Impact of stereotaxic core breast biopsy on cost of diagnosis
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
Stereotaxis core biopsy of the breast.

Type of intervention
Diagnosis

Economic study type
Cost-effectiveness analysis

Study population
Patients in an existing mammography programme with non-palpable, mammographically evident lesions that were considered probably malignant. These patients would otherwise be referred for surgical biopsy unless special circumstances occurred, such as the presence of a bleeding diethesis.

Setting
Hospital. The economic study was conducted in New York, USA.

Dates to which data relate
Not clear when the effectiveness data were collected. Costs related to 1993 and 1992.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
Not clear if costing was undertaken on the same patient sample as that used in the effectiveness study.

Study sample
182 women with non-palpable, indeterminate or suspicious for malignancy mammographic lesions. No power calculations were reported.

Study design
Case series, single centre study. Clinical follow-up was carried out on 86% of 106 patients for whom stereotaxic core biopsy findings were negative. Duration of follow-up was nineteen months.
Analysis of effectiveness
The analysis of the clinical study was based on 'intention to treat'. The primary health outcomes used in the analysis were histopathological findings for which stereotaxic core biopsy replaced a diagnostic surgical biopsy.

Effectiveness results
Pathologic findings at stereotaxis core biopsy were as follows: 106 cases (58%)- benign, 47 cases (26%)- malignant, 4 cases (2%)- unusual, 18 cases (10%) atypical and 7 cases (4%) inadequate. Use of stereotaxis core biopsy spared 140 (77%) of 182 patients a diagnostic surgical procedure. This included 102 of 110 patients for whom stereotaxis core biopsy revealed benign histologic findings without atypia and 38 (81%) of 47 patients for whom stereotaxis biopsy revealed malignant disease. The histopathologic findings for which stereotaxis core biopsy did not replace a diagnostic surgical procedure were: atypical hyperplasia (18 cases), inadequate specimen (7 cases), carcinoma (9 cases), benign histologic condition requiring further investigation (4 cases), other benign condition (4 cases), in total- 42 cases.

Clinical conclusions
The use of stereotaxis core biopsy with a 14-gauge needle has shown promise as a sensitive and specific means for diagnosis of breast lesions.

Measure of benefits used in the economic analysis
Histopathologic findings for which stereotaxic core biopsy replaced a diagnostic surgical procedure.

Direct costs
Costs and quantities were not reported separately. Direct health service costs were considered for: needle core biopsy of the breast, stereotaxis localisation, pathologic analysis, surgery, anaesthesia, specimen radiography, personnel, facilities. Professional costs of stereotaxis core biopsy and surgical procedure were estimated from 1993 Medicare and Relative Value for Physicians (RVP) data. Ad hoc calculations were used to estimate hospital costs. Cost of Hospital stay from 1993 official statistical date.

Indirect Costs
Time lost from work was considered. Costs and quantities were reported separately. The number of workdays lost was guessed. Wage data were derived from 1992 governmental data.

Currency
US dollars ($)

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
Use of stereotaxis core biopsy spared 140 (77%) of 182 patients a diagnostic surgical procedure. This included 102 of 110 patients for whom stereotaxis core biopsy revealed benign histologic findings without atypia and 38 (81%) of 47 patients for whom stereotaxis biopsy revealed malignant disease. The histopathologic findings for which stereotaxis core biopsy did not replace a diagnostic surgical procedure were: atypical hyperplasia (18 cases), inadequate specimen (7 cases), carcinoma (9 cases), benign histologic condition requiring further investigation (4 cases), other benign condition (4 cases), in total- 42 cases.

Cost results
The mean adjusted (ie. taking into account the percentage of patients for whom stereotaxis core biopsy was performed in addition to a diagnostic surgical procedure) direct cost savings per stereotaxis core biopsy were $893 (Medicare data) or $1491 (RVP data). The indirect cost savings per patient were calculated to be $94.

**Synthesis of costs and benefits**
Not performed.

**Authors’ conclusions**
Stereotaxis core biopsy obviated surgical biopsy for most non-palpable lesions sampled, resulting in greater than 50% reduction in biopsy costs.

**CRD Commentary**
Interesting study, although essential elements such as sensitivity analysis and price date are missing. A longer follow-up of the negative cases would have been useful to assess effectiveness of the stereotaxis procedure. Moreover, since equal effectiveness between the stereotaxis biopsy and the gold standard has not been ascertained in absolute terms, an incremental analysis would be necessary, preferably based on an evaluation of final outcomes. Nevertheless, a good costing exercise, with quite dramatic findings for the breast biopsy procedure.

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