To cite this article: Halaclar B, Aydin F, Albuz O. The Comparison of Selection Criteria and Results for Incisional and Excisional Biopsy in Breast Masses Turk J Clin Lab 2023; 2: 380-385

Research Article

# The Comparison of Selection Criteria and Results for Incisional and Excisional Biopsy in Breast Masses

## *Meme Kitlelerinde Eksizyonel ve İnsizyonel Biyopsi İşlemlerinin Seçim Kriterleri ve Sonuçları*

Bulent Halaclar[1], Feray Aydin[2], Ozgur Albuz*[3]

[1]Private Algomed Hospital, Department of General Surgery, Adana, Turkey
[2]Bilkent City Hospital, Department of General Surgery, Ankara, Turkey
[3]Dr. Abdurrahman Yurtaslan Oncology Training and Research Hospital Department of General Surgery, Ankara, Turkey

## Abstract

**Aim:** The main purpose of this study is to clarify the biopsy selection criteria by revealing the biopsy methods and post-biopsy surgical treatment choices and pathology results in cases with biopsy indication.

**Material and Methods:**The study was carried out in cases who applied to the General Surgery Clinic between June 2020 and June 2022 and had biopsy indication.In fact;The records of 62 patients aged 18-70 years who were diagnosed with benign or malignant masses after excisional biopsy, tru-cut or incisional biopsy were retrospectively reviewed, and cases with incomplete or uncertain data were not included in the study.Descriptive statistics are given as mean±standard deviation, percentage and frequency.Student t test was used for continuous variables in the comparison of binary groups, $\chi 2$ test was used for comparison of binary variables, and the $p<0.05$ value in the 95% confidence interval was considered statistically significant.

**Results:**The total number of cases was 62.The mean age of the patients included in the study was 41.11±14.74.On the other hand, the mean age of the cases diagnosed as malignant after biopsy was found to be higher than the benign cases[(49.46±15.38)vs(39.31±14.10)($p<0.05$)].The number of cases with BI-RADS 4 was found to be significantly higher in the group who underwent trucut or incisional biopsy[(n=11(91.6%)].Biopsy incidences;n=12(19.4%) incisional or trucut biopsies were performed, and the remaining 50(80.6%) cases underwent excisional biopsy.It was seen that patients who underwent incisional or trucut procedure were statistically significantly malignant [n=11(91.6%) vs 1(8.4%)($p<0.05$)]. According to the total number of patients, the results of malignancy in cases who underwent incisional or trucut biopsy were significantly higher than those who underwent excisional biopsy[n=11(17.7%)vs51(82.3%)($p<0.0001$)].

**Conclusion:** We think that the cases diagnosed with breast cancer generally have masses that are not palpable as a result of mammography examinations performed in the preoperative period, and therefore, the cases with excisional biopsy are usually benign, and preoperative imaging is very important like physical examination.

**Key words:** Excisional biopsy, incisional biopsy , breast ,mass , biopsy selection

Corresponding Author*: Özgür Albuz, Dr.Abdurrahman Yurtaslan Oncology Training and Research Hospital Department of General Surgery, Ankara, Turkey
E mail: oalbuz@gmail.com
Orcid: 0000-0002-8534-1781
Doi: 10.18663/tjcl.1313710
Recevied: 17.06.2023 Accepted: 22.06.2023
Declaration of congress abstract: This study has not been published anywhere before and has not been presented in any congress.

TJCL Volume 14 Number 2 p: 380-385


## ÖZ

**Amaç:** Bu çalışmanın temel amacı, biopsi endikasyonu görülen olgularda biopsi yöntemlerini ve biopsi sonrası cerrahi tedavi seçimleriyle patoloji sonuçlarını ortaya koyarak biopsi seçim kriterlerini netleştirmektir.

