

## (Ductal carcinoma *in situ*: DCIS)

= Abstract =

### The Diagnosis and Treatment of Ductal Carcinoma *In Situ* of the Breast

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**Background:** Ductal carcinoma in situ (DCIS) of the breast has been considered a relative rare form of breast cancer because its diagnosis was difficult, but the widespread use of screening mammography makes it easy to detect breast disease and there has been marked increase in the incidence of DCIS. But the exact diagnosis and treatment are controversial.

**Methods:** We reviewed the clinical records of 55 cases with DCIS treated at the Department of Surgery, Samsung Medical Center, between September 1994 and December 1997. If microinvasion was noted, the case was excluded from this study.

**Results:** The incidence of DCIS was 11.5% of all breast cancer (55 out of 477) with increasing tendency from 1995 to 1997. DCIS was most prevalent in women who were in their fifth decade, and the mean age was 47 years old. Chief complaints were palpable breast masses in 22 (40%) cases, mammographic abnormalities in 21 (38%), abnormal nipple discharge in 7 (13%), and others in 5 (9%). The most common mammographic finding was microcalcifications in 38 (78%) cases, but mass density and architectural distortion were also noted in a small percentage. Diagnostic methods for preoperative pathology were Fine Needle Aspiration (FNA) cytology in 15 (27%) cases, localization and excisional biopsy in 17 (31%), excisional biopsy in 12 (22%), incisional biopsy in 5 (9%), stereotactic core biopsy in 3 (5%), US guided biopsy in 2 (4%), and ABBI (Advanced Breast Biopsy Instrument) biopsy in 1 (2%). If the chief complaint was a palpable mass, FNA was the diagnostic choice. On the other hand, if the problem was mammographic abnormalities, localization and excisional biopsy was preferred. The surgical procedures were modified radical mastectomy in 17 (31%) cases, total mastectomy in 21 (38%), lumpectomy with axillary lymph node dissection in 7 (13%), and lumpectomy only in 10 (18%). If preoperative histology revealed the tumor of comedo type, mastectomy was preferred, but in case of

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\* 1998

non-comedo type, conservative surgery was preferred. Conservative surgery was followed by radiation therapy. Cancers were subclassified according to their histologic subtypes in 51 cases, and comedo type was most common (42%). Prevalent sizes of the masses were less than 2 cm, and the biggest one was 9 cm. There was one case (2%) of lymph node metastasis. It was comedo type and the size of the tumor was 9 cm.

**Conclusions:** The widespread use of screening mammography and various other diagnostic methods will increase the chance of detecting DCIS, and conservative surgery will be performed more frequently in selected groups of patients.

