Optimizing Outcomes with BPH Treatment

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Disclosure

• Consultant for American Medical Systems

Outline

• Newer Surgical Techniques
  - Modifications for Simple Prostatectomy
  - Modifications of Electrosurgical Techniques
  - Update on Laser Treatments
  - Urethral Lift
  - Water based Ablation
• Trends in Endoscopic Treatment
• Impact of Surgical Volume
• Improvements in Surgical Education

Simple Prostatectomy

• Indications
  - Large glands (>80 grams)
  - Concomitant condition (eg. Bladder stones, diverticula)
• Blood transfusions common
• Length of stay unacceptable given modern alternatives
• Significant decrease in volume of procedures done in the US

Open (Simple) Prostatectomy - Summary

• Decreasing number of procedures being performed
  - Miniscule amount of MIS
• High blood transfusion rates
• High length of stay and catheter time
• Excellent functional results
• Durable
• Still considered a major inpatient operative procedure

Transurethral Resection of the Prostate

• Considered "Gold Standard"
• Multiple Variations
  - TUVP
  - Saline Bipolar TURP
• Excellent Results for years

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Monopolar versus Bipolar

- Bipolar Transurethral Resection of the Prostate uses a bipolar electrode in saline irrigant media for resecting
- Similar results in functional outcomes with possible decreased complication rates

Transurethral Resection of the Prostate - Summary

- Multiple modalities now available
- All have problem with decreasing number of procedures being performed
  - Medical education issues
- Bipolar may be safer than monopolar
- Long-term functional outcomes with bipolar vaporization techniques unclear
  - One center dominates published literature

BPH Guidelines – Laser Therapy

Laser Therapies
- Transurethral laser ablation (monopolar laser ablation of the prostate [TURP]), transurethral microwave thermotherapy (TUMT), holmium laser enucleation of the prostate (HoLEP), transurethral side-firing laser ablation (TSLA), and photoselective vaporization of the prostate (PVP) are appropriate and effective treatment alternatives to transurethral resection of the prostate and open prostatectomy in men with moderate to severe LUTS, especially those who are significantly bothered by those symptoms. The choice of approach should be based on the patient’s presentation, existing, the surgeon’s level of training and experience, and a discussion of the potential benefit and risk for complications. Generally, transurethral laser approaches have been associated with shorter procedure time and length of stay, with comparable improvements in LUTS. There is a decreased rate of the perioperative complication of transurethral resection systems. Information concerning certain systems, including resection and controlled devices, is limited due to short followup. As with all new devices, comparison of outcomes between studies should be considered carefully given the rapid evolution in technology and power levels. Emerging evidence suggests a possible role of transurethral enucleation and laser vaporization in options for men with very large prostates (e.g., 180 g). There are insufficient data as to base comments on bleeding.

Holmium Laser Enucleation of the Prostate

- Conceptually similar to simple prostatectomy
  - Incision to adenoma made with laser
  - Cystoscopy used to separate adenoma from capsule with laser used for hemostasis
- Excellent long-term data available
  - Unfortunately, reports concentrated from a few centers
- Difficult procedure to master

Holmium Laser Enucleation - Summary

- Long-term results excellent if done in good hands
- Technique difficult to master
- Morcelator needed in addition to standard laser equipment
  - Act of morcelation results in additional operative time and morbidity
- Functional results comparable or better than TURP or simple prostatectomy

GreenLight Laser Vaporization of the Prostate

- High Power
  - Evolving: original 60W - GreenLight PV system (80W) - GreenLight HPS system (120W) - GreenLight XPS system (180W)
  - Coagulation zone depth of 1.2 mm with side-firing optical fiber in non-contact mode
    - Hemostasis ideal with this depth of coagulation
  - Long-term outcomes data available for 80-180W from multiple centers
    - Appears safer than other modalities
- Simulator introduced to flatten learning curve
- Recent randomized trial comparing 180W (XPS) to TURP
Conclusion from GOLIATH study

