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# An assessment of the value of Stereotactic Mammotomy Biopsy (SMB) in the diagnosis of impalpable breast lesions

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## Summary

**Background** Breast cancer is the most common malignancy for women in Poland and represents 19.7% of all neoplasms diagnosed in this group. It is also the most frequent cause of cancer related deaths among women (14.1% of total).

An improvement in these results has been achieved by the popularisation of prophylactic mammography. An increase in awareness among women, of the dangers of breast cancer, and an increase in the availability of mammography testing has resulted in impalpable breast lesions being diagnosed increasingly frequently. These diagnoses require histopathological verification.

**Aim** To demonstrate the usefulness of stereotactic mammotomy biopsy (SMB) in the diagnosis of impalpable breast lesions, and its effects on the processes of diagnosis, classification and treatment of pre-invasive growths within the breast.

**Materials/Methods** Stereotactic mammotomy biopsy is a minimally invasive method for the collection of tissue from impalpable changes in the breast which are visible in mammography images and require histopathological diagnosis. The procedure may be carried out on an ambulant patients, under a local anaesthetic.

Between April, 2000, and August, 2003, the First Surgical Department carried out 2000 SMB procedures. Changes suitable for biopsy fall into three groups: clusters and areas of microcalcification – 929 (46.45%), small tumours and soft tissue density – 975 (48.75%), radial structures – 96 (4.80%).

**Results** 365 patients (18.25%) required surgery for the purpose of obtaining a histopathological diagnosis, including 150 (7.50%) with invasive cancer, 120 (6.00%) with pre-invasive cancer – DCIS and 95 (4.75%) with atypical ductal hyperplasia – ADH.

Among the remaining 1635 patients (81.75%) changes were found to be benign and the patients avoided surgery.

**Conclusions** It is demonstrated that stereotactic mammotomy biopsy is the method of choice for the diagnosis of mammographically detected, inpalpable lesions of the breast, and furthermore, contributes to the process of diagnosis, classification and treatment of pre-invasive growths in the breast.

**Key words** **stereotactic biopsy • subclinical breast cancer**

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## Background

Breast cancer is the most common malignancy for women in Poland and represents 19.7% of all neoplasms diagnosed in this group. It is also the most frequent cause of cancer related deaths among women (14.1% of total).

An improvement in these results has been achieved by the popularisation of prophylactic mammography. An increase in awareness among women, of the dangers of breast cancer, and an increase in the availability of mammography testing has resulted in impalpable breast lesions being diagnosed increasingly frequently. These diagnoses require histopathological verification.

Methods currently used for the collection of material for microscopic analysis include fine needle aspiration, tru-cut biopsies (under ultrasound or mammography guidance)and open surgical biopsies after needle localisation. These methods have proven to be disappointing and imperfect. There remained a need for a diagnostic method, of high sensitivity and specificity, which could be performed on ambulant patients, under local anaesthetic. In order to meet this need, stereotactic mammotomy biopsies were developed and introduced into clinical practice in the United States during the 90s. The method was also quickly adopted in Europe.

In Poland there are several facilities working in this area, one such facility is in the Great Poland Cancer Centre in Poznań.

Patients qualifying for mammotomy biopsy have mammographically detected impalpable changes in the breast, requiring histopathological verification. The change must be of defined character (clusters or areas of microcalcification, small tumours or soft tissue density, radial structures)and must be visible in two mammograms.

The mammotomy procedure requires no special preparation and may be carried out on ambulant patients using a local anaesthetic.

## Aim

To demonstrate the usefulness of stereotactic mammotomy biopsy (SMB)in the diagnosis of impalpable breast lesions, and its effects on the processes of diagnosis, classification and treatment of pre-invasive growths within the breast.

## Materials and Methods

The equipment consists of: a digital mammograph – which produces images of selected areas of the breast, of size 5×5 cm and of 8 × magnification, a stereotactic table with a moveable frame which holds a biopsy needle and a computer to control the whole system.

### Procedure

The patient is positioned on their stomach on a Fischer stereotactic table. The breast to be biopsied is positioned at an opening in the table. Based on assessment of existing mammograms, the changes are localized and a holding plate with an opening measuring 5×5 cm holds the breast such that the changes are in its centre. A radiogram, of 0 degrees projection, is made and a check is made on a monitor screen to ensure that the sought focus of changes is visible. If not, a further attempt is made. If the change is visible, two further radiograms are made with projections of (+)15 degrees and (–)15 degrees. On screen the result is views of the same change through 30 degrees of perspective. The cursor is used to mark the same point on both images. Marking only this single altered element guarantees sampling of the proper material. Further procedures leading to the choice of parameters of the biopsy are made by the computer programs and are shown on the horizontal, vertical and depth axes of the on-screen display. The horizontal and vertical axes are automatically introduced into the device guiding the biopsy needle. The depth to which the needle is to be inserted into the immobilized breast is determined, by the surgeon, on a scale on the guidance device and in accordance with indications from the computer. The invasive part of the method follows. The fragment of skin visible in the window of the guide plate is disinfected. The area where the needles are to be introduced is anaesthetised using 1% Xylocaine with Adrenalin and the skin is incised to a length of 3 to 5 mm. The biopsy needle is introduced to the breast, to the depth indicated on the guide scale. In this position, the tip of the needle touches the determined target. After the blockade is removed, the trigger button is pushed and we make a “shot” which introduces the needle in such a way that the biopsy chamber will be in the area of the change. The collected material, which consists of 10–30 cylinders of tissue (30–100 mg of tissue), is withdrawn by around 1 cm using a clockwise and outward motion. After the collection of material is completed, we make images of the area in order to assess the extent of tissue removal. The site