

# ORIGINAL TECHNIQUE IN MAMMARY ECHOTOMOGRAPHY

G. B. NARDELLI, P. RESTA

Obstetric and Gynecological Department,  
University of Padua (Italy)

The Authors, convinced that the finding of a nodule in glandular tissues already corresponds to the clinical stage of disease, believe it important to pay attention to the pre-clinic stage of the disease and therefore to monitor glandular tissues when it is still "believed healthy" with the same systematicity of Pap-test: every six months.

Technological and economical difficulties are well known.

Observation of surgically removed breasts induced the authors to search for an echographic survey technique as an option to the supine position.

Such a position, in fact, alters anatomic ratios which, on the contrary, are of fundamental importance for studying glandular architecture.

Already an Australian, Kossof (<sup>1, 2</sup>), has widely proved that the prone position on the Octoson device is able to provide complete sections of breast with very high resolution.

Unfortunately, only few radiologic centers can afford such expensive devices.

## MATERIAL AND METHODS

The instrumentation, designed and realized at the Echographic Center of Obstetric and Gynecological Clinic of the University of Padua, consists of a regular bed provided with a rectangular opening in the superior third of the bed. From the opening, a plastic container with special dimensions, thickness and elasticity, hangs down and it is hooked to a metallic case placed on the opening edge.

The container, full of lukewarm water, receives both breasts simultaneously. Breasts, hanging down in the water, assume their maximum anatomic expression also if hypoplastic. Then, under the container, a linear array is inserted, connected with a real-time equipment and a grey scale (MS-50, Kontron-Roche) equipped with sharpening. Echotomographic examination is performed with longitudinal and transverse "balayage" for a global framing of breasts and, subsequently, with a series of parallel sections. 192 patients were studied in mammary depistage in our Clinic.

At the end of the examination, the patient had been visited again with the breasts in the same position. In this phase of the study, the authors tried to verify validity of the new tech-

## SUMMARY

The Authors report a new technique of employing mammary echotomography. The patient, in prone position, is tested with her breasts immersed in water, using a linear array of 2.8 MHz.