- TURP resulted in 5 times more surgical interventions to resolve post-operative bleeding than GreenLight XPS procedure
- Comparable results in terms of IPSS, Qmax, and complication-free after 12 months
- Patients treated with the GreenLight XPS system had a significantly shorter median length of catheterization, time until stable health, and hospitalization compared with TURP
- Comparable storage symptoms (dysuric or irritative symptoms) between treatment arms
- Overall post-operative re-intervention rates were not significantly different between treatment arms

GreenLight Laser Summary

- Technique evolved to current state
- Safety better than TURP
  - Anticoagulated patients
  - High-risk patients
- Functional outcomes similar to TURP
- Decreased catheter time and length of stay
  - Possible as outpatient
- Improvements in training make it easier to learn
  - Simulator

Other Lasers (available in the US)

- Thulium
  - Similar to Holmium
  - Enucleation and Ablation techniques
- Diode
  - Office-based
  - Deeper penetration, therefore similar to VLAP

Prostatic Urethral Lift

- Easy to perform
  - Multiple implants to desired effect
- No tissue ablation/resection
- No significant adverse events
- Long-term data needed

Prostate Urethral Lift - Summary

- Simple, easy, outpatient technique
- Urinary outcomes better than control, slightly worse than TURP
- Ejaculation preserved
- Longer term data needed to assess durability

Other Upcoming Techniques

- Aquabeam
  - Phase 1 data presented at AUA 2015
- MIST
- Prostate Artery Embolization
Recent Trends in Endoscopic Management

Contemporary Practice Patterns of Endoscopic Surgical Management for Benign Prostatic Hyperplasia Among Urologists in the United States

- TURP (and TURP-like) procedures started to increase in the mid 2000s

Surgical Volume Impact

- Surgical Learning Curve well described
  - 250 cases of radical prostatectomy needed to reach plateau
- TURP is a difficult case to learn
  - Most consider 80 cases minimum to reach plateau
  - We sought to use ACGME aggregate data to determine if training numbers are decreasing and impact on surgical adverse events

What can be done?

- Only let high volume surgeons perform procedures – those further along the learning curve
  - "Regionalization of Care"
- Improve surgical training to change the learning curve (flatten by improving starting point or steepen it by increased education)
  - Better operative training techniques (eg video or possibly dual consoles)
  - Role for surgical simulation

Simulation Technology

- Simulation used extensively in other fields
  - Aviation
  - Engineering
  - Architecture
- Has been used more sparingly in health care
  - Laporoscopy
  - Robotic surgery
  - TURP

Clinical Significant Prostate Cancer is Rarely Missed by Ablative Procedures of the Prostate in Men With Prostate Specific Antigen Less Than 4 ng/ml

- Graduating chief residents graduate with 40 cases over 4 years
- Learning curve thought to plateau at 80 cases
- Decreasing numbers leading to adverse outcomes
- Decreasing surgical volume increases complications – vicious cycle

Decreasing Electrosurgical Transurethral Resection of the Prostate Surgical Volume During Graduate Medical Education Training is Associated With Increased Surgical Adverse Events

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Structured Simulation in Training Programs

Development and implementation of centralised simulation training: evaluation of feasibility, acceptability and construct validity

- 33 Urologists and 5 nurses
- 14 half-day and 7 full day course
- Pilot project supported by BAUS
- Independent scoring

The Future of Laser Simulation

- Realistic laser-tissue interaction (tactile simulation)
  - System is based on actual laser tissue interaction data
  - Tactile and visual realism
  - University of Minnesota and AMS partnership
- Practice modules to reinforce the techniques of PVP for basic and complex case parameters for various levels of experience
- Provides ability to log, display, and report key metrics relevant to individual sessions
- User gets immediate feedback on parameters important to PVP technique

Image provided by American Medical Systems, Inc.

Summary

- Surgical management of LUTS/BPH continues to evolve
- More data available of laser techniques
- Several novel (and likely safer and easier) techniques on the way
- Surgical education improving