specimens in a tertiary care hospital. *J Cancer Res Ther.* 2023;19(Supplement):S116-S120.
- 7- **Kitamura K, Inoue H, Ishida M, Kinoshita J, Hashizume M, Sugimachi K.** Endoscopic extirpation of benign breast tumors using an



- extramammary approach. *Am J Surg.* 2001; 181(3):211-214.
- 8- **Osanai T, Nihei Z, Ichikawa W, Sugihara K.** Endoscopic resection of benign breast tumors: retromammary space approach. *Surg Laparosc Endosc Percutan Tech.* 2002;12(2):100-103.
- 9- Agarwal BB, Agarwal S, Gupta M, Mahajan K. Transaxillary endoscopic excision of benign breast lumps: a new technique [published correction appears in *SurgEndosc.* 2010 Jun;24(6):1514. Agarwal, B [corrected to Agarwal, B B]]. *SurgEndosc.* 2008;22(2):407-410.
- 10- **Kitamura K, Hashizume M, Kataoka A, et al.** Transaxillary approach for the endoscopic extirpation of benign breast tumors. *Surg Laparosc Endosc.* 1998;8(4):277-279.

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