**Key Words:** Ductal carcinoma in situ, Breast neoplasm

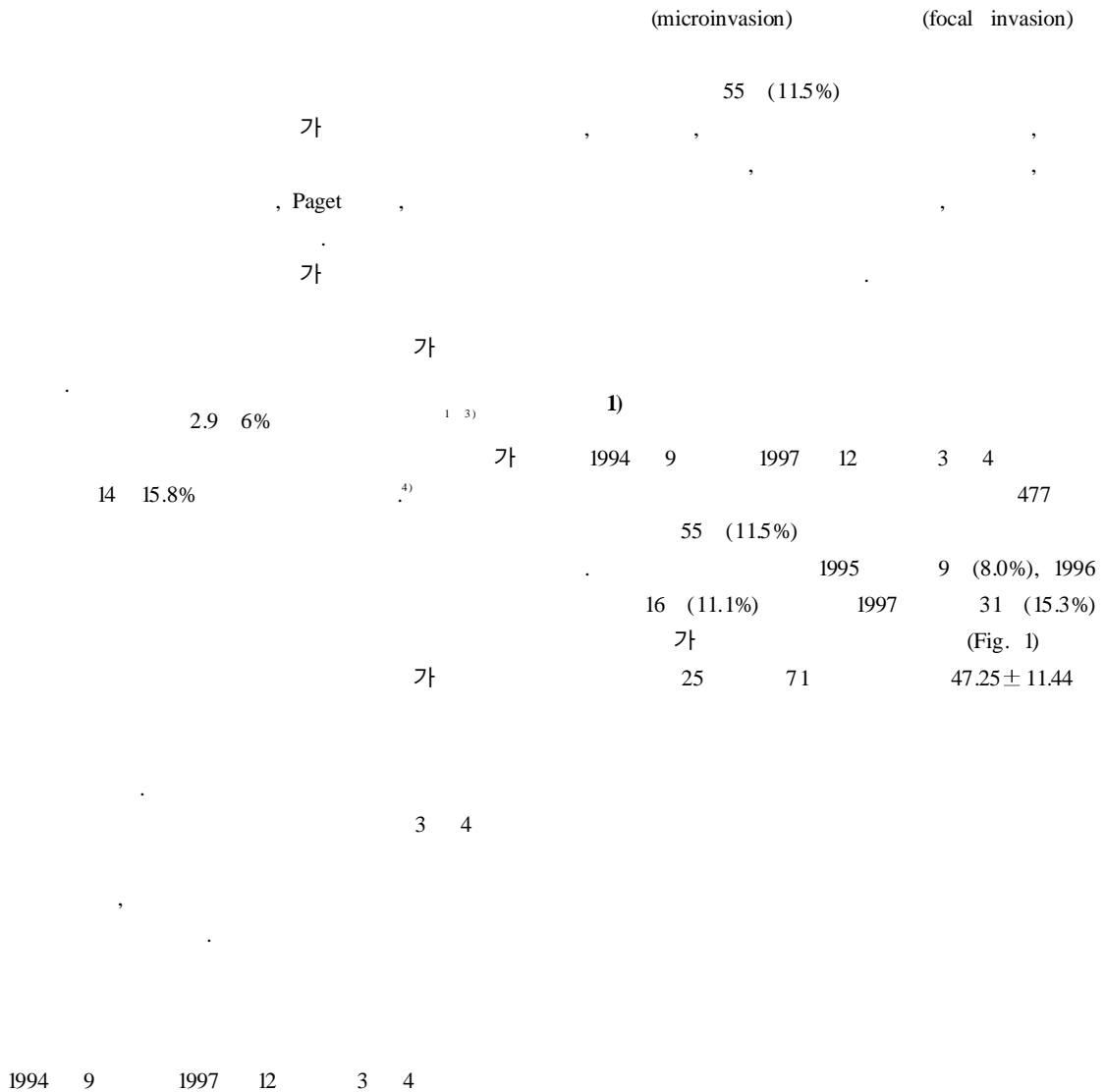


Fig. 1. Annual proportion of DCIS in breast cancer.

20 3 , 30 13 , 40 20 , 50 8 , 60  
9 , 70 2 40 가 가 30 ,  
60 (Table 1).

21 (38%),  
7 (13%), 3 (5%),  
1 (2%) 1 (2%) (Table 2).

2)

3)

가 22 (40%)  
, 33 (60%)

49 (89%)  
가 38 (78%), 가 9  
(18%) 3

**Table 1.** Age distribution of DCIS

Age	Number of cases
20-29	3
30-39	13
40-49	20
50-59	8
60-69	9
70-79	2
Total	55

1 (2%) 1  
(2%)가 (Table 3).

22  
4 (8%)

4)

22  
(fine needle aspiration: FNA) 13 , 7 ,  
(localization & excision) 2  
2  
1

**Table 2.** Clinical presentations

Chief complaints	Number of cases (%)
Mass	22 (40%)
Mammographic abnormalities	21 (38%)
Nipple discharge	7 (13%)
Nipple ulceration	3 (5%)
Nipple retraction	1 (2%)
Mastalgia	1 (2%)
Total	55 (100%)

