

## Multifaces of Sonographic Findings of Galactocele : Comparison According to it 's Association with Pregnancy<sup>1</sup>

Mi-Suk Park, M.D., Ki Keun Oh, M.D., Eun Kyung Kim, M.D., Sung Il Lee, M.D.

**Purpose :** To compare the sonographic findings of galactocele according to it 's association with pregnancy.

**Materials and Methods :** We reviewed the sonographic findings of 21 lesions in 20 patients confirmed by surgery (n= 15) or fine needle aspiration (n= 6) as galactoceles. The patients were divided into two groups, according to the period from the most recent pregnancy or lactation. In the first group(n= 8, mean age= 28.6 years), this was less than one year and in the second group(n= 13, mean age= 45.6 years), was more than one year.

**Results :** In our study, pregnancy-unrelated galactoceles (n= 13) were more common than pregnancy-related galactoceles (n= 8). The sonographic findings of galactocele of the first group were as follows; ovoid anechoic cystic mass (n= 5), cystic mass with fat-fluid level (n= 2), and well defined heterogeneous mass (n= 1). Those of the second group were as follows; irregularly bordered deeply hypoechoic mass (n= 3), irregularly bordered hypoechoic mass with internal nodules (n= 3), homogeneous hypoechoic mass with smooth margin (n= 4), and lobulated anechoic mass with posterior acoustic enhancement and internal debris (n= 3).

**Conclusion :** Pregnancy-unrelated galactoceles demonstrated the variable sonographic findings of solid f mass, whereas most of pregnancy-related galactoceles demonstrated the sonographic features of cysts.

**Index words :** Breast, US  
Breast, diseases

A galactocele is a benign cyst filled with milk (1). This uncommon lesion almost always occurs in women during or within a few months after lactation, although it has also been described in males (1, 2). A few reports in the literature describe the radiographic appearances of galactoceles. Gomez et al (3) reported three of their mammographic feature, while Salvador et al (4) and

Kopans (5) reported their sonographic features. All these investigators described pregnancy-associated galactoceles. To our knowledge, however, the radiographic findings of galactoceles unassociated with pregnancy have not been well documented in the literature.

This report compares the sonographic findings of galactoceles according to their association with pregnancy.

### Materials and Methods

A retrospective review of medical records over a 13-year period from 1985 to 1997 identified 49 galactoceles in 44 women evaluated at our institution. Sonography

<sup>1</sup>Department of Diagnostic Radiology, Yonsei University College of Medicine.

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Address reprint requests to : Ki Keun Oh, M.D., Department of Radiology, Yonsei University College of Medicine, YongDong Severance Hospital, 146-92, Dokok-Dong, Kangnam-Ku, Seoul 135-270, South Korea.

Tel. 82-2-3497-3515 Fax. 82-2-3462-5472

(ATL HDI 3000 with 10MHz transducer, Advanced Technology Laboratories, Bothell, Wash., U.S.A.) was performed for 21 lesions in 20 women. All were confirmed by surgery (n= 15) or fine needle aspiration (n=6). The patients were divided into two groups according to the period from the last delivery or lactation to symptom presentation; in the first group this was less than one year, and in the second was more than one year. Clinical charts were reviewed to ascertain patient age, obstetric history, symptoms at presentation, and interval between the last delivery and symptom presentation. Sonographic findings were evaluated in terms of shape, boundary, internal echo of the mass, and associated findings such as posterior enhancement, posterior shadowing, and calcification.

Eight lesions in seven patients belonged to group 1. The age of patients in this group ranged from 25 to 34 (mean, 28.6) years, and the time interval between the most recent delivery and symptom presentation ranged from 2 to 4 (mean, 2.8) months. Three of eight cases were confirmed by surgery and the remainder by fine needle aspiration. Except for one case, all lesions were located in the upper portion.

Thirteen lesions in 13 patients belonged to group 2; their age ranged from 28 to 62 (mean, 45.6) years. The time interval between the most recent delivery and

symptom presentation ranged from 3 to 30 (mean, 13) years. Twelve cases were confirmed by surgery and one by fine needle aspiration. Two lesions were located in the subareolar region and the remainder in the upper portion.

### Results

The sonographic findings of lesions in group 1 (n= 8) were as follows: five were seen as a homogeneously anechoic, ovoid mass with posterior acoustic enhancement and bilateral shadowing (Fig. 1), and fulfilled the criteria of simple cysts; in two cases a lobulated mass with fat-fluid level and thick wall was seen, and in the remaining case the lesions was a well defined, internally heterogeneous ovoid mass.

