

Cost Savings Achieved through Introduction of HOLEP and Care Pathway

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Cost Savings Achieved through Introduction of HOLEP and Care Pathway

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Background

- 50% of men between ages 51-60 will develop benign prostatic hyperplasia (BPH)
- Holmium Laser Enucleation of the Prostate (HOLEP) was introduced as a safer and more efficacious surgical technique compared to the gold-standard transurethral resection of the prostate (TURP)
- HOLEP is generally performed in high-volume academic institutions due to the steep procedural learning curve and high capital costs to the institution
- Lehigh Valley Health Network (LVHN) is a large community-based institution that established a HOLEP program and care pathway aimed at lowering the costs of surgical treatment for BPH, but its effectiveness has not been measured
- This pilot study's objective is to investigate the impact on length of stay (LOS) as a source of cost savings compared to TURP in this community-hospital setting

Results

- In this study, 51 HOLEP and 155 TURP patients were identified.
- On average, HOLEP patients had a LOS that was 11.9 hours shorter than TURP patients (95%CI 4.08 to 19.7; p=0.003) and saved \$267.44 in hospital charges (95%CI -\$2.60 to \$537.49; p=0.0522; Table 1)
- At 6-weeks follow-up, HOLEP patients experienced a larger improvement in Qmax (6.9 vs 2.1 ml/s; p=0.013), decrease in PVR (-263 vs -115ml; p=0.0009), IPSS (-7.0 vs 6.2; p=0.7655), and Bother Score (-1.3 vs -1.13; p=0.7587) compared to TURP patients (Table 2)
- At 12-weeks follow-up, HOLEP patients experience a larger improvement in Qmax (7.1 vs 2.9 ml/s; p=0.0582), decrease in PVR (-264 vs -118ml; p=0.0007), and IPSS (-9.4 vs -9.0; p=0.9010), while TURP patients experienced a greater decrease Bother Score (-2.0 vs -2.3; p=0.6580; Table 2)
- HOLEP patients had higher prostatic volume resected (41.5g vs 16.5; p=0.0003).

Table 1. Mean (\pm Standard Deviation) Length of Stay and Cost Savings

	HOLEP (n = 51)	TURP (n = 155)	p-value
Length of Stay (hrs)	8.20 (\pm 8.84)	20.10 (\pm 27.84)	p=0.0030
Cost of Care	\$1766.57 (\pm \$507.38)	\$2034.01 (\pm \$933.38)	p=0.0522

Problem Statement

Can we shorten the length of stay through implementation of care pathway in HOLEP vs traditional TURP procedure, thereby lowering cost of BPH treatment, without significant differences in post-operative outcomes?

Methods

All patients undergoing HOLEP and TURP between August 6, 2015, to September 20, 2017, were identified and included in this pilot retrospective cohort study. The study protocol was approved a priori by the LVHN Institutional Review Board. The primary outcome was total hospital length of stay (LOS). Secondary outcomes were total cost, volume of tissue resected, and 6- and 12-week post-operative changes in maximum urine flow rate (Qmax), post-void residual (PVR), International Prostate Symptom Score (IPSS), and Bother Score. Data were collected independently among 4 investigators from review of electronic medical records (EMR) using standardized forms and analyzed with analysis of variance using SAS 9.4.

Table 2. Procedural Outcomes Between HOLEP and TURP Patients at 6- and 12-Week Follow-Up

	6-Week Follow-Up			12-Week Follow-Up		
	HOLEP	TURP	p-value	HOLEP	TURP	p-value
Change in Qmax (ml/s)	6.9	2.1	p=0.013	7.1	2.9	p=0.0582
Change in Post-Void Residual (ml)	-263	-115	p=0.0009	-263	-118	p=0.0007
Change in IPSS	-7.0	-6.2	p=0.7655	-9.4	-9.0	p=0.9010
Change in Bother Score	-1.3	-1.13	p=0.7587	-2.0	-2.3	p=0.6580

Conclusions and Future Implications

In this setting, HOLEP patients experienced shorter LOS and lower costs while reporting overall improved post-operative outcomes compared to TURP patients. This must be interpreted with caution, as the largest limitation to this study was incomplete data in the EMR. Many patients were lost to follow-up, possibly due to significantly improved symptoms, which highlights selection bias in the study. Prospective studies at LVHN are needed with strict patient follow-up to determine a more accurate relative impact of HOLEP.

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