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Abstract

The role of anterior fibromuscular stroma (AFS) is to contract and open the bladder neck thus initiating the voiding process [1]. As a result, preserving AFS might have a positive impact on post operative continence preservation for patient undergoing prostate enucleation surgery. We recruited two groups of patients that undergone prostate enucleation from a single experience surgeon: traditional en-bloc one lobe enucleation(N=83) versus AFS-preserved prostate enucleation (N=94).

The AFS-preserved group had a significantly larger maximal VV on the first day after Foley removal than the traditional enucleation group (269cc vs 202cc, p=0.001), and this pattern continued with a larger maximal VV two weeks after discharge (356cc vs 270cc, p=0.001). Both groups had an increase in maximal VV two weeks after Foley removal, with the AFS-preserved enucleation group having a larger increase (263cc vs 356cc, p=0.0018) than the traditional enucleation group (202cc vs 271 cc, p=0.0001).

Introduction

There are several risk factors identified for post-operative incontinence after Endoscopic enucleation of prostate (EEP), such as resection ratio, PSA reduction rate, patient age, diabetes, or surgeon's experience. However, no definitive risk factor has been identified. In response, pioneering enucleation surgeons have modified their surgical technique to improve post-operative incontinence. Endo et al. proposed the "Anteroposterior dissection HoLEP," which involves early apical release of the sphincter, greatly reducing the incidence of post-operative SUI/UUI. Several modified surgical techniques based on this early apical release method have been developed, with similar long-term outcomes in IPSS and quality of life.

The anterior fibromuscular stroma (AFS) contracts to open the bladder neck and initiate the voiding process [1]. AFS injury during prostate enucleation/TURP may disrupt the synchronization between the external sphincter, AFS, and detrusor, leading to incontinence or dysfunctional voiding. To investigate the continent status of our published AFS-preserved prostate enucleation [2] patients, we evaluated their voiding volume (VV) on the first day of Foley removal and at a 2-week follow-up after discharge from the hospital.

Methods and Materials

The patients included in our study underwent prostate enucleation by a single experienced surgeon. Those who received traditional en-bloc one lobe enucleation were recruited between July 2017 and December of the same year, while those who received AFS-preserved prostate enucleation were recruited between July 2019 and December of that year. Patients' baseline demographics, including PSA, TRUS, residual urine, and uroflow study, were collected. The Foley catheter was removed on the second postoperative day morning, and patients were discharged if they exhibited smooth voiding with low residual urine. The largest voiding volume noted before discharge was recorded. Two weeks later, a regular postoperative OPD follow-up was conducted, during which we collected the largest voiding volume recorded by the patients at home during this period.

Results

We enrolled a total of 177 patients who underwent prostate enucleation: 94 patients received AFS-preserved enucleation, while 83 patients underwent traditional enucleation. Both groups had similar baseline characteristics, including age, BMI, DM, HTN, old CVA, parkinsonism, PSA, TRUS, and T zone. However, the AFS-preserved enucleation group had a higher percentage of patients taking anticoagulants compared to the traditional enucleation group (25.5% vs 7.3%, p=0.003). The AFS-preserved group had a significantly larger maximal VV on the first day after Foley removal than the traditional enucleation group (269cc vs 202cc, p=0.001), and this pattern continued with a larger maximal VV two weeks after discharge (356cc vs 270cc, p=0.001). Both groups had an increase in maximal VV two weeks after Foley removal, with the AFS-preserved enucleation group having a larger increase (263cc vs 356cc, p=0.0018) than the traditional enucleation group (202cc vs 271 cc, p=0.0001).

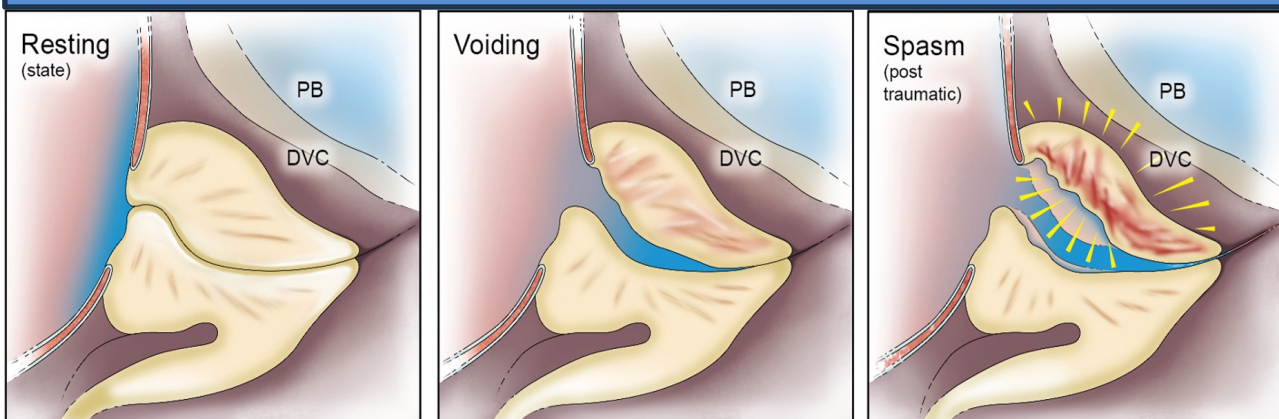
Table 1. Voiding volume after AFS preserved enucleation compared with traditional method

	AFS preserved Enucleation	Traditional Enucleation	P value
Maximal VV (ml)			
First day of Foley removal	262.9 (90-850)	202 (50-400)	<0.001
Maximal VV (ml)			
2 weeks after discharge	356.15 (100-1200)	270.8 (100-500)	<0.001
p value	0.0018	0.0001	

Discussion

Enucleation surgeons and patients are greatly concerned about the risk of urge/stress urinary incontinence following the procedure. Endo et al.'s proposal of "Anteroposterior dissection HoLEP" has significantly improved long-term urinary incontinence. Enucleation surgeons are now seeking appropriate tools to assess immediate incontinence after the procedure [3]. Urge/stress incontinence may lead to lower voiding volume, and patients may be apprehensive about urine leakage. Our AFS preserved enucleation technique [2] was compared to previous traditional enucleation methods using voiding volume, which showed a significant improvement following our surgical modification.

Figure 1. Visual illustration of the role of anterior fibromuscular stroma during resting, voiding, spasm.



Conclusions

AFS preserved endoscopic enucleation of the prostate has been found to result in better continent control, as evidenced by a larger voiding volume after Foley catheter removal. Moreover, patients tend to show an improvement in voiding volume two weeks after being discharged.

References

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