The sonographic findings of lesions in group 2 (n= 13) were as follows: three appeared as a markedly hypoechoic solid mass with irregular and angular margins (Fig. 2), while three were seen as a lobulating mass in which an internal echo filled one or two-thirds of the lesion (Fig. 3). In four cases a smooth, marginated, ovoid hypoechoic mass was demonstrated (Fig. 4), and in the remaining three, a lobulated anechoic mass with posterior acoustic enhancement and internal debris was seen.

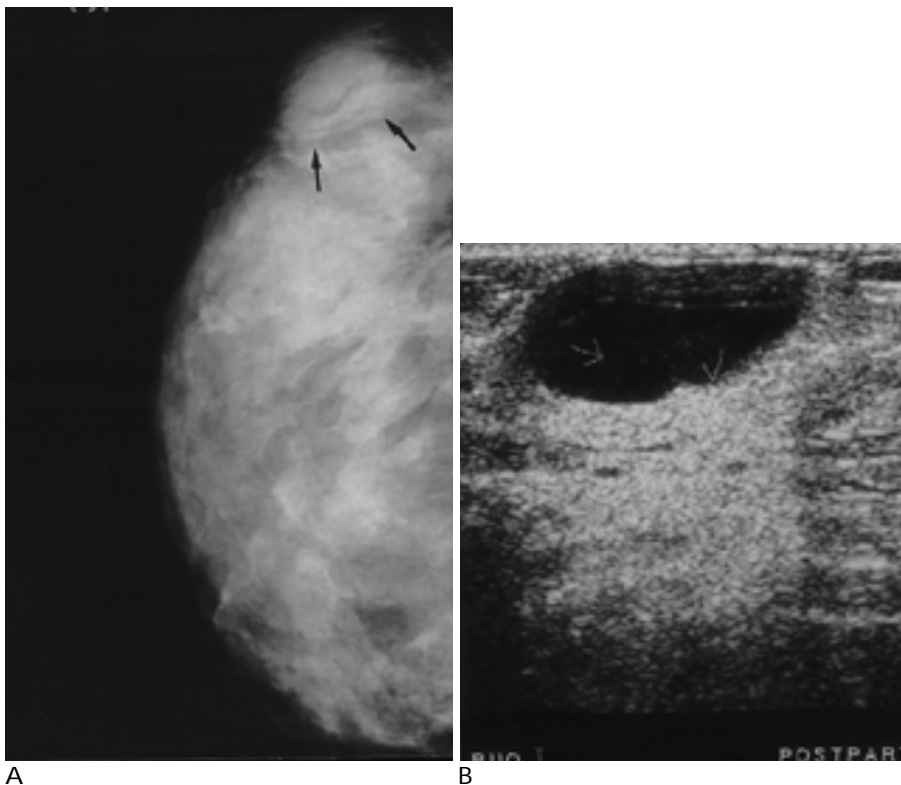


Fig. 1. A 27-year-old woman who noted a breast mass 4 months after delivery. (A) Craniocaudal view of mammography shows a lobulating, homogeneous high density mass (arrows) in the 12-o'clock axis of her right breast. (B) On sonogram, the mass is a typical cyst with smooth borders, no internal echoes, and posterior enhancement.

### Discussion

Galactocele is a true cyst lined by cuboidal epithelium containing milk-like fluid with or without curd-like material (2). This uncommon lesion usually occurs in women during or within a few months after lactation (1,

6). Although the exact mechanism involved in the formation of galactoceles is unknown, but there is no doubt that obstruction of the mammary ducts in a lactating female is the prime predisposing factor (2). Winkler (7) summarized the etiologic factors that must be operating: a secretory breast epithelium, present or previous prolactin stimulation, and some form of ductile ob-

