Primary urethral reconstruction: the cost minimized approach to the bulbous urethral stricture

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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 study compared two different treatments for urethral stricture, direct vision internal urethrotomy (DVIU) and open reconstruction in the form of stricture excision and primary anastomosis (EPA).

Type of intervention
Treatment.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised a hypothetical cohort of patients with a 2-cm bulbous urethral stricture.

Setting
The study setting was secondary care. The economic analysis was conducted in the USA.

Dates to which data relate
The effectiveness data were derived from studies published between 1983 and 2002. The price year was 2002.

Source of effectiveness data
The effectiveness data were derived from published studies as well as information obtained from the authors’ large institutional cohort. However, no further details of this cohort were reported in the study.

Modelling
A decision tree was constructed to include the most common and clinically relevant outcomes. In the model, stricture recurrence after DVIU was regarded as treatment failure, while further treatment involved open urethral construction rather than repeat urethrotomy.

Outcomes assessed in the review
The outcomes assessed were:

the success of DVIU and EPA;

the rate of complications after DVIU, including bleeding, fever, urinary tract infection, erectile dysfunction and incontinence; and
the rate of complications after EPA, including wound complications, thromboembolism, permanent neurapraxia, back pain and compartment syndrome.

**Study designs and other criteria for inclusion in the review**
To evaluate the success of DVIU and EPA only, studies with at least 4 years of follow-up were included in the review.

**Sources searched to identify primary studies**
Not reported.

**Criteria used to ensure the validity of primary studies**
Not reported.

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

**Number of primary studies included**
Fourteen studies were included in the review.

**Methods of combining primary studies**
Not reported.

**Investigation of differences between primary studies**
The authors did not report whether differences between the primary studies were investigated.

**Results of the review**
The success rate was 27% (range: 18 - 49) for DVIU and 96% (range: 93 - 100) for EPA.

The complication rates associated with DVIU were bleeding 6.1%, fever 1.5%, urinary tract infection 10.4%, and less than 1% for each of erectile dysfunction and incontinence.

The complication rates associated with EPA were wound complications 2.1%, thromboembolism 2.3%, and less than 1% for each of permanent neurapraxia, back pain and compartment syndrome.

**Measure of benefits used in the economic analysis**
No measure of benefits was used in the economic analysis. However, from the review of the literature, the authors established that EPA was more effective than DVIU as it had a higher success rate.

**Direct costs**
The costs included in the analysis were those to the third-party payer. These comprised surgeons’ fees, hospital and operative costs, and the cost of follow-up procedures and complications. Surgeons’ fees were derived from standard Medicare reimbursements. Financial data from a general hospital were used to determine the average cost per procedure and the cost for each complication arising. As the authors did not report the timeframe of their analysis, it was unclear if discounting was relevant. The study reported the average and incremental costs. The price year was 2002.
Statistical analysis of costs
The costs were reported as point estimates (i.e. the data were deterministic).

Indirect Costs
The indirect costs were not included.

Currency
US dollars ($).

Sensitivity analysis
Numerous sensitivity analyses were performed to test decision tree imprecision and to confirm the results across all clinically relevant cost and adverse effect variables.

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

Cost results
The mean cost per patient was $17,748 for the DVIU strategy and $16,444 for treatment with EPA.

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

The sensitivity analysis of the risk of stricture recurrence after DVIU demonstrated that after the probability of recurrence became less than 60%, DVIU became the preferred treatment option. The sensitivity analysis of the probability of significant lithotomy complications revealed that EPA would remain the least costly option as long as the lithotomy complication rate remained below 24%. Initial stricture treatment with EPA remained the most cost-saving option as long as its success remained above 71%.

Authors' conclusions
Primary reconstruction was less costly for the treatment of short segment bulbous urethral strictures than direct visual internal urethrotomy (DVIU).

CRD COMMENTARY - Selection of comparators
A justification was given for using DVIU as the comparator. It is the standard and widely applied procedure for urethral stricture disease. You should decide if the comparator used represents current practice in your own setting.

Validity of estimate of measure of effectiveness
The authors reported that an extensive review of the literature was performed to identify relevant research. They also reported that clinical probability estimates were derived from a large cohort, details of which they did not report. The authors failed to report the methodology of their review and the sources searched. However, the clinical studies included all had follow-up of more than 4 years, which will give more reliable estimates of the outcomes of both treatment options. In addition, the authors varied all probabilities derived from the literature in a sensitivity analysis. However, it was difficult to ascertain whether the best available evidence had been used to inform this analysis.

Validity of estimate of measure of benefit
No measure of benefits was used in the economic analysis. However, from the review of the literature, the authors established that EPA was more effective than DVIU as it had a higher success rate, as determined by no stricture recurrence.

**Validity of estimate of costs**
All the categories of cost relevant to the perspective adopted were included in the analysis. No major cost components appear to have been omitted from the analysis. The costs and the quantities were not reported separately, which will hamper the generalisability of the authors' results. The costs were derived from Medicare reimbursements (surgeons' fees) and from the authors' settings. Appropriate sensitivity analyses of the costs were performed. The authors did not discount the costs, although it was unclear if discounting was relevant since the authors did not report the timeframe of the analysis. The price year was reported, which will aid any possible inflation exercises.

**Other issues**
The authors did not compare their findings with those from other studies. The issue of generalisability to other settings was not addressed. The authors do not appear to have presented their results selectively and their conclusions reflected the scope of the analysis. However, the authors should also have modelled the benefits from each of the two treatment options. The authors did not report any limitations to their study.

**Implications of the study**
The authors reported that, from a financial standpoint, urethral reconstruction should be considered over DVIU in the majority of clinical circumstances.

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None stated.

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**Other publications of related interest**


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