**Table 4.** Diagnostic methods of DCIS

Clinical findings	Diagnostic methods	Number
Palpable mass	FNA	13
	Excisional biopsy	7
	Localization and excisional biopsy	2
Microcalcification	Localization and excisional biopsy	14
	Stereotactic core biopsy	2
	US guided biopsy	2
	ABBI biopsy	1
Bloody nipple discharge	Incisional biopsy	2
	Excisional biopsy	5
Nipple ulceration	Incisional biopsy	3
Nipple retraction	Localization and excisional biopsy	1
Mastalgia	Stereotactic core biopsy	1

**Table 3.** Mammographic findings

Mammographic findings	Number of cases (%)
Microcalcification	38 (78%)
Mass	6 (12%)
Mass+microcalcification	3 (6%)
Architectural distortion	1 (2%)
No abnormal finding	1 (2%)
Total	49 (100%)

21 가 19 (86%),  
 14 , (stereotactic core 가 2 (9%) 1 (5%)  
 biopsy) 2 , 2 , ABBI (Advanced  
 Breast Biopsy Instrument) 1 , 21  
 2 가 20 (95%),  
 7 2 , 가 1 (5%)  
 5 44 (80%)  
 5 4 , Paget 6 (11%), 1 (2%),  
 가 1 (2%) 2  
 Paget 1  
 1 (Table 4). (Fig. 2).  
 5) 6)

22 17 (31%)  
 21 (38%)  
 17  
 7 (13%)  
 10 (18%)  
 (Table 5).  
 가 1  
 16 가  
 subtype 33 co-  
 medo 15 3 ,  
 9 , 1  
 2  
 non-comedo  
 1 , 8 , 3 ,  
 6 comedo  
 (Fig. 3).  
 7)  
 가 가 51 comedo 21

Fig. 2. Preoperative diagnosis of DCIS.  
 \*FCD: Fibraystic disease

Fig. 3. Operative procedures according to subtypes.  
 MRM: modified radical mastectomy, TM: total  
 mastectomy, L & ACND: lumpectomy & axillary  
 lymphnode dissection, L: lumpectomy only

**Table 5. Operative procedures**

Procedures	Number of cases (%)
Modified radical mastectomy	17 (31%)
Total mastectomy	21 (38%)
Lumpectomy with ALND	7 (13%)
Lumpectomy only	10 (18%)
<b>Total</b>	<b>55 (100%)</b>

(42%), cribriform 12 (24%), solid 1 (2%), micropapillary 2 (4%) comedo cribriform 3 (14%) 5 cm 2 (9.5%) comedo (Table 7).  
 6 cribriform micropapillary 9)  
 4 15 (29%) comedo 55  
 가 (Table 6). comedo 21 45 (82%)  
 Paget 1 1 (2%) 가  
 가 9 cm

38 20 (53%)가 comedo . comedo .  
 8) 10)  
 50 2  
 가 microfoci 5 cm .  
 1 cm 13 (26%), 2 cm 17 (34%), 3 cm 1 (2%), 4 cm 5 (10%) 5 cm  
 4 (8%) . comedo  
 1 cm 2 (9.5%), 2 cm 9 (43%), 3 cm 4 (19%), 4 cm 1 (5%), 5 cm

**Table 6.** Histologic subtypes

Subtypes	Number of cases (%)
Comedo	21 (42%)
Cribriform	12 (24%)
Solid	1 (2%)
Micropapillary	2 (4%)
Mixed	15 (29%)
Total	51 (100%)

**Table 7.** Extents of tumor

Extents	Number (%) - total	Number (%) - comedo
less than 1 cm	13 (26%)	2 (9.5%)
1-1.9 cm	17 (34%)	9 (43%)
2-2.9 cm	10 (20%)	4 (19%)
3-3.9 cm	1 (2%)	1 (5%)
4-4.9 cm	5 (10%)	3 (14%)
more than 5 cm	4 (8%)	2 (9.5%)
Total	50 (100%)	21 (100%)

5)  
 가 .  
 , Paget , 14%  
 2 7% 1,2,6 11)  
 1990 Lagios 3 5% 12)  
 가  
 Ernster 4) 1973 2.4% 1992 15.8% 가  
 , 4 5  
 1995  
 가 1997 15.3%  
 .  
 40 가  
 13)  
 14)