*Reprinted from*

**Eur. J. Gynaec. Oncol. - ISSN: 0392-2936  
II, 2, 1981**

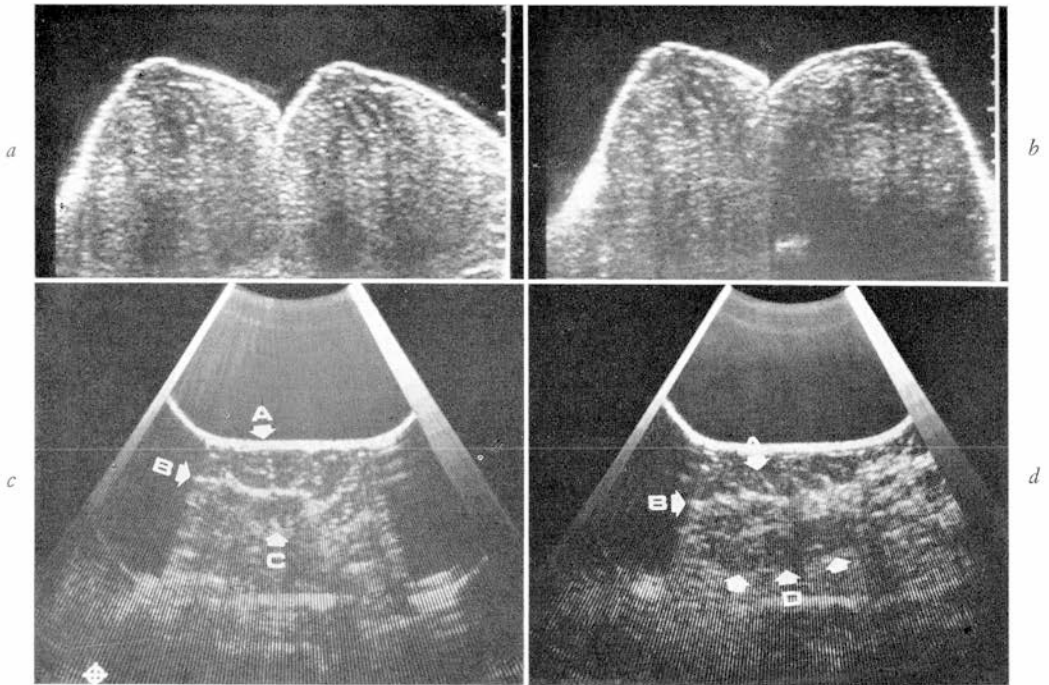


Fig. 1. — *a, b*) Examples of echographic picture obtained with the patient in prone position and linear array of 2.8 MHz. Patient at the 5th day of rise of the milk presented hyperthermia and mastodynia; pre-mammary fat was not pointed out by echography, breast profile was uniform, the ducts appeared ectasic because of obstruction. *c, d*) Examples of echotomography performed on hanging breast with a immersed linear array of 5 MHz. On the display only one section a time is visible. Anyway, the prone position puts in evidence the mammary architecture: A) Cooper's suspensory ligaments, B) fat-gland interface, C) acinaceous ectasia, D) marked fibrous component in fibrocystic breast.

nique for mass monitoring associating it with the control, besides contact thermography and diaphanoscopy, also to the normal linear array of 5 MHz with direct contact and with a water bottle interposed.

Breasts studied concerned patients with: mastodynia, mastosis, fibrocystic mastopathy, primary and secondary amenorrhea in hormonal therapy, sterility in hormonal therapy, hormonal contraception, menstrual irregularity in hormonal therapy, puerpera with or without rise of the milk, that is patients with endogenous and/or exogenous dishormonal situations.

## RESULTS

In every condition, the prone position allowed to point out clearly premammary fat and glandular tissue: the different

acoustic impedance accentuates the line of demarcation and points out the Duret crests<sup>(3,4,5)</sup>.

The tree-shaped structure of the mammary gland had always been pointed out starting from nipple (point of reference), moreover, we always searched signs of fixation and retraction both directly (from the inside of the gland) and indirectly (profile of cutis). These signs, unlike Octoson, are more easily evidenced; in such a method, the profile of breast is not defined by sustaining membrane, but by cutis.

At least, having measured the pre-mammary fat, the following touching control

took into account the wadding referred to the fat. The echotomographic image obtained in this way, permitted the interpretation of areas without echoes allowing the differentiation between the fat, defined by the canalicular system and acinaceous ectasiae.

## CONCLUSIONS

The advantages pointed out by this method are essentially four:

- The length of the array, which, in supine position, is a limit, allows to study the whole breast and not only a quadrant (fig. 1).

- Moreover, pre-mammary fat, on display results separated from glandular tissue and so the fat lobule delimited by the Cooper's suspensory ligaments, is external to it. It results a more accurate study of glandular tissue.

- The examination is carried out with a linear array of 2.8 MHz, used in obstetrics, so, this avoids the use of a 5 MHz

linear array with or without a water bottle, in which the distance array-cutis is spaced by the layer of water.

- In respect of arrays in immersion, the line of membrane impedance is in direct contact with the array, so it is relegated on the superior border of the display and not half way of the screen.

## BIBLIOGRAPHY

- 1) Kossoff G., Carpenter D.E., Radovanovich G., Robinson D.E., Garret W.J.: *Excerpta Med. Congr. Series*, 363, 90, 1975.
- 2) Kossoff G., Garrett W.J.: *The Octoson in use. Ultrasound in Medicine*, 2, White and Barnes Ed., Plenum Press, N. Y., 341, 1976.
- 3) Resta P., Nardelli G.B., Ambrosini A., Becagli L., D'Antona N.: *Clin. Exp. Obst. Gyn.*, 6, 282, 1979.
- 4) Resta P., Nardelli G.B., Ambrosini A.: *Echographic aspects of normal breast*. 3rd Europ. Congr. Ultrasonic in Medicine, p. 71, Bologna, Oct., 1978.
- 5) Resta P., Nardelli G. B., Ambrosini A., Becagli L., D'Antona N.: *Europ. J. Gynaec. Oncol.*, 1, 181, 1980.