413

Y. Igawa, H. Kato, O. Ishizuka, O. Nishizawa and *J. Fukui

Department of Urology, Shinshu University School of Medicine, Matsumoto and *Department of Urology, St. Luke International Hospital, Tokyo, Japan

A NEW URETHRAL LENGTHENING PROCEDURE USING INTESTINAL TUBE FOR SPHINCTERIC INCONTINENCE IN PATIENTS WITH MYELOMENINGOCELE

AIMS OF STUDY

Urinary incontinence is a common urological problem, especially in the myelomeningocele population. Kropp and Angwafo (1) presented a urethral lengthening procedure using a bladder tube for neurogenic incontinence and later several others (2-4) modified this procedure. However, bladder wall of those patients is often too thickened and rigid to be used as a neourethra implanted into the bladder through a submucosal tunnel. Since the Mitrofanoff principle (5) has been accepted as a procedure providing an excellent flap valve mechanism, we applied the principle to urethral lengthening and attempted to create a continent neourethra by using an intestinal tube. In the present study, we report our first experience with this new procedure and its urodynamic effects.

METHODS

Six patients (3 male and 3 female, 8-24 year old) with myelomeningocele underwent this new urethral lengthening procedure. Preoperative video-urodynamic study revealed that all the patients had intrinsic sphincter deficiency (Fig. 2) and poor compliant acontractile detrusor. Augmentation cystoplasty using sigmoid colon and creation of a continent appendical umbilical stoma were performed simultaneously in all patients. Two patients who had had vesicoureteral reflux underwent ureteral reimplantation at the same time. An intestinal tube as long as 6 cm was created using a tapered ileal segment in 3 patients and a transversely reconfigured sigmoid colonic segment according to the Monti procedure (6) in the remaining 3 patients. Serosal and muscle layers of the posterior and trigonal bladder wall were opened longitudinally along the mid-line to create a trough for submucosal implantation of the intestinal tube (Fig. 1A). Anterior bladder wall was opened longitudinally to the bladder neck and anterior two third of the bladder neck was divided. One end of the intestinal tube was introduced into the trigone through a mucosal hole created at the distal end of the trough and anastomosed to the urethra in an end to end manner (Fig. 1B). The opposite end of the tube was fixed at the proximal end of the trough at the posterior bladder wall as a new internal urethral meatus and the bladder wall was reapproximated over the intestinal neourethra to embed the tube submucosally. All patients were followed up and reevaluated by video-uodynamic investigations.

RESULTS

The postoperative follow up raged from 19 to 26 months. Four patients (3 male and 1 female) became dry between intermittent catheterization both day and night. The remaining two experience occasional dribble and wear a minipad.

Neither vesicoureteral reflux or uretral stricture was observed after the operation. Valsalva leak point pressure was increased in all 6 patients(Fig. 2). Urethral pressure profile revealed that the functional urethral profile length was significantly increased (Fig. 3), but the maximum urethral closure pressure did not change after the operation. No revisions directly related to the operative procedure were needed, although one male patients had difficult catheterization thruogh the urethra.

CONCLUSIONS

The present urethral lengthening procedure using an intestinal segment based on the Mitrofanoff principle provides a neouretha acting as a good continent flap valve and minimal complications without ureteral reimplantation. This procedure may be useful especially when the bladder wall is too thickened and poor compliant and thus augmentation cystoplasty is required simultaneously.

REFERENCES

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Fig. 1. Urethral lengthening procedure using an intestinal tube based on the Mitrofanoff principle.
A: Creation of a trough at the trigone and posterior bladder wall for submucosal implantation of an intestinal tube.
B: Anastomosis of the intestinal tube (neourethra) to the urethra and creation of a new internal urethral meatus at the posterior bladder wall.

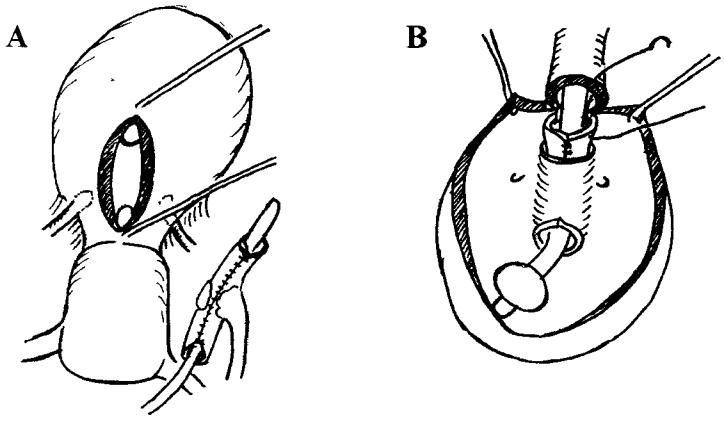
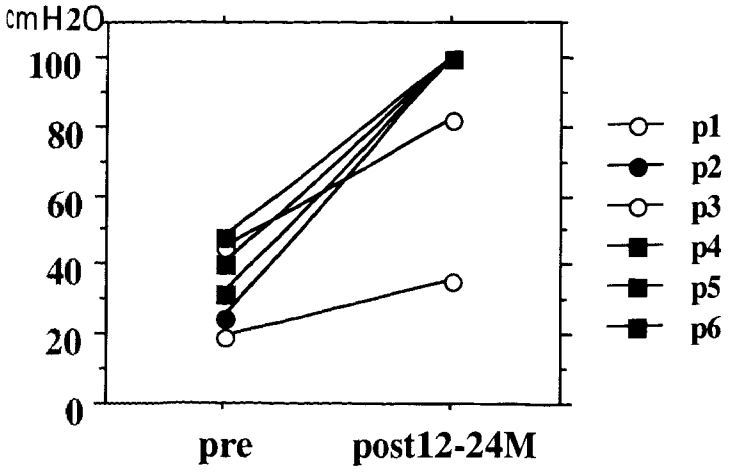
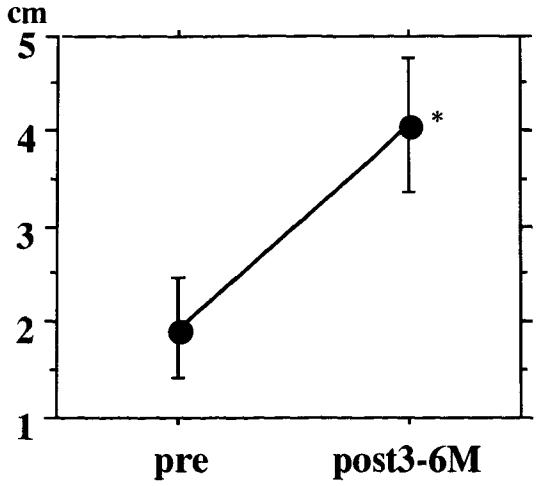


Fig. 2. Valsalva leak point pressure before and 12-24 months afetr operation



When no leakage was observed at more than 100 H_2O, the VLPP value is expressed as 100 H_2O in the figure.

Fig. 3. Functional urethral profile length before and 3-6 months after operation



*: $P < 0.01$, different from preoperative value by paired t-test