가 Silverstein<sup>24)</sup>  
 non-high grade non-comedo  
 가 Tinneman<sup>15)</sup> 가 high grade comedo  
 95% 가 가 , comedo  
 , Goedde<sup>16)</sup> 가  
 non-comedo  
 가 Evans<sup>17)</sup> 가  
 , comedo ,<sup>12,25,26)</sup> Cheng<sup>27)</sup>  
 84% comedo , Fowble,<sup>28)</sup> Harris,<sup>29)</sup> Gallagher<sup>30)</sup>  
 95% . Carty<sup>31)</sup>  
 comedo Holland<sup>18)</sup> 3 cm , Fowble<sup>32)</sup> ,  
 linear casting non-comedo , Griffin<sup>33)</sup> non-  
 granular 가 comedo  
 , Delaney<sup>34)</sup>  
 가 10% 가 2.5 cm  
 가 Sharma<sup>35)</sup> 가 4 cm  
 non-comedo 가 4 cm  
 ABBI (Advanced Breast  
 Biopsy Instrument) 2 comedo  
 (multicentricity) .  
 가 Lagios<sup>19)</sup> 가 Lagios<sup>19)</sup> comedo 39.2%  
 32% 42% 가  
 5,12) 가 Holland<sup>36)</sup> 5 cm  
 가 41% 가  
 1 cm 26%, 2 cm 34%, 3 cm 20%  
 3 cm 가 . 2%  
 가 23)  
 1% 가 9 cm comedo .  
<sup>20 22)</sup> 17 ,  
<sup>23)</sup> 21  
<sup>20 22)</sup> 17 가 . 1994 9 1997 12 3 4

55

DCIS 11.5% 가

가 47 40

가 (40%)

(38%) 38 (78%)

15 (29%),

17 (31%), 12 (22%)

17 (31%), 21 (38%),

17 (31%)

가 가 comedo non-comedo

(20% 50%). comedo

21 42% 1 cm

5 cm 1 cm 13 (26%),

1 2 cm 가 17 (34%) 2 cm 가

1 (2%)

comedo 가 9 cm

가

가

REFERENCES

1) , , : 26: 576, 1994

2) , : Ductal carcinoma in situ. 27: 419, 1995

3) Rosen D, Bedwani RN, Vana J, Baker HW, Murphy GP: Noninvasive breast carcinoma. Ann Surg 192: 139, 1980

4) Ernster VL, Barclay J, Kelikowske K, Grady D, Henderson IC: Incidence of and treatment for ductal

carcinomas in situ of the breast. JAMA 275: 913, 1996

5) Rosen PP, Senie R, Schottenfeld D, Ashikari R: Noninvasive breast carcinoma: Frequency of unsuspected invasion and implications for treatment. Ann Surg 189: 377, 1979

6) , : I, II 24: 125, 1992

7) , , , : 24: 708, 1992

8) , : 44: 367, 1993

9) , : 44: 656, 1993

10) , , : 45: 23, 1993

11) , , : 46: 195, 1994

12) Lagios MD: Duct carcinoma in situ: Pathology and treatment. Surg Clin North Am 70: 853, 1990

13) Blichert-Toft MD, Graversen HP, Anderson JA: In situ breast carcinoma. World J Surg 12: 845, 1988

14) Heller KS, Rosen PP, Schottenfeld D, Ashikari R: Male breast cancer: A clinicopathologic study of 97 cases. 188: 60, 1978

15) Tinnemans JGM, Wobbes T, Holland R: Mammographic and histopathologic correlation of nonpalpable lesions of the breast and the reliability of frozen section diagnosis. Surg Gynecol Obstet 165: 523, 1987

16) Goedde TA, Frykberg ER, Crump JM: The impact of mammography of breast biopsy. Am Surg 58: 661, 1992

17) Evans A, Pinder S, Wilson R, Sibbering M, Poller D, Elston C, Ellis I: Ductal carcinoma in situ of the breast: Correlation between mammographic and pathologic findings. Am J Radiol 162: 1307, 1994

