An economic evaluation of a clinical trial to compare automated percutaneous lumbar discectomy with microdiscectomy in the treatment of contained lumbar disc herniation

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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
Automated percutaneous lumbar discectomy.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with contained lumbar disc herniation.

Setting
The study was conducted in hospital, Liverpool, UK.

Dates to which data relate
It is not stated when the effectiveness and resource data were collected. 1992 prices were used.

Source of effectiveness data
Single study.

Link between effectiveness and cost data
The costing was undertaken retrospectively on the same patient sample as that used in the effectiveness study.

Study sample
The trial intended to analyse 160 patients with contained lumbar disc herniation but ended when the clinicians were satisfied that microdiscectomy produced significantly superior results to APLD. Therefore, 71 patients had been admitted to the trial: 40 randomized to the microdiscectomy group and 31 to the APLD group. 5 patients declined to participate. 20 patients with unsatisfactory APLD underwent a follow-up microdiscectomy. One patient from the microdiscectomy group underwent a second microdiscectomy. No power calculations were given.

Study design
Randomized controlled trial, single centre study. Duration of follow-up was 6 months. Outcomes were assessed by two dimensions, out of which one was masked to the method of treatment. There was no loss to follow up on the 71
Analysis of effectiveness
The analysis of the clinical study was based on treatment completers only (71 patients). The primary health outcomes used in the analysis were final outcomes by first treatment on a four-point scale: 1 = poor, 2 = fair, 3 = good and 4 = excellent. There were no important differences in the socioeconomic backgrounds of the patient groups. Socioeconomic data were collected by questionnaire around the time of the operation and 6 months after the operation.

Effectiveness results
The final outcomes by first treatment were, after microdiscectomy vs. APLD: excellent for 10 vs. 3 patients, good for 22 vs. 19 patients, fair for 8 vs. 5 patients and poor for 0 vs 4 patients.

Clinical conclusions
Outcomes for APLD were shown to be medically inferior.

Measure of benefits used in the economic analysis
Final outcomes after first treatment classified into poor, fair, good and excellent.

Direct costs
Direct health service costs were considered: staff, drugs, disposables. Quantities and costs were not analysed separately. 1992 prices were used. Patients costs such as private costs were also considered but found to be similar for the two groups. Costs were derived from actual data (unit of analysis). Allowance was made for capital consumption and hospital overhead expenditures.

Currency
UK pounds sterling (£)

Sensitivity analysis
Not performed.

Estimated benefits used in the economic analysis
The final outcomes by first treatment were after microdiscectomy vs. APLD: excellent for 10 vs. 3 patients, good for 22 vs. 19 patients, fair for 8 vs. 5 patients and poor for 0 vs. 4 patients.

Cost results
The total cost of treatment including follow-up surgery was 71,812 for the APLD group and 62,665 for the microdiscectomy group. The average cost was 2,317 per patient in the APLD group and 1,567 in the microdiscectomy one. Diagnostic tests and other expenses before surgery were excluded as being common to both procedures.

Synthesis of costs and benefits
The average cost per microdiscectomy successful outcome (1,958) was 60% of the average cost per APLD successful outcome (3,264). Alternatively, using health points, the cost per point gained was 1,381 for APLD and 764 for microdiscectomy.
Authors' conclusions
It was demonstrated that, within the restrictions imposed by the data set, APLD was less cost-effective, and less effective clinically than microdiscectomy.

CRD Commentary
No sensitivity analysis was performed. The allocation of costs is debatable: the average cost of an initial microdiscectomy was 1,506 vs. 752 for an APLD, but the method used for calculating the cost of the final outcome, transferring costs generated by microdiscectomy to the APLD procedure might distort the final results. The statistical analysis is poor; there are no power calculations. Moreover, as the authors themselves underline, due to the small sample size, (which was further reduced when analysed by outcome groups), it was unlikely that strong conclusions would emerge from the questionnaire.

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