Vasoepididymostomy for vasectomy reversal: a critical assessment in the era of intracytoplasmic sperm injection

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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
Vasoepididymostomy for vasectomy reversal.

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
Patients undergoing treatment for vasectomy reversal and for epididymal obstruction secondary to vasectomy (obstructive azoospermia).

Setting
Secondary care. The economic study was conducted in Cleveland, Ohio, USA.

Dates to which data relate
Results in patients who underwent vasoepididymostomy for vasectomy reversal in the authors’ institution (between January 1979 and August 1995) were compared to those reported previously (in 4 studies published between 1994 and 1995) for microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection performed for obstructive azoospermia. Cost dates were not explicitly stated.

Source of effectiveness data
The authors used their own study, and also a synthesis of previously published studies, in order to obtain the effectiveness data.

Link between effectiveness and cost data
Costing was undertaken on the same patient sample as that used in the effectiveness analysis for vasoepididymostomy, but there is no link between the effectiveness and the cost data for microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection.

Study sample
A total of 55 men underwent 58 vasoepididymostomies in an attempt to restore fertility after vasectomy. No power calculations relating to the sample size were performed.
Study design
The study was a retrospective case series. Median follow-up was 19 months.

Analysis of effectiveness
The main health outcomes used in the analysis were patency, pregnancy, delivery and complication rates.

Effectiveness results
The patency rate after 6 months was 85%. Of the couples, 20 achieved 24 pregnancies and 16 had 17 births. The pregnancy rate at 1 year was 44%. There were 4 miscarriages and 3 ongoing pregnancies. The live delivery rate was 36%. There were no major complications.

Clinical conclusions
The success of vasoepididymostomy depends partly on the experience of the surgeon.

Modelling
Not performed.

Outcomes assessed in the review
Pregnancy, delivery and complication rates were also derived from a review of previous studies.

Study designs and other criteria for inclusion in the review
Studies on microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection performed for obstructive azoospermia were considered relevant.

Sources searched to identify primary studies
Not stated.

Criteria used to ensure the validity of primary studies
Not stated.

Methods used to judge relevance and validity, and for extracting data
Not stated.

Number of primary studies included
For pregnancy rates, 4 studies dealing with microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection performed for obstructive azoospermia were included, and 3 studies dealing with the complications of assisted reproductive technologies were included for complication rates.

Methods of combining primary studies
The method of combination of primary studies was not stated.

Investigation of differences between primary studies
Not performed.
Results of the review
The overall pregnancy rate was found to be 56% and the overall delivery rate 29%. Major complications were found to be rare; the incidence of twins and triplets in assisted reproductive technique pregnancies used in the calculations was 20% and 2% respectively, versus 0.7% and 0.01% respectively, in natural pregnancies.

Measure of benefits used in the economic analysis
The measure of benefits used in the economic analysis was the rate of live delivery.

Direct costs
Direct health service costs were considered, such as the standard (all inclusive) fee for vasoepididymostomy and for intracytoplasmatic sperm injection at the authors' institution. The median cost for microsurgical epididymal sperm aspiration was also based on the financial records compiled at the authors' institution. Normal delivery costs and cost of complications were obtained from reported estimates. Price dates were not stated. Resource quantities were not reported.

Statistical analysis of costs
Not performed.

Indirect Costs
Time off work was assumed to be 2 weeks for both procedures; time off work secondary to multiple births and their complications was assumed to be 4 weeks. A 40-hour work week at $11 per hour was used to calculate indirect costs.

Currency
US dollars ($).

Estimated benefits used in the economic analysis
There were 17 live deliveries in the vasoepididymostomy group, representing a 36% live delivery rate, while for the comparator group the rate was 29%.

Cost results
Total cost of vasoepididymostomy was $8,500. For the other procedures (microsurgical epididymal sperm aspiration and intracytoplasmatic sperm injection) the total cost was $10,213.

Synthesis of costs and benefits
The cost per new-born was $31,099 for vasoepididymostomy versus $51,024 for microsurgical epididymal sperm aspiration and intracytoplasmatic sperm injection.

Authors' conclusions
Vasoepididymostomy is more successful and more cost-effective than microsurgical epididymal sperm aspiration and intracytoplasmatic sperm injection for vasectomy reversal. It does not expose women to complications in the treatment of a male problem and it is indicated for treatment of epididymal obstruction secondary to vasectomy. Microsurgical epididymal sperm aspiration and intracytoplasmatic sperm injection should be reserved for cases not amenable to surgical reconstruction.
CRD COMMENTARY - Selection of comparators
The reason for the choice of the comparators (vasoepididymostomy vs. microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection) is clear, as both were used in the authors' setting. You, as a database user, should consider if this applies to your own setting.

Validity of estimate of measure of benefit
Some of the effectiveness results were based on literature review, but, as there is no evidence of a systematic search of the literature, it is not clear to what extent all relevant studies were included.

Validity of estimate of costs
The authors provided scarce details relating to the cost composition (mainly for direct costs). Whilst the standard fee for the two procedures was used, details of its composition were not given and it is, therefore, difficult to judge if any important cost elements were omitted.

Other issues
The main weakness of the study lies in the literature review. No details are given regarding the criteria used to judge the validity of the studies included in the review.

Implications of the study
A randomised controlled trial is needed to assess the cost-effectiveness of vasoepididymostomy versus microsurgical epididymal sperm aspiration and intracytoplasmic sperm injection.

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