

Transurethral denudation of the bladder mucosa by a needle electrode: shedding new light on an old technique.

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INTRODUCTION

Although the procedure of denudation of the bladder mucosa was developed over 50 years to treat patients with low-grade non-muscle invasive bladder cancer, this technique was almost abandoned because of several reasons:

performed by open surgery, severe bladder hemorrhage, urinary extravasation, bladder contracture, hydronephrosis.

Recently, needle electrode proved to be a useful tool in accurate transurethral resection of bladder tumor (ATURBT).

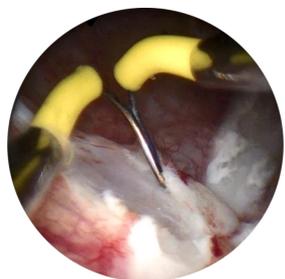
METHODS

A needle electrode was used. The edge of the mucosa planned to be stripped was marked by electrocautery with the needle tip. Then the needle was stabbed into the submucosal layer and the mucosa was stretched away from the bladder wall, followed by cutting with the electroresection current. Blunt dissection with the needle electrode was performed in the submucosal space.

Electrical energy during denudation was not used unless bleeding occurred.

Precise electrocoagulation on the bleeding point was performed by the tip of the needle. The peri-orifice mucosa as well as triangle mucosa was retained.

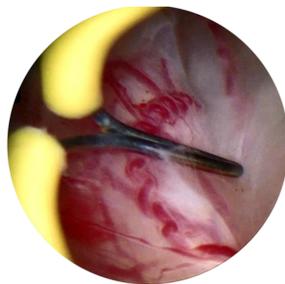
mark the targeted mucosa with the needle tip



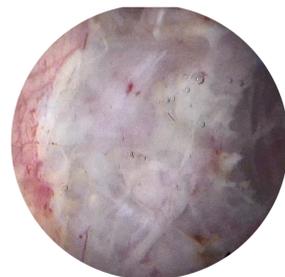
precise electrocoagulation of the bleeding spot



blunt dissection of the mucosa



tumor bed after mucosa denudation



KEY STEPS OF TRANSURETHRAL DENUDATION OF THE BLADDER MUCOSA

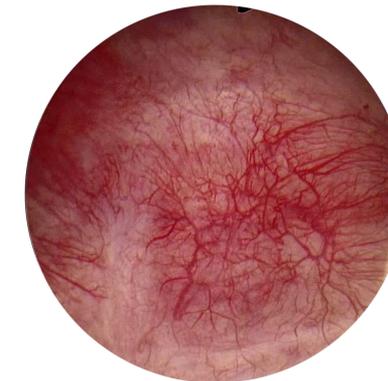
RESULTS

6 patients underwent transurethral extensive or partial mucosal denudation (more than 1/3 of the bladder mucosa). The mean denudation time was 42 ± 17 minutes. Total blood loss was less than 2 ml in every case. No bladder perforation or obturator nerve reflex occurred. The Foley catheter was removed 10-12 days post-operation. Frequency or urgency occurred in all the patients after catheter removal, but the bladder volume recovered to 312 ± 82 ml 8 weeks post-operation. Regeneration of the mucosa took place within 12 weeks as normal urothelium. No hemorrhage, urinary extravasation, bladder contracture, or hydronephrosis occurred during a mean follow-up of 10 months. One patient had tumor recurrence.

mucosa after denudation



regenerated mucosa (3 months)



			patient information		
case	gender	age	Estimated denudation area (%)	denudation time(min)	
1	M	40	30	24	
2	M	82	30	26	
3	F	63	60	34	
4	M	44	80	66	
5	F	84	60	57	
6	M	65	80	45	

CONCLUSIONS

Transurethral mucosal denudation by this novel technique could be performed simply and safely. Complications could presumably be reduced by limiting the operation to subtotal or partial stripping, and by blunt denudation without electrical energy. In addition, the peri-orifice mucosa and triangle mucosa were retained which would facilitate the mucosa regeneration.

REFERENCE

Harada N, Yano H, Ohkawa T, et al. New surgical treatment of bladder tumours: mucosal denudation of the bladder. *Br J Urol.* 1965;37(5):545-7.
 Sun S, Xu A, Chen G, et al. Re: Monopolar versus Bipolar Transurethral Resection of Bladder Tumors: A Single Center, Parallel Arm, Randomized, Controlled Trial. *J Urol.* 2015 ;193(1):371-2.
 Sun S, Xu A, Chen G, et al. Accurate transurethral resection of bladder tumor located in lateral bladder wall: a novel technique obtaining en bloc resection and obviating obturator nerve stimulation. *J Urol.* 2017; 197(4S): e708.