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Title: SUBMUCOSAL COLLAGEN INJECTIONS FOR THE TREATMENT OF URINARY INCONTINENCE IN PATIENTS WITH NEUROGENIC LOWER URINARY TRACT DYSFUNCTION

Aims of Study:

Effective treatment options for urinary incontinence due to incompetence of the bladder neck or sphincter mechanism in patients with neurogenic lower urinary tract dysfunction are scarce. A manifold of surgical procedures, of which the implantation of an artificial sphincter is the most promising, are beneficial in selected cases, but the incidence of complications is high in this specific patient group. Bulking injections of bio-degradable cross-linked bovine collagen might provide an alternative in poor candidates for open surgery [1,2].

Material and methods:

Between February 1993 and March 2000, fifteen men and thirteen women (mean age 48.8 years; range 18-78 years) with neurogenic lower urinary tract dysfunction and incontinence were treated by endoscopic suburethral injection of GAX collagen at the bladder neck (7), the sphincteric area (8) or combined (13) to induce urethral coaptation. Two injections were made, one each in the 3 and 9 o'clock position, and in few cases a third in the 12 o'clock position. The total volume of collagen injected was between 1 and 9 ml. The outcome of the procedure was related to pre- and postoperative clinical and urodynamic data. Follow-up data were available in 23 patients, the mean follow-up duration was 23 months (range 2½-82).

Results:

The main duration of the neurogenic lesion at the time of surgery was 15.8 years (range 4 months to 44 years). Pre-operatively, 18 patients had reflex or spontaneous voiding, five performed aseptic intermittent catheterisation, three used an indwelling catheter, and two emptied their bladder in the pads. For the management of the incontinence 14 more patients used pads, and six used penile sheaths. Incontinence severity was clinically light in six patients, moderate in eight, and severe in 14 patients.

A second intervention became necessary in 19 patients after an average of 6.4 months (range 0.6-37.6). Seven patients underwent a third intervention at average 3.3 months (range 0.4-8.1) after the second, and 3 patients a fourth at a mean of 4.3 months (range 3.6-4.6) after the third. In all, 57 interventions were done in our patients for an average of two.

After the first intervention the incontinence condition had improved in 14 patients and deteriorated in nine. Four patients were completely continent, eight had only light, nine moderate, and three severe incontinence. Four patients were lost for follow-up. After the second injection in 19 patients, the incontinence condition improved in 11 and was worse in 8. The third injection in seven patients ameliorated the incontinence in three, the condition worsened in another three. The fourth injection in 3 patients did not

change their incontinence condition.

The urodynamic parameters — maximal bladder capacity, compliance, maximal detrusor pressure during voiding, leak point volume, and residual urine — did not change considerably, except for the increase of residual volume, as expected.

Reflux developed in four patients, but did not necessitate specific treatment: one grade I on the right side after four collagen treatments; and three grade III's, one right-sided, one left-sided, and one on both sides. At the final follow-up in 23 available patients, 15 had undergone other procedures for incontinence treatment, seven had an artificial sphincter, two a fascia sling, and six a suprapubic catheter. From the remaining eight patients, two used acetylcholine as an accessory drug treatment.

Conclusion:

Although the first impression of the result of collagen injection is positive in that half of the patients improve in their incontinence condition, we could not find any enduring improvement in this patient group. A second intervention may again bring about a temporary improvement, but a third or fourth intervention appear to be void of effect.

One causal reason for these disappointing results may be that too little collagen has been applied. Another cause may be that many of the patients do perform aseptic intermittent catheterisation after the procedure also. This might speed up the shrinking of the collagen bulges around the urethra.

On the basis of these dates, we would discourage the use of collagen injections for the treatment in this patient group, perhaps with the exception of the milder grades of incontinence and for patients in whom other interventions are contra-indicated.

References:

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- Nataluk EA, Assimos DG, Kroovand RL. Collagen injections for treatment of urinary incontinence secondary to intrinsic sphincter deficiency. *J Endourol* 1995; 9: 403-406.