

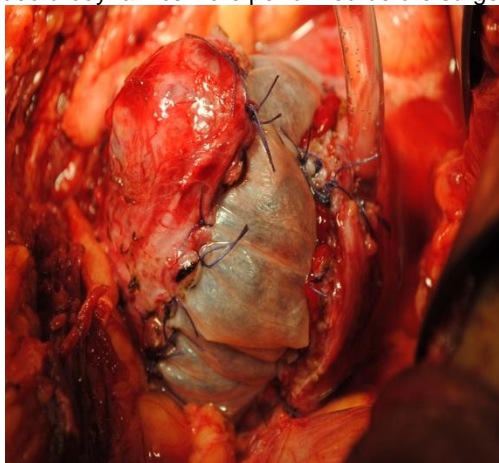
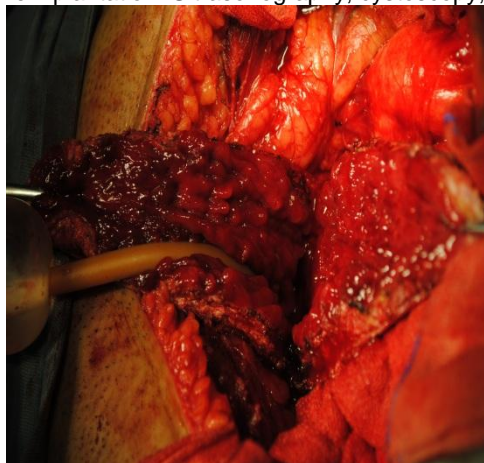
BLADDER AUGMENTATION USING SMALL INTESTINAL SUBMUCOSA: A PILOT EXPERIENCE IN SPINA BIFIDA PATIENTS

Hypothesis / aims of study

Bladder augmentation is often required in spina bifida patients to improve bladder capacity and compliance, which can protect their upper urinary tract. Recently, bladder regeneration has been demonstrated feasible by tissue engineering techniques, in vivo or in vitro. Our previously studies demonstrated that small intestinal submucosa seems to be a viable alternative to the use of intestine in the reconstruction of bladder. The aim of this study was to investigate the functional characteristics of small intestine submucosa (SIS) as bladder wall replacement in spina bifida patients' augmentation cystoplasty.

Study design, materials and methods

Three patients (1 males, 2 females), mean age 21 years, presenting poor bladder capacity and compliance and hydronephrosis after repair of meningocele, who have operative indication about sigmoid augmentation cystoplasty. All the patients agreed with the surgery program about augmentation using small intestinal submucosa (SIS) patch. Then they received ventral bladder horizontal section and two sheets of four layer of SIS (COOK®, 7×2.5cm) will be sewn to bladder with 1/0 vicryl suture material in a watertight manner (one sheet was sewn in left figure, and the other was sewn in right figure). We also did anti-reflux ureteral reimplantation. Ultrasonography, cystoscopy, video urodynamics were performed before surgery and 3 months after surgery.



Results

All patients had uneventful postoperative period. Ultrasonography found obvious improvement of hydronephrosis in three patients. Cystoscopy showed that there were no bladder stones, perforation and contracture in the new bladders of three patients. The video urodynamics examination indicated that the new bladder had larger capacity and its shape was more round. And we also found that ureter reflux had been disappeared. (table 1)

Table 1. Bladder capacity and status of reflux (pre-operation and post-operation)

Patients	Age	Sex	Capacity(ml)		Reflux	
			Pre-operation	Post-operation	Pre-operation	Post-operation
1	20	F	210	290(+38%)	Grade3,left	disappeared
2	20	F	200	300(+50%)	Grade4,right	disappeared
3	23	M	309	430(+39%)	none	none

Interpretation of results

In this study, the volume of urine which sterile intermittent catheterized per times had been increased post-operation in all the patients. The ureter reflux had been disappeared, so that the renal function had been protected post-operation. The DLPP after operation had not been compared with that of pre-operation, that because the patients had ureter reflux which made us hard to measure the exactly value of DLPP before operation. But the symptoms of leakage of urine indeed improved in all the three patients. These values achieved the effect of surgery.

Concluding message

The results obtained from this study indicate that (1) The regenerated bladder had larger capacity and no perforation and contracture (2) SIS seems to be a viable alternative to the use of intestine in the reconstruction of bladder of spina bifida patients but long-term follow-up and more detailed investigations should be carried out.

Disclosures

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