**Gereç ve Yöntemler:** Çalışma haziran 2020 ve haziran 2022 tarihleri arasında Genel Cerrahi Kliniğine başvuran ve biopsi endikasyonu konulan olgularda gerçekleştirildi. Esas olarak; Eksizyonel biopsi, tru-cut veya insizyonel biyopsi sonrası benign veya malign kitle tanıları konulan 18-70 yaş arası 62 hasta kayıtları retrospektif olerek incelemeye alınmış olup, verileri eksik ya da belirsiz olan olgular çalışmaya dahil edilmemiştir. Bu tanımlayıcı istatistikler ortalama±standart sapma, yüzde ve frekans olarak verilmiştir. İkili grupların karşılaştırılmasında sürekli değişkenler için bağımsız gruplarta student t test, ikili değişkenlerin karşılaştırılmasında $\chi 2$ testi kullanılmış ve %95 güven aralığındaki $p<0,05$ değeri istatistiksel olarak anlamlı kabul edilmiş olup nihai sonuçlara regresyon analizi yapılarak ulaşılmıştır.

**Bulgular:** Toplam olgu sayısı 62 idi. Çalışmaya alınan hastaların yaş ortalaması 41,11±14,74 idi. Diğer yandan biopsi sonrası malignite tanısı alan olguların yaş ortalaması, benign olgulura göre daha yüksek saptandı[(49,46±15,38) vs (39,31±14,10) ($p<0.05$)].BI-RADS 4 gelen olgu sayısı trucut veye iniszyonel biopisi yapılan grupta belirgin biçimde yüksek olarak bulundu[(n=11(91.6%)].

Biopsi insidansları; n= 12(19.4%) insizyonel veya trucut biopsisi yapılmış olup, geri kalan 50 (80.6%) olguya eksizyonel biopsi yapılmıştır.İnsizyonel veya trucut işlemi uygulanan hastaların istatistiki olarak anlamlı biçimde malign geldiği görülmüştür [n=11( %91.6) vs 1(8.4%)($p<0.05$)].Toplam hasta sayısına göre de insizyonel veya trucut biopsi yapılan olguların malignite ile sonuçlanmaları eksizyonel biopsi yapılan olgulara göre anlamlı olarak yüksektir[ n=11(17.7%)vs 51(82.3%) ($p<0.0001$)].

**Sonuç:** Meme kanseri tanısı konan olguların genel olarak preoperatif dönemde yapılan mammografi tetkikleri neticesinde ele gelmeyen kitleler olduğu ve bu sebeple eksizyonel biopisi yapılan olguların belirgin olarak benigin geldiğini ,preoperatif görüntülemenin, fizik muayane gibi çok önemli olduğunu düşünüyoruz.


**Anahtar Kelimeler:** Eksizyonel biyopsi, insizyonel biyopsi, meme, kitle, biyopsi seçimi

## Introduction

Although the diagnosis and diagnosis methods are much better day by day, on the other hand, breast cancers are increasing, unfortunately, and it was stated that the number of cases diagnosed all over the world in 2018 was around 2.2 million(1). On the other hand, it has been reported that the number of women with a history of breast cancer in the United States alone in 2022 is almost 4.1 million(2).As stated in the literature; Palpable breast lumps and sometimes nipple discharge are common symptoms that often bring patients to the doctor. Andrea M. Bodine et al. also stated that a careful anamnesis and a comprehensive approach including physical examination and laboratory imaging examinations are required when evaluating the cases with the above basic complaints(3). While breast cancer is increasing all over the world, early diagnosis and treatment are gaining importance. For this reason, biopsy can be performed if there is a suspicion of malignancy as a result of the patient's history, physical examination, and imaging studies. In addition, although the diagnosis of benign radiological disease is thought to be radiological, if there is a mass that impairs the patient's quality of life, its excision can be considered by investigating other causes. However, unnecessary excisional biopsies should be avoided, especially at early ages.Because by affecting the breast and therefore axillary lymph nodes; It may lead to skip axillary metastases, which are especially missed in sentinel lymph node biopsies. Charles E. Cox et al. In their study on sentinel lymph node biopsies, they stated that only 1 case among all patients had axillary skip metastases and this patient had a history of previous excisional biopsy(4).All the above factors, the importance of biopsy selection criteria becomes clear.