18) Holland R, Hendriks JH, Vebeek AL, Mravunac M, Schuurmans Stekhoven JH: Extent, distribution, and mammographic/histological correlations of breast ductal carcinoma in situ. Lancet 335: 519, 1990

19) Lagios MD, Westdahl PR, Margolin FR: Duct carcinoma in situ: relationship of extent of noninvasive disease to the frequent of occult invasion, multicentricity, lymph node metastasis and short-term treatment failures. Cancer 50: 1309, 1982

20) Fowble B, Hanlon AL, Fein DA, Hoffman JP, Sigurdson ER, Patchefsky A, Kessler H: Result of conservative surgery and radiation for mammographically

- detected ductal carcinoma in situ. *Int J Radiation Oncology Biol* 38: 949, 1997
- 21) Solin LJ, Kurtz J, Fourquet A: Fifteen-year results of breast-conserving surgery and definitive breast irradiation for the treatment of ductal carcinoma in situ of the breast. *J Clin Oncol* 14: 754, 1996
  - 22) Solin LJ, Yeh IT, Kurtz J: Ductal carcinoma in situ (intraductal carcinoma) of the breast treated with breast-conserving surgery and definitive irradiation. *Cancer* 71: 2532, 1993
  - 23) Kinne DW, Petrek JA, Osborne MP, Fracchia AA, DePalo AA, Rosen PP: Breast carcinoma in situ. *Arch Surg* 124: 33, 1989
  - 24) Silverstein MJ, Poller DN, Waisman JR, Colburn WJ, Barth A: Prognostic classification of breast ductal carcinoma in situ. *Lancet* 345: 1154, 1995
  - 25) Simpson JF, Page DL: The role of pathology in premalignancy and as a guide for treatment and prognosis in breast cancer. *Seminars in Oncology* 23: 428, 1996
  - 26) Page DL, Simpson JF: Pathology of preinvasive and excellent-prognosis breast cancer. *Current Opinion in Oncology* 8: 462, 1996
  - 27) Cheng L, Al-Kaisi NKL, Gordon NH, Liu AY, Gebraill F, Shenk RR: Relationship between the size and margin status of ductal carcinoma in situ of the breast and residual disease. *J Natl Cancer Inst* 89: 1356, 1997
  - 28) Fowble BL: Intraductal non-invasive breast cancer: a comparison of three local breast cancers. *Oncology* 3: 51, 1989
  - 29) Harris JR: Clinical management of ductal carcinoma in situ. In: breast disease. Edited by JR Harris, S Hellman LC Henderson and DW Kinne. JB Lippincott co., Philadelphia, 1991, p233
  - 30) Gallagher WJ, Koerner FC, Wood WC: Treatment of intraductal carcinoma with limited surgery. *J Clin Oncol* 7: 376, 1989
  - 31) Carty NJ, Royle GT, Carter C, Johnson CD: Management of ductal carcinoma in situ of the breast. *Ann R Coll Surg Engl* 77: 163, 1995
  - 32) Fowble B, Hanlon AL, Fein DA, Hoffman JP, Sigurdson ER, Patchefsky A, Kessler H: Results of conservative surgery and radiation for mammographically detected ductal carcinoma in situ (DCIS). *Int J Rad Oncol Biol Phys* 38: 949, 1997
  - 33) Griffin A, Frazee RC: Treatment of Intraductal breast cancer- Noncomedo Type. *Am Surg* 59: 106, 1993
  - 34) Delaney G, Ung O, Cahell S, Bilous M, Boyages J: Ductal carcinoma in situ Part 2: Treatment. *NZJ Surg* 67: 157, 1997
  - 35) Sharma S, Hill ADK, McDermott EW, O'Higgins NJ: Ductal carcinoma in situ of the breast-current management. *Eur J Surg Oncol* 23: 191, 1997
  - 36) Holland R, Veling SHJ, Mravunac M, Hendriks JHCL: Histologic multifocality of Tis, T 1-2 breast carcinomas, implications for clinical trials of breast conserving surgery. *Cancer* 1: 979, 1985
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