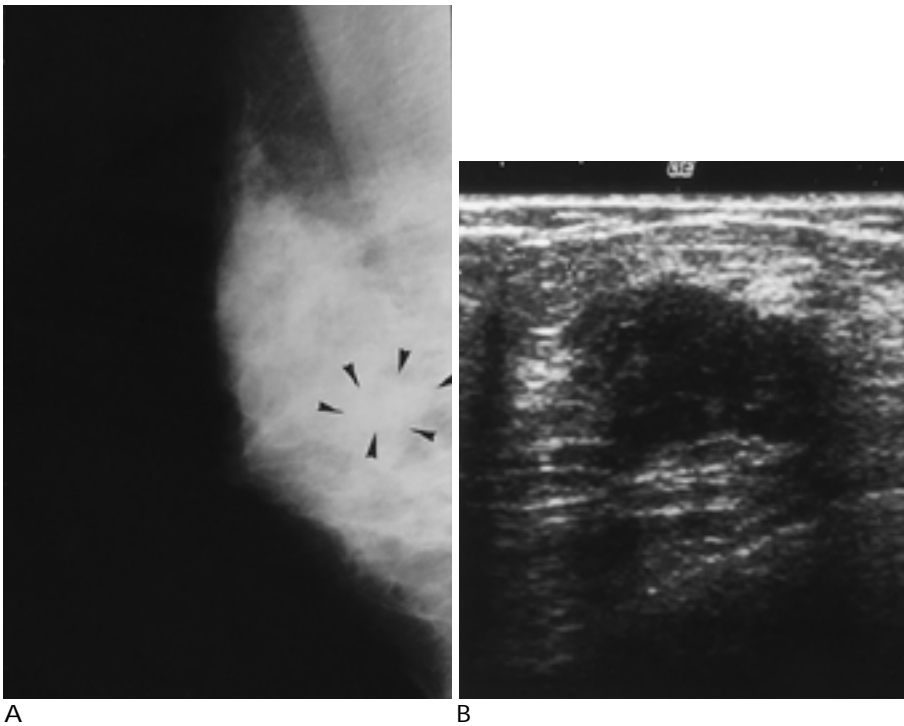


Fig. 2. A 40-year-old woman who noted a breast mass 9 years after the last delivery. (A) Mediolateral oblique view of mammography shows lobulated, homogeneous isodensity mass (arrowheads) with a halo in the 6-o'clock axis of her breast. (B) Sonogram revealed an irregular bordered, hypoechoic mass with an angular margin and internal echogenicity.

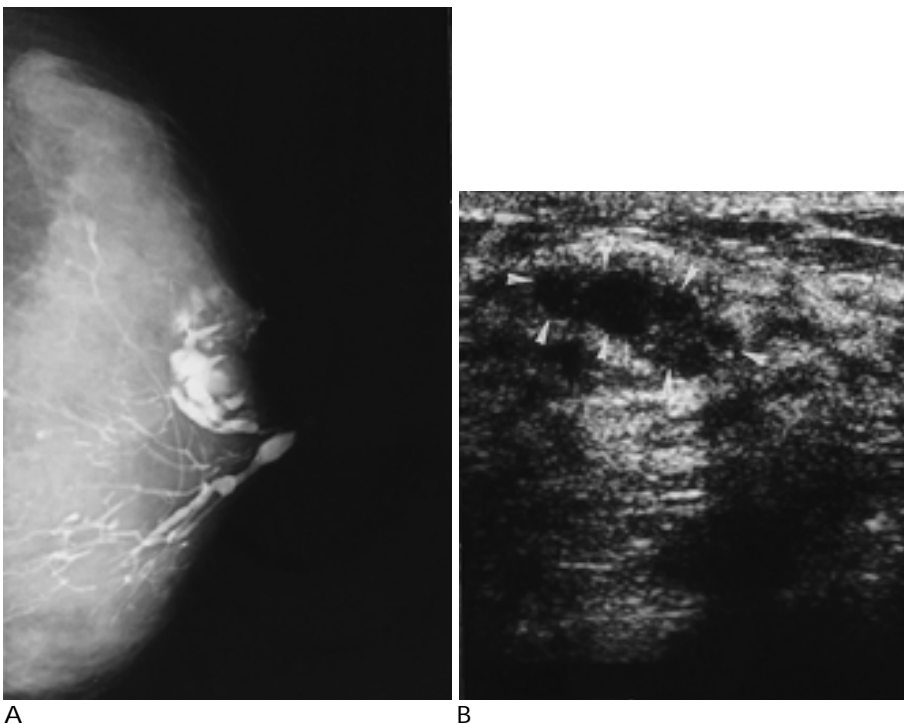


Fig. 3. A 28-year-old gravida 0, para 0 woman who noted nipple discharge. (A) Galactogram shows dilated duct with irregular filling defects. (B) Sonogram revealed lobulated anechoic mass (arrowheads) with internal echogenicity filling more than one-third of the lesion.