## Material and Methods

The retrospective study was approved by Çukurova University Faculty of Medicine Ethics Committee dated February 4, 2023 the ethics committee decision the number of 130.The study was carried out in cases who applied to the General Surgery Clinic between June 2020 and June 2022 and had biopsy indication.

In fact;The records of 62 patients aged 18-70 years who were diagnosed with benign or malignant masses after excisional biopsy, tru-cut or incisional biopsy were retrospectively reviewed, and cases with incomplete or uncertain data were not included in the study. Descriptive statistics are given as mean±standard deviation, percentage and frequency.Student t test was used for continuous variables in the comparison of binary groups, $\chi 2$ test was used for comparison of binary variables, and the $p<0.05$ value in the 95% confidence interval was considered statistically significant.

## Results

All of the patients consisted of female cases. The mean age of the entire patient population was 41.67±13.77 years. On the other hand, the mean age of patients diagnosed with malignant breast cancer was significantly higher than those with benign pathology results [ (49.46±15.38) vs.(39.31±14.10) ($p<0.05$)] (Table 1).

As a result of the comparison of the postoperative malignancy results of the cases with BI-RADS 4 mammography and those who did not have mammography due to age or whose mammography was BI-RADS 3 and below;The all patients who diagnosed with mammografphy as BI-RADS 4 , as a result; Trucut was the group of patients diagnosed with fine needle aspiration or incisional biopsy (Table2). According to preoperative clinical staging of cases found to be malignant and surgery performed;

Of the malignant cases, 5 (45.5%) cases were left MRM, 2 (18.2%) cases were right MRMs, 4 (36.4%) cases were BCS. In the preoperative clinical staging of the cases; 1 case was defined as stage 0, 9 cases as stage 2, and 1 case as stage 3 (Table 3). Considering the postoperative staging of the cases found to be malignant, different from the preoperative stage, it is distributed as follows according to the surgery performed; It was understood that 4 cases with BCS and 2 cases with right MRM were stage 2, 2 patients with left MRM were stage 3, 3 cases were stage 3, and the difference between the groups was significant (Table4).

According the table 3; Of the malignant cases, 5 (45.5%) were LMRM, 2 (18.2%) were RMRM, 4 (36.4%) were BCS. In the preoperative clinical staging of the cases; 1 case was defined as stage 0, 9 cases as stage 2, and 1 case as stage 3.

It was understood that 4 patients who underwent BCS and 2 patients who underwent RMRM and 2 patients who underwent LMRM were stage II, 3 patients who underwent LMRM stage III, and the difference between the groups was significant.

**Table 1:** Comparison of the cases with malignant pathology after biopsy applied to the patients, with cases with benign pathology results in independent groups by Studen t t test.

| | Applied surgical procedure | n | Mean±Std. Deviation | P<0.05 |
|---|---|---|---|---|
| Age | 1,00(Malign cases) | 11 | 49,46±15,38 | 0.031 |
| | 2,00(Benign cases) | 51 | 39,31±14,10 | |
| | Total case | 62 | 41,67±13.77 | |

1:After trucut or incisional biopsies for malignant results; Performed right modified radical mastectomy, left modified radical mastectomy, breast-conserving surgery)
2: Benign excisional biopsy or tru-cut biopsy results

**Table 2 :** The comparison of the postoperative malignancy results of the cases with BI-RADS 4 mammography and those who did not undergo mammography due to age or whose mammography was BI-RADS 3 and below

| | | | BI-RADS | | Total | P<0,05 |
|---|---|---|---|---|---|---|
| | | | ,00 | 4,00 | | |
| Malign vs.benign cases | + | n | 0 | 11 | 11 | 0.0001 |
| | | % of Total | 0,0% | 17,7% | 17,7% | |
| | - | n | 51 | 0 | 51 | |
| | | % within BIRADS | 100,0% | 0,0% | 82,3% | |
| | | % of Total | 82,3% | 0,0% | 82,3% | |
| Total number | | | 51 | 11 | 62 | |

