Dorsal onlay versus ventral onlay urethroplasty for anterior urethral stricture: a meta-analysis


CRD summary
This review concluded that dorsal onlay was better than ventral onlay in free skin graft urethroplasty in males with anterior urethral stricture. Bulbar urethra was the most suitable site for graft onlay urethroplasty. Possible inappropriate pooling and possible sources of bias and error suggest these conclusions should be viewed with caution.

Authors' objectives
To compare dorsal onlay urethroplasty (DOU) to ventral onlay urethroplasty (VOU) in males with anterior urethral stricture.

Searching
MEDLINE, EMBASE and The Cochrane Library were searched to October 2007. Search terms were reported. Reference lists of selected papers were searched for additional studies.

Study selection
Studies of free graft DOU or VOU for treatment of anterior urethral stricture in men were eligible for inclusion. Studies of hypospadias therapy, graft tubing urethroplasty and female urethral stricture were excluded, as were studies in which fewer than 80% of patients were followed-up. Successful treatment was defined as no obstruction of the urethra and no complications that needed surgery. Included patients had a bulbar and/or pendulous stricture site. The grafts included were bladder mucosa, skin, buccal mucosa or extracellular matrix (for example, small intestinal submucosa).

Two reviewers selected studies for inclusion and disagreements were resolved by discussion.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Complication rates and success rates were extracted as percentages.

The number of reviewers that performed data extraction was not reported.

Methods of synthesis
Total success rates were calculated for dorsal onlay and ventral onlay for different graft types and among different sites of the anterior urethra. These were compared using Pearson’s $X^2$ tests. Heterogeneity between studies was not formally assessed.

Results of the review
Forty-nine studies were included in the review (n=1,263; range one to 89): 27 studies of VOU; 17 of DOU; and five that included patients with both VOU and DOU.

The success rate of VOU (n=750) was 82.5% and DOU (n=513) was 86.9% (p=0.034). Reasons for failure were provided.

Buccal mucosa graft (n=699) had a significantly higher combined success rate (88.1%) than skin graft (p<0.001), extracellular matrix graft (p=0.013) and bladder mucosa graft (p=0.026). The success rate was significantly higher for DOU (84.7%; n=170) than VOU (74.7%; n=221) for free skin graft (p=0.016). There was no significant difference in
success rates between DOU and VOU techniques for buccal mucosa or extracellular matrix grafts; all bladder mucosa grafts used VOU.

There were higher success rates with bulbar urethral stricture (87.4%; n=761) than with pendulous urethral stricture (77.6%; n=125) (p=0.019). The DOU (90.0%; n=391) success rate was significantly higher than VOU (84.6%; n=370) for bulbar urethral stricture (p=0.024); there was no significant difference in success rates between DOU and VOU for pendulous urethral stricture and pan-anterior urethral structure.

Authors' conclusions
Dorsal onlay was better than ventral onlay in free skin graft urethroplasty. Bulbar urethra was the most suitable site for graft onlay urethroplasty. Buccal mucosa graft was helpful for achieving good results.

CRD commentary
The research question was supported by inclusion criteria for intervention, comparator and participants. The authors did not report whether language restrictions were applied, the possibility of language bias could not be ruled out. As the authors did not attempt to identify unpublished studies and publication bias was not assessed formally or informally, the possibility that studies were missed could not be ruled out. Two reviewers were involved in study selection, which reduced risks of error and bias; it was not reported whether similar steps were taken for data extraction. The authors did not state that they assessed validity and so the reliability of the results of the primary studies was unknown. Few details of the primary studies were reported (such as types of study design, follow-up and definitions of success), which would have assisted in the interpretation of results. Study samples generally appeared small. Success rates from different studies were combined, but there appeared to be no assessment of comparability of these studies. Simple pooling to produce percentage success rates was used and heterogeneity was not assessed; pooling may not have been appropriate. As pooling may not have been appropriate and there were possible sources of bias and error in the review process, the authors' conclusions should be viewed with caution.

Implications of the review for practice and research
Practice: The authors stated that DOU for the pendulous urethra may be a better choice. DOU and VOU were both good techniques for treatment of bulbar urethra. The technique used should depend on the judgement of the urologist.

Research: The authors stated that further research was needed before urologists started commonly using extracellular matrix augmentation onlay urethroplasty. Long-term follow-up was needed to confirm long-term effectiveness of this surgery.

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