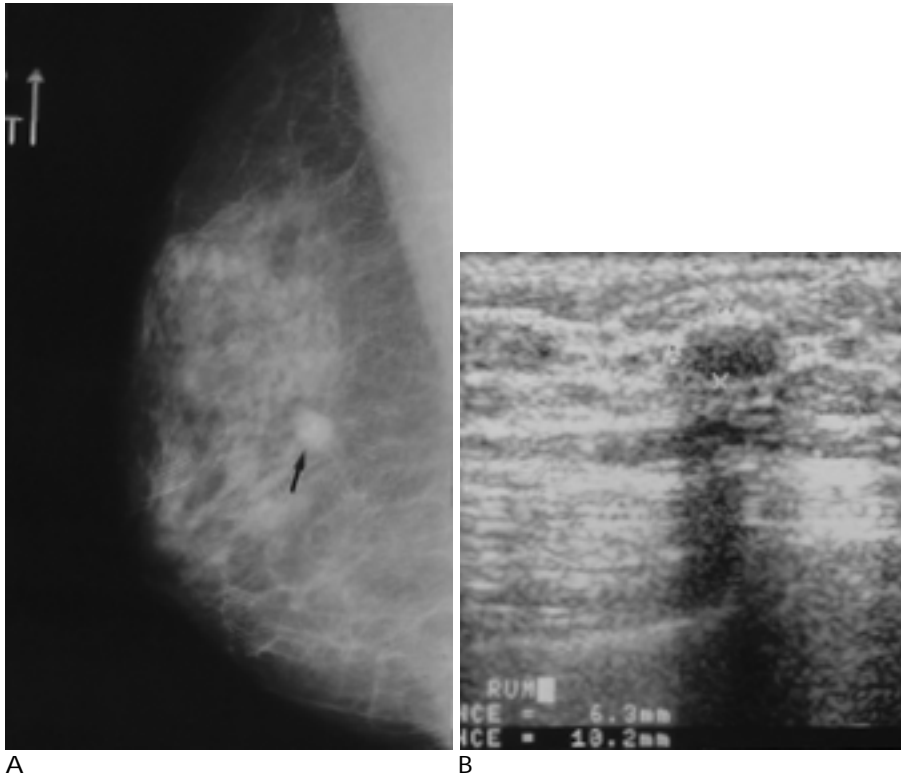


Fig. 4. A 56-year-old woman who noted a breast mass 20 years after the last delivery. (A) Mediolateral oblique view of mammography shows ovoid shaped mass (arrow) with a halo. (B) Sonogram revealed an ovoid, homogeneous hypoechoic mass with posterior shadowing.

struction. Generally, development of a galactocele is preceded by cessation of nursing with subsequent inspissation of milk within a duct, obstructing it and the acini it drains (8). Presentation may be delayed as much as 6-10 months after nursing has ceased (8). Thus we defined galactoceles presenting within one year after the most recent delivery (if occurring in the absence of breast feeding) or lactation as pregnancy-associated.

There have been case reports of galactoceles unassociated with pregnancy, though such cases are rare. The occurrence in a woman thirteen years postpartum (2), in male infants (6, 9, 10), in a 75-year-old man (6), and in women who underwent augmentation mammoplasty (11, 12) have been described. Transplacental passage of prolactin is the mechanism thought to be responsible for male infant galactoceles (6, 9, 10) and the release of lactogenic hormone triggered by postoperative breast congestion is that responsible for galactoceles following augmentation mammoplasty (11). In our study, however, relatively large numbers of galactoceles (13 of 21 cases) were not related to pregnancy (mean duration from postpartum was 13 years). Two of the women involved had undergone excision and partial mastectomy of ipsilateral breast, 3 and 5 years previously due to fibrocystic disease and infiltrating ductal carcinoma, respectively. Unlike previously reported galactoceles following augmentation mammoplasty, too much time had e-

lapsed since surgery to consider manipulation of breast tissue at that time as the cause of those galactoceles. It is known that inappropriate lactation may result from multiple factors such as elevated prolactin levels, decreased luteinizing hormone levels, excessive breast stimulation, and oral contraceptives (11). In our study, two women had taken oral contraceptives until symptom presentation, but in the others there was no precipitating factor. In our study, information on serum hormone levels, other medications, and excessive stimulation of breast tissue is not available, and we could not, therefore, rule these out as etiologic factors. At any rate, this study revealed, unlike previous reports (1, 2, 6, 8), that a relatively large number of galactoceles occurring in women might be unassociated with pregnancy, although the exact mechanism was not clear.