**Table 3:** Preoperative clinical staging of cases found to be malignant and surgery performed

| | | | The distribution of surgery performed | | | Total number | P<0.05 |
|---|---|---|---|---|---|---|---|
| | | | BCS | RMRM | LMRM | | |
| Preoperative clinical stage | Stage 0 | n | 0 | 0 | 1 | 1 | |
| | | The percentage(%) of the distribution of surgery performed in Stage 1 cases | 0,0% | 0,0% | 20,0% | 9,1% | |
| | Stage 2 | n | 4 | 2 | 3 | 9 | |
| | | The percentage(%) of the distribution of surgery performed in Stage 2 cases | 44,4% | 22,2% | 33,3% | 100,0% | |
| | | The percentage(%) of surgery performed according to total malignant cases for stage 2 | 100,0% | 100,0% | 60,0% | 81,8% | |
| | Stage 3 | n | 0 | 0 | 1 | 1 | |
| | | The percentage(%) of the distribution of surgery performed in Stage 3 cases | 0,0% | 0,0% | 20,0% | 9,1% | |
| Total number | | n | 4 | 2 | 5 | 11 | |
| | | % Total-Consequently the percentage(%) of the distribution of surgery performed in cases for BCS, RMRM,LRMM | 36,4% | 18,2% | 45,5% | 100,0% | |

BCS: Breast conserving surgery
RMRM: Right modified radical mastectomy
LRMM: Left modified radical mastectomy

**Table 4 :** Postoperative staging of the cases found to be malignant and their distribution according to the surgery performed are as belowed

| | | | The distribution of surgery performed | | | Total number | P<0.05 |
|---|---|---|---|---|---|---|---|
| | | | BCS | RMRM | LMRM | | |
| Postoperative stage | Stage 2,00 | n:The distribution of opeative stage II cases according to the surgery performed | 4 | 2 | 2 | 8(72,7%) | 0.046 |
| | | The distribution percentage(%) of postoperative stage II cases according to the surgery performed | 50,0% | 25,0% | 25,0% | 100,0% | |
| | Stage 3,00 | n: The distribution of opeative stage III cases according to the surgery performed | 0 | 0 | 3 | 3(27,3%) | |
| | | The distribution percentage(%) of postoperative stage III cases according to the surgery performed | 0,0% | 0,0% | 100% | 100,0% | |
| Total number | | The distribution of cases according to the surgery performed | 4 | 2 | 5 | 11 | |
| | | The distribution percentage(%) of total cases according to the surgery performed | 36,4% | 18,2% | 45,5% | 100,0% | |

## Discussion

In the literature , approximately 30% of the cases diagnosed with breast cancer have modifiable risk factors such as excessive body weight, insufficient physical activation and alcohol consumption, and therefore, if these factors are corrected, underlined advantage can be available against to the breast cancer(5). Xiaoxian Li et al. In the study they shared in the literature on breast cancer, they emphasized that the age distribution was between 30 and 87. In our study, the age distribution was between the age group of 33 and 80, which is consistent with the literature. In addition, our average age value; It was significantly higher than the benign group and this was statistically significant. The malign cases mean age 49,46±15,38 and benign cases mean age was 39,31±14,10(p=0.03)(6). This is clearly seen in Table 1.On the other hand, as determined in our study, it has been reported that mammography tests provide significant decreases in mortality thanks to a secondary prevention mechanism against breast cancer and the chance of early diagnosis(7). This determination in our study is also clearly seen in Table 2. In the light of one of the current literature, it has been stated that especially Contrast-enhanced mammography (CEDM) technique provides superiority in preoperative accurate staging(8). We also agree with this view. Because while there

