Hand-assisted laparoscopic living-donor nephrectomy as an alternative to traditional laparoscopic living-donor nephrectomy


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
Hand-assisted laparoscopic living-donor nephrectomy (HALDN) was compared with traditional open donor nephrectomy (ODN).

Type of intervention
Treatment (surgery).

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised donors and recipients undergoing live-donor nephrectomy and kidney transplantation.

Setting
The setting was secondary care. The economic analysis was carried out in Ohio, USA.

Dates to which data relate
The effectiveness data related to 1997 to 2001. The dates to which the resources and prices related were not reported.

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

Link between effectiveness and cost data
The costing was carried out on the same sample of patients as that used in the effectiveness study.

Study sample
No power calculations to determine the sample size were reported. The study sample comprised 100 consecutive donors who were operated on with HALDN between October 1998 and August 2001, and 50 consecutive donors who were operated on with ODN between August 1997 and January 2000. A total of 150 donors were included in the analysis.

Study design
The study was a retrospective cohort study that was conducted in a single centre. The patients appear to have been followed up until discharge.
Analysis of effectiveness
All of the patients in the study were included in the analysis. The operative data and the patient recovery data were evaluated. The outcomes for donor recovery included narcotic usage and dosage, time to return to diet, time to discharge, and time to return to daily activities, driving a car and work. Operative outcomes were also included. Donor age was significantly greater in the HALDN group (38.2 +/- 9.5 years) than in the ODN group (31.2 +/- 7.8 years), (p<0.01). The mean donor weights were also similar in the two groups, 179.6 +/- 40.8 lb (HALDN) versus 167.4 +/- 30.3 lb (ODN). The percentage of right nephrectomies in the HALDN group (17%) was significantly less than in the ODN group (44%), (p<0.05).

Effectiveness results
The operative time was longer for the HALDN group (3.9 +/- 0.7 hours) than for the ODN group (2.9 +/- 0.5 hours), (p<0.01), while the ischaemia time was shorter, 3:05 (+/- 1:10) minutes versus 3:16 (+/- 0:21 minutes), (p<0.01). Two operative conversions (2%) were required in the HALDN group.

The following were significantly less in the HALDN group than in the ODN group:
- return to diet, 6.9 (+/-2.8) hours versus 25.6 (+/- 6.1) hours, (p<0.01);
- narcotics requirement, 18.4 (+/-7.8) hours versus 56.3 (+/- 6.4) hours, (p<0.01);
- amount of narcotic, 17.3 (+/- 6.9) mg morphine sulfate versus 39.6 (+/- 10.6) mg morphine sulfate, (p<0.05); and
- length of stay, 51.7 (+/- 22.2) hours versus 129.6 (+/- 65.7) hours, (p<0.01).

The following were achieved sooner in the HALDN group than in the ODN group:
- return to daily activities, 7.3 (+/-3.3) days versus 22.1 (+/- 3.2) days, (p<0.05);
- return to driving a car, 11.4 (+/- 4.6) days versus 40.9 (+/- 5.1) days, (p<0.05); and
- return to work, 29.1 (+/- 7.1) days versus 54.3 (+/- 7.9) days, (p<0.05).

Graft function in recipients was similar between the two groups (3% versus 2%). One-week Cr (1.4 +/- 0.9 g/dL versus 1.6 +/- 1.1 g/dL) and one-year creatinine (1.2 +/- 1.1 g/dL versus 1.2 +/- 1.2 g/dL) were also similar.

Clinical conclusions
HALDN provided operative and clinical advantages over ODN.

Measure of benefits used in the economic analysis
The authors did not develop a summary benefit measure. A cost-consequences analysis was therefore performed.

Direct costs
The perspective adopted was not reported. The direct costs were for operative expenses (including instruments and operating room time) and hospital costs (including hospital room and pharmacy costs). The costs and the quantities were not reported separately. The source of the quantities and costs was not reported, but it was likely to have been the authors' institution. The price year was not reported. The period of follow-up was not reported, but it was likely to have been the time from the initiation of the intervention to discharge.
Statistical analysis of costs
Statistical analyses of the costs, including Student’s t-test, were performed.

Indirect Costs
No indirect costs were included in the analysis.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

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

Cost results
The procedural costs were higher in the HALDN group ($6,071) than in the ODN group ($2,899), (p<0.05).

However, the total hospitalisation costs were not statistically different between the HALDN and the ODN groups ($11,072 versus $10,840).

Synthesis of costs and benefits
Not applicable.

Authors' conclusions
Hand-assisted laparoscopic living-donor nephrectomy (HALDN) enables grafts of similar quality to open donor grafts to be provided, while extending to the donors the advantages of a traditional LDN procedure over open donor nephrectomy (ODN), without increasing the costs.

CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparator, ODN, was clear. The comparator was chosen because it represented the technique that had been used in the authors' setting. However, the authors could have also compared HALDN with traditional LDN, which was the current alternative in their setting. You should consider whether this is a widely used technology in your own setting.

Validity of estimate of measure of effectiveness
The study design was likely to have been appropriate for the study question. The patients from the two groups were not comparable at baseline in terms of their gender and age. Further, the authors did not report that statistical analyses were undertaken to take account of potential biases and confounding factors.

Validity of estimate of measure of benefit
There was no summary measure of benefit.

Validity of estimate of costs
The perspective adopted was not reported. Details of the cost items included in the cost analysis were lacking. For example, it was unclear whether surgeon and assistant services were included in the operating expenses. The costs and the quantities were not reported separately and the price year was not reported. Both of these factors hinder the generalisability of the results. A statistical analysis of the costs was performed. Discounting was unnecessary since the costs were incurred during less than one year.

Other issues
The authors made appropriate comparisons of their findings with those from other studies. The generalisability of the results to other settings or countries was not specifically addressed. The authors did not present their results selectively. The authors did not report further limitations to their study.

Implications of the study
The authors did not specify any implications beyond their conclusion.

Source of funding
None stated.

Bibliographic details

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Activities of Daily Living; Comparative Study; Costs and Cost Analysis; Humans; Kidney Transplantation /methods /physiology; Laparoscopy /economics /methods; Length of Stay; Living Donors; Nephrectomy /economics /methods; Ohio; Pain, Postoperative /drug therapy /epidemiology; Posture; Time Factors

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