Office based wire-guided open breast biopsy under local anaesthesia is accurate and cost effective

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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
The use of a simplified wire-guided biopsy (WGB) method during mammography, which allows the procedure to be conducted with a minimum of dissection and under local anaesthesia in the office setting.

Type of intervention
Diagnosis.

Economic study type
Cost-effectiveness analysis

Study population
The study population comprised all patients having WGB at the authors' institution between 1992 and 1998. No further details were given.

Setting
The setting was an institution. The study was conducted at the Department of Surgery (Surgical Oncology), Oregon Health Sciences University, Portland (Oregon), USA.

Dates to which data relate
The effectiveness data were gathered from 1992 to early 1998. The prices used were the average charges from 1992 to 1998.

Source of effectiveness data
The effectiveness data were derived from a single study.

Study sample
Power calculations to determine the sample size were not reported. The authors saw 164 cases at their institution from 1992 to early 1998. The mean age of the patients biopsied was 61 years (range: 34 - 93). The mean age was 64 years for patients biopsied in the office setting and 54 years for those biopsied in the OR. No clinical details were given, other than the reasons for performing a biopsy in the OR.

Study design
This study was essentially a case series. The authors reported their experience in their institution. However, the analysis was conducted as if there was a control group, in that those having a reason (given in the paper) for an OR biopsy acted as a control or comparator. The length of follow-up was not stated, although it was stated that no lesions were missed.
No details were provided on the methods on determining this. The authors stated that there were no losses to follow-up.

**Analysis of effectiveness**
The primary outcome measures were the number of complications and the number of biopsies missed. The total numbers of biopsies, negative margins and malignancies were also reported. The groups were clearly not comparable, in that they had indications for treatment in different settings. No comparison was made at baseline and no allowance for confounding was made.

**Effectiveness results**
The total number of biopsies was 164. There were 114 in the office and 50 in the OR, \((p=0.000062)\).

There were 8 complications in the office and 2 in the OR, \((p=0.697)\).

There were 14 negative margins in the office and 17 in the OR, \((p=0.07)\).

The malignancy rate \((n=65)\) was 38 in the office 38 and 27 in the OR, \((p=0.02)\).

**Clinical conclusions**
There were no statistically significant differences in the rate of complications. It was stated that no lesions were missed in either setting.

**Measure of benefits used in the economic analysis**
The authors did not derive a summary measure of health benefit. The analysis was therefore categorised as a cost-consequences study.

**Direct costs**
The resource quantities were not reported separately. Only the direct costs of the hospital were considered, using patient charges. The charges were estimated using actual data. The average reduction in patient charges, resulting from the office-based method compared with the OR approach, was calculated using Current Procedural Terminology CPT 1996 (see Other Publications of Related Interest). Discounting was not carried out, although it is unlikely to have been relevant as the costs were probably incurred over less than 2 years. For WGB, the average surgeon fee (CPT code 19125) for the period in which these procedures were conducted, was used. For OR biopsy, the utilisation charges, anaesthesia charges and recovery room fees were included. The break-even charges were excluded from the calculations. These included pathology fees, tray use and radiology charges. No extra (non-break-even) office or personnel costs were incurred by the office setting, because the clinic biopsies were performed in an established clinic procedure room and staffed by the clinic nurse.

**Statistical analysis of costs**
No statistical analysis of the costs was performed.

**Indirect Costs**
No indirect costs were included in the analysis.

**Currency**
US dollars ($).
Sensitivity analysis
No sensitivity analysis was performed.

Estimated benefits used in the economic analysis
See the 'Effectiveness Results' section.

Cost results
The total cost for the WGB (CPT code 19125) was $665 and there was no discount rate. The total cost (charges) for OR biopsy (comparator) was $5,297.

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
Office-based wire-guided biopsy (WGB) using a method described previously is accurate and can be applied to at least 70% of the patients. On the basis of the favourable results of their cost analysis and rising support for sentinel lymph node biopsy, the authors anticipate increased use of the clinic setting and local anaesthesia for breast preserving therapy in the future.

CRD COMMENTARY - Selection of comparators
No explicit justification was given for the comparator used, although it would appear to represent current practice in the authors' setting. You should decide if the comparator represents current practice in your own setting.

Validity of estimate of measure of effectiveness
The study design was not really appropriate for the study question, in that the interaction and comparator groups had different indication for treatment (they were not from the same population). It would appear that, apart from those specifying a preference, most patients who had OR biopsy would have other problems. These might negatively affect their prognosis and, initially, might make the detection of a tumour more difficult. Therefore, the office-based procedure might be even better. However, another problem was the lack of reporting the methods and results on a primary measure, i.e. whether lesions were missed.

Validity of estimate of benefits:
The analysis of benefits appears to have been based upon the therapeutic equivalence of treatment alternatives. The economic analysis, therefore, only included the costs.

Validity of estimate of costs
The authors limited their analysis to the direct costs, and limited this only to charges. Following the authors' work, "Because the clinic biopsies were performed in an established clinic procedure room and staffed by the clinic, nurse, no extra office or personnel costs were incurred by the office setting". But, as they say, charges for OR biopsies included OR utilisation charges, anaesthesia charges, and recovery room fees. The unit costs and the resource quantities were not reported separately. The quantities used were those that the authors view as the usual practice. No statistical analysis of the costs was performed and a sensitivity analysis was not conducted. The costs were treated deterministically, which may limit the generalisability of the study findings. In addition, it does not allow for any uncertainty.

The prices were obtained from a published source (Current Procedural Terminology CPT 1996). Appropriate currency conversions were not performed. Discounting was not undertaken and might have been appropriate, but the length of follow-up was not stated. Charges were used to proxy prices, thus presenting a breakdown to the unit costs for the
resource quantities. The date to which the prices and charges relate was reported, but the price year was not.

Other issues
The authors acknowledged that the WGB and OR groups were essentially different populations. They also made some appropriate comparisons with other studies, although the issue of generalisability was not addressed. The authors’ optimistic conclusions in relation to the clinic setting were not very well supported by the design of the study. To draw their conclusions, the authors generalised their conclusions across all age groups and levels of severity; "Office-based WGB using our previously described method is accurate and can be applied to at least 70% of patients”. In addition, the design was inappropriate (it did not compare like with like). The effectiveness results were reasonably well presented, but there was a lack of transparency in the methodology and costing.

Implications of the study
The authors' conclusions should be viewed in the light of the weak design and lack of effectiveness evidence. The authors stated that a phase III controlled trial, which was in progress, would help to inform the choice of a clinic-based or OR intervention.

Source of funding
None stated.

Bibliographic details

PubMedID
10930494

Other publications of related interest


Indexing Status
Subject indexing assigned by NLM

MeSH
Adult; Aged; Aged, 80 and over; Algorithms; Anesthesia, Local /adverse effects /economics /methods; Biopsy /adverse effects /economics /methods; Breast Neoplasms /pathology /radiography; Cost-Benefit Analysis; Feasibility Studies; Female; Humans; Mammography /adverse effects /economics /methods; Mastectomy, Segmental /adverse effects /economics /methods; Middle Aged; Office Visits /economics; Operating Rooms /economics; Patient Selection; Radiography, Interventional /adverse effects /economics /methods; Reproducibility of Results; Treatment Outcome
AccessionNumber
22000001350

Date bibliographic record published
28/02/2003

Date abstract record published
28/02/2003