is only 1 case in stage III stage in table 3 showing preoperative staging, 3 cases in stage III stage in table 4 showing postoperative staging. Although we did not use contrast-enhanced mammography in our study, we were successful in detecting breast cancer in all our BI-RADS 4 cases, but we cannot say the same about preoperative staging. It is striking that the stages determined in the preoperative staging table 3 and the postoperative staging table in table 4 are different.To the American Congress of Obstetrics and Gynecology (ACOG) and the American Cancer Society (ACS); Other breast cancer among new cancer cases, 30% cases in women. They reported that you created (9). In addition, unfortunately, the lifetime rate of breast cancer in a woman is not to be underestimated, and 1 out of every 8 cases is likely to be breast cancer(10,11). Breast cancer is a common cancer in women (122.2/100.000) (12).; A very good evaluation absolutely must be done. Here, as an inclusive; Physical examination, radiological images, pathological diagnosis samples should be taken in the best way and followed up. In our study, as seen in both table 5 and figure 1, 82.3% of the patients were benign. However, since breast cancer is a common and fatal disease, we should carefully in diagnosisi process.

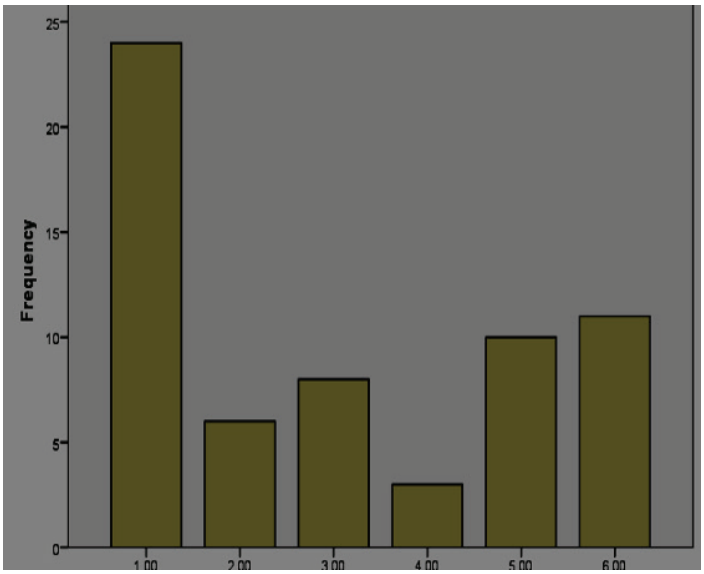


**Figure 1:** Schematic representation of the distribution of subgroup surgeries and postoperative diagnoses indicated in Table 5.

Distribution of the postoperative diagnosis;

1.Pure fibrocyst, fibrocystic lesion and fat necrosis, fibroadenoma, fibroepithelial polyp, accessory breast tissue, sclerosing adenosis and fibrocystic disease, tubular adenoma, tubular adenoma and fibroadenoma association

2.Coexistence of fibrocystic change, apocrine metaplasia and sclerosing adenosis, coexistence of chronic active mastitis and apocrine metaplasia in the breast, Coexistence of fibrocystic change sclerosing adenosis and apocrine metaplasia.

3.Chronic active inflammation, abscess and cyst formation in the breast, chronic active inflammation and granulation, abscess and chronic active inflammation

4. Pure epidermal cyst

5.Chronic active mastitis, ruptured epidermal cyst, granulomatous mastitis, non-caseating granulomatous mastitis, lymphocytic invasion and giant granulocytic structure

6. Primary malignant breast cancer [mucinous carcinoma, Iintraductal carcinoma(IDK), IDK+ carcinoma in situ]

**Table 5:** Distribution of subgroup surgeries and postoperative diagnoses

| | Frequency | Percent | Cumulative Percent | |
|---|---|---|---|---|
| Subgroups | 1,00 | 24 | 38,7 | 38,7 |
| | 2,00 | 6 | 9,7 | 48,4 |
| | 3,00 | 8 | 12,9 | 61,3 |
| | 4,00 | 3 | 4,8 | 66,1 |
| | 5,00 | 10 | 16,1 | 82,3 |
| | 6,00 | 11 | 17,7 | 100,0 |
| | Total | 62 | | 100,0 |

## Conclusion

We think that when biopsy is decided after the radiological and examination phases starting with breast examination, it is more necessary to prioritize trucut and incisional biopsies over excisional biopsies and even to prioritize trucut biopsy in order not to affect lymphatic drainage.

