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ACCURACY OF TRANSURETHRAL ENDOSCOPIC AND ULTRASOUND GUIDED INJECTIONS OF BULKING AGENTS

Hypothesis / aims of study
Transurethral injections of a variety of bulking agents under endoscopic view are widely used to treat urinary incontinence. In an experimental study the precision of endoscopic as well of ultrasound guided injections was investigated.

Study design, materials and methods
Bovine collagen was marked with Indian ink and injected into the lower urinary tract in 20 dead female pigs. In each pig 5 depots of marked collagen were injected. In 5 pigs collagen was injected into the urethral wall under endoscopic control (group I). In the second group collagen depots were injected periurethrally under endosocopic control. In 5 pigs collagen was injected into the urethral wall under sonographic control (group III). In the fourth group collagen depots were injected periurethrally under sonographic control. A transurethral ultrasound probe (23 F) and injection device were used for transurethral ultrasound guided injections. In all pigs the urethra and the periurethral tissue were removed after injection and investigated by means of anatomical preparations and histological sections.

Results
In 2 pigs of group I only 2 depots were actually located in the urethral wall (2 out of 25 depots, 8%). In 2 pigs of group II 5 depots could be found in the urethral wall (5 out of 25 depots, 20%). The periurethral collagen depots were found to spread out in the loose connective and fat tissue around the urethra. In group III all ultrasound guided injections of collagen were situated in the urethral wall, in group IV all were located periurethrally.

Interpretation of results
The present study demonstrates that endoscopic injection of bulking agents is an inaccurate technique. Ultrasound guided injection of bulking agents is much more precise. This technique enables excellent control of the therapeutic procedure.

Concluding message
For application of cells or other materials into the urethra and the rhabdosphincter endoscopic injection techniques are inadequate, while transurethral ultrasound guided application represents an ideal injection technique.