There is little in the literature which addresses the sonographic findings of galactoceles. Salvador et al (4) reported that a cystic cavity with a fluid level separating the upper echolucent and the lower echogenic fluid might be considered highly suggestive of a galactocele. Kopans (5) reported that galactoceles are circumscribed, contain low-level internal echoes, and demonstrate posterior acoustic enhancement, similar to circumscribed solid breast tumors. In the first group involved in our study, most of the cases demonstrated anechoic cystic masses and it was only two cases that demonstrated fat-

fluid levels known to be a characteristic finding of galactocele. Because, however, all patients in this group had a recent history of delivery or lactation, there was no difficulty in diagnosing galactocele and unnecessary surgery was thus in many cases avoided. In the second group, the sonographic findings of galactoceles were more variable: a hypoechoic solid mass with irregular and angular margin, similar to a malignant mass; solid or cystic mass with internal nodule similar to an intraductal or intracystic papillary tumor; and a hypoechoic or isoechoic mass with posterior acoustic shadow mimicking a benign solid tumor such as fibroadenoma. Pure cysts or cystic masses with fat-fluid level were not seen. Because there was no history of recent delivery or lactation in this group, preoperative diagnosis of galactocele was not possible. Moreover, because the average age of this group was 45.6 years, possible malignancy could not be excluded. Most patients in this group could not, therefore, avoid surgery.

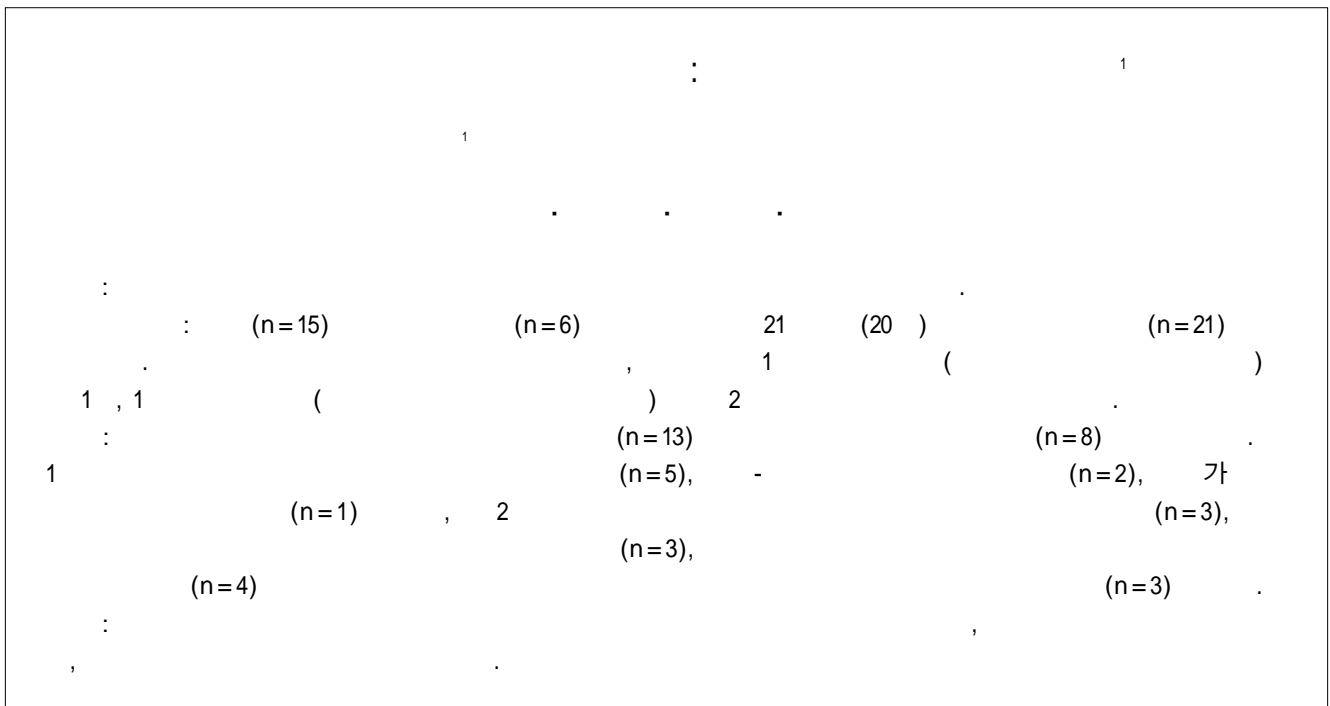
A limitation of our study is the small number of cases it involves and the relatively high proportion of patients in whom pregnancy was not an associated factor. This bias is due to the fact that because most pregnancy-associated galactoceles can be easily diagnosed on the basis of clinical history and physical examination, radiographic examination is not necessary.

In conclusion, a relatively large number of galactocele-

les may occur in non-lactating women and the sonographic findings in such cases are variable.

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