Adult endopyelotomy: impact of etiology and antegrade versus retrograde approach on outcome


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
Using antegrade or retrograde endopyelotomy in the treatment of patients with ureteropelvic junction obstruction (primary, secondary, calculi-related, high insertion, and impaired renal function related).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients with ureteropelvic junction obstruction (primary, secondary, calculi-related, high insertion, and impaired renal function related).

Setting
Hospital. The economic study was carried out in the USA.

Dates to which data relate
Effectiveness and resource use data corresponded to patients treated between October 1989 and May 1996. The price year was not explicitly specified.

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

Link between effectiveness and cost data
Costing was retrospectively performed on the same patient sample as that used in the effectiveness analysis.

Study sample
Power calculations were not used to determine the sample size. 83 patients underwent antegrade endopyelotomy versus 66 who underwent retrograde endopyelotomy. The study sample consisted of 149 patients (83 women and 66 men) with an average age of 44.2 years (range: 17 - 90). 109 patients had primary ureteropelvic junction obstruction versus 49 with secondary ureteropelvic junction obstruction.

Study design
This was a retrospective cohort study, carried out in a single institution. The mean subjective follow-up was 30 months for patients undergone antegrade endopyelotomy and 25 months for those undergoing retrograde endopyelotomy. Patients were followed up for 13 and 19 months, respectively. Loss to follow-up was not reported.

Analysis of effectiveness
The health outcome measures were subjective and objective success rates, and complication rates. An analog pain scale was used for subjective assessment based on an office visit and mailed or telephoned questionnaire, while objective evaluation relied on renal scan, excretory urography or Whitaker test.

Effectiveness results
Effectiveness results are shown below:

Patients with primary noncalculous ureteropelvic junction obstruction.
Subjective success rates: antegrade group, 90%; retrograde group, 85%.
Objective success rates: antegrade, 89%; retrograde, 71%.
Complication rates: antegrade, 25%; retrograde 14%.

Patients with secondary noncalculous ureteropelvic junction obstruction.
Subjective success rates: antegrade, 87%; retrograde, 77%.
Objective success rate: antegrade, 86%, retrograde, 83%.
Complication rates: antegrade, 26%, retrograde, 0%.

Patients with ureteropelvic junction obstruction and renal calculi.
Primary group (n=17).
Subjective success rate, 94%; objective success rate, 93%.
Secondary group (n=3).
Subjective success rate, 100%; objective success rate, 100%.

Endopyelotomy for high insertion ureteropelvic junction obstruction.
Retrograde group (n=8).
Subjective success rate: 75%, objective success rate, 63%.
Antegrade group (n=2).
Subjective success rate: 100%; objective success rate, 100%.

Clinical conclusions
Antegrade endopyelotomy tended to provide a better objective success (89 versus 73%) for primary noncalculous ureteropelvic junction obstruction. For secondary noncalculous ureteropelvic junction obstruction retrograde endopyelotomy tended to provide a better objective success rate (83% versus 77%). In patients with concomitant stones antegrade endopyelotomy produced excellent results, equivalent to open pyeloplasty.
Measure of benefits used in the economic analysis
The benefit measure was treatment success rate.

Direct costs
Costs were not discounted since they seemed to incorporate only components associated with operations and subsequent hospital stays. Some quantities (mean operating room time and mean hospital stay) were reported separately from the costs. Cost components were reported separately. Cost analysis covered the costs associated with professional services, hospital facilities, and retreatment for failed cases (use of an open pyeloplasty). The perspective adopted in the cost analysis was not explicitly specified. Charges were used as a proxy for true costs. Price data referred to the period from 1989 to 1996 and no adjustments were made for inflation. The cost analysis did not cover the costs associated with pre-stenting for retrograde endopyelotomy because the current 5F cutting balloon device precluded this requirement.

Statistical analysis of costs
Statistical analysis was performed on operating room time and hospital stay using t test or Mann-Whitney U test, as required. No statistical analyses were performed on the product of unit costs and resource use quantities.

Indirect Costs
Indirect costs were not included.

Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was carried out.

Estimated benefits used in the economic analysis
The treatment success rate for patients with noncalculous primary ureteropelvic junction obstruction was 0.89 for the antegrade group versus 0.73 for the retrograde group. The corresponding values for the patients with noncalculous secondary ureteropelvic junction obstruction were 0.77 and 0.83.

Cost results
The total treatment cost (TTC) for patients with noncalculous primary ureteropelvic junction obstruction was $19,860 for the antegrade group versus $15,987 for the retrograde group. The corresponding costs for the patients with noncalculous secondary ureteropelvic junction obstruction were $22,329 and $14,161.

Synthesis of costs and benefits
Costs and benefits were not combined.

Authors' conclusions
Antegrade endopyelotomy is the preferred approach in patients with primary ureteropelvic junction obstruction and concomitant renal calculi (13.4% of cases), and may also be preferable in patients with high insertion obstruction (6.7%). For all other primary and all secondary ureteropelvic junction obstruction, antegrade and retrograde endopyelotomy is effective therapy yet retrograde endopyelotomy results in shorter operating room time, shorter hospital stay, fewer complications and significantly less expense to achieve the desired outcome.
CRD COMMENTARY - Selection of comparators

No specific health technology was regarded as the comparator since both approaches were reported to be established for endopyelotomy at the time of the study.

Validity of estimate of measure of benefit

The internal validity of the effectiveness results cannot be assured due to the retrospective nature of the study design, the fact that the procedures were not performed at the same time, and the effects of confounding variables.

Validity of estimate of costs

Quantities were not fully reported separately from the costs. Adequate details of the methods of cost estimation were not given. The retrospective nature of the cost analysis, the use of charge data instead of true costs and the lack of standardisation of the cost data by using a price year, may have adversely affected the internal validity of the cost calculations. Costs results may not be generalisable to other settings or countries.

Other issues

Given the limitations of the study design and the cost analysis, the study results should be interpreted with some caution. The issue of generalisability to other settings or countries was not addressed. Costs and effects were not combined, although this would have been methodologically appropriate in order to compare the two health modalities in the groups with significantly different effectiveness outcomes. Appropriate comparisons were made with other studies.

Implications of the study

An editorial comment suggested that "a prospective comparative trial be done between 2 institutions comparing results, complications and cost-effective data, which perhaps will clarify the question for the future".

Source of funding

None stated.

Bibliographic details


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Other publications of related interest


Indexing Status

Subject indexing assigned by NLM

MeSH

Adolescent; Adult; Aged; Aged, 80 and over; Female; Humans; Kidney Pelvis; Male; Middle Aged; Nephrostomy, Percutaneous; Retrospective Studies; Treatment Outcome; Ureteral Obstruction /etiology /therapy

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