## Ethic

In this retrospective study, national and international ethical rules were complied with.

## Conflict of Interest

No conflict of interest was declared by the authors. In addition, no financial support was received for this study.

## References

1. Salvatore L. Versaggi, Alessandro De Leucio. NCBI Bookshelf. A service of the National Library of Medicine, National Institutes of Health. StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-.Breast Biopsy

2. Giaquinto, A.N., Sung, H., Miller, K.D., Kramer, J.L., Newman, L.A., Minihan, A., Jemal, A. and Siegel, R.L. (2022), Breast Cancer Statistics, 2022. CA A Cancer J Clin, 72: 524-541. https://doi.org/10.3322/caac.21754

3. Bodine, A. M., Holahan, B., & Mixon, A. (2017). Benign Breast Conditions. The Journal of the American Osteopathic Association, 117(12), 755. doi:10.7556/jaoa.2017.147

4. Cox CE, Pendas S, Cox JM, Joseph E, Shons AR, Yeatman T, Ku NN, Lyman GH, Berman C, Haddad F, Reintgen DS. Guidelines for sentinel node biopsy and lymphatic mapping of patients with breast cancer. Ann Surg. 1998 May;227(5):645-51; discussion 651-3. doi: 10.1097/00000658-199805000-00005. PMID: 9605656; PMCID: PMC1191339.

5. Islami F, Goding Sauer A, Miller KD, et al. Proportion and number of cancer cases and deaths attributable to potentially modifiable risk factors in the United States. CA Cancer J Clin. 2018;68:31-54.

6. Li, X., Ma, Z., Styblo, T.M. et al. Management of high-risk breast lesions diagnosed on core biopsies and experiences from prospective high-risk breast lesion conferences at an academic institution. Breast Cancer Res Treat 185, 573–581 (2021). https://doi.org/10.1007/s10549-020-05977-9

7. Giaquinto, A.N., Sung, H., Miller, K.D., Kramer, J.L., Newman, L.A., Minihan, A., Jemal, A. and Siegel, R.L. (2022), Breast Cancer Statistics, 2022. CA A Cancer J Clin, 72: 524-541. https://doi.org/10.3322/caac.21754

8. Montrognon F, Clatot F, Berghian A, Douvrin F, Quieffin F, Defta D, Buquet A, Ferret M, Lequesne J, Leheurteur M, Fontanilles M, Georgescu D, Callonnec F. Impact of preoperative staging with contrast-enhanced mammography for localized breast cancer management. Br J Radiol. 2022 Jun 1;95(1134):20210765. doi: 10.1259/bjr.20210765. Epub 2022 Mar 9. PMID: 35195454.

9. American College of Obstetricians and Gynecologists' Committee on Practice Bulletins—Gynecology. Practice bulletin no. 179: Breast cancer risk assessment and screening in average-risk women. Obstet Gynecol. 2017;130(1):e1-e16. doi:10.1097/AOG.0000000000002158

10. American College of Obstetricians and Gynecologists. Practice Bulletin no. 122: breast cancer screening. Obstet Gynecol. 2011;118(2 pt 1):372-378.

11. For women facing a breast biopsy. The American Cancer Society website. http://www.cancer.org/acs/groups/cid/documents/webcontent/003176-pdf.pdf. Updated October 9, 2017. Accessed April 6, 2016

12. Cancer among women. Centers for Disease Control and Prevention website. http://www.cdc.gov/cancer/dcpc/data/women.htm. Updated June 5, 2017. Accessed November 10, 2017.