

# Vacuum Therapy for Erectile Dysfunction: ISSM 2014

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# Historical Perspective

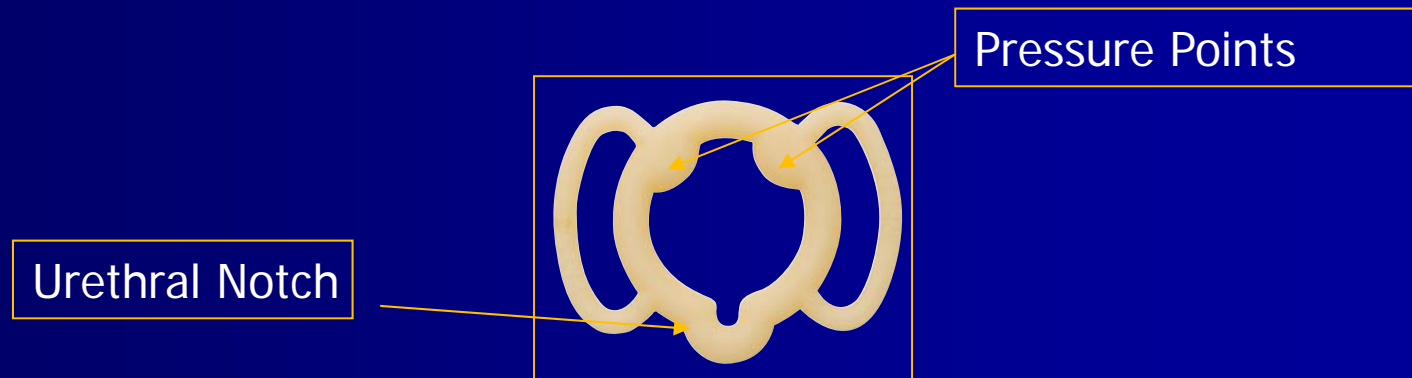
- 1874: John King : “glass exhauster”
- 1917: Otto Lederer patent : vac + ring
- 1960s: Geddings D. Osbon  
→ Erecaid (1982 FDA)
- 1996: AUA Clinical Guidelines Panel

Montague et al., J Urol 1996; 156: 2007-2011

Sadeghi-Nejad H and Seftel A (2004). Male and Female Sexual Dysfunction. Mosby.

# Mechanism of Action

- Manual vs. Automatic.
- Cylinder, pump, constriction ring
- Lubrication
- 30 minute limit



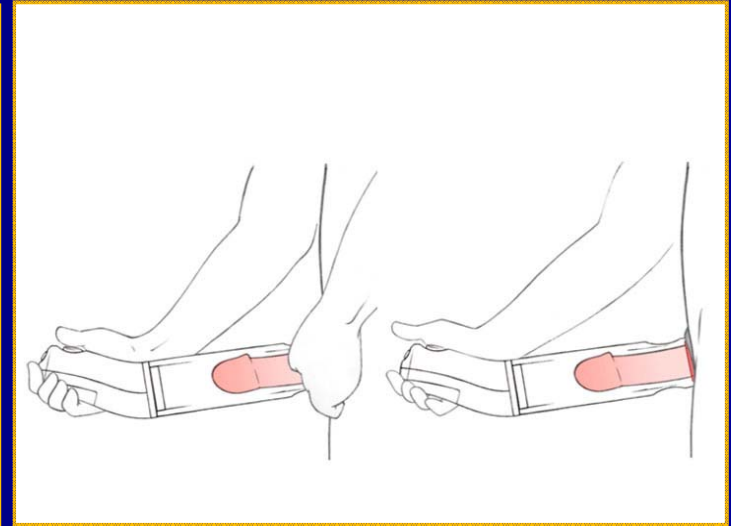
# Mechanism of Action



# VED Application

## SLOW process

- Pump → wait 3-5s → pump.
- Repeat till penis lifts of the bottom of the cylinder
- The release button may be used in between these steps to stretch the tissues more slowly.



# The Resurgence of the Vacuum Erection Device (VED) for Treatment of Erectile Dysfunction

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J Sex Med 2013;10:1124–1135

## Indications

ED including SCI, Post-prosthesis explant

- Pre-prosthesis placement, penile rehabilitation
- Second line therapy
- Combination therapy
  - (ICI, PDE5-Is, intraurethral, prostheses)

Sadeghi-Nejad H and Seftel A (2004). Male and Female Sexual Dysfunction. Mosby.

13-4745

## Survey of International Society of Sexual Medicine (ISSM) Members: Use Patterns for the Vacuum Erection Device

Thomas Facelle\*, Newark, NJ, Hossein Sadeghi-Nejad, Hackensack, NJ

To what extent do you or your practice employ the VED for the following indications?

Answer options	All the time	Often	Sometimes	Rarely	Never	Response count
Rehabilitation after RP	22%	33%	27%	8%	9%	85
ED, after PDE5i failure	7%	22%	50%	16%	5%	86
Diabetic ED	11%	16%	46%	20%	7%	85
ED, as a last option	4%	16%	44%	26%	10%	80
Spinal cord injury	4%	12%	33%	37%	13%	82
ED, first line	1%	8%	22%	41%	28%	83

Table 1: VED Use Patterns by Indication: All Respondents that Currently Prescribe VEDs

13-4745

Survey of International Society of Sexual Medicine (ISSM) Members: Use Patterns for the Vacuum Erection Device

Thomas Facelle\*, Newark, NJ, Hossein Sadeghi-Nejad, Hackensack, NJ

- **CONCLUSIONS:** Most of the respondents in this survey used the VED “All of the Time” or “Often” for post RP penile rehabilitation.
- Many use VED following PDE5i failure and for diabetic patients.
- Obstacles to VED use include, surprisingly for sexual health practitioners, lack of familiarity with the VED application technique and mechanism of function.



# Contraindications

- Spontaneous priapism history
- Penile deformities and anomalies (relative)
- Adverse events in pts on anticoagulants:  
    Similar to the general population  
    Petechiae, bruising, hematoma

# Combination Therapy: PDE5-I Nonresponders

## VED + PDE5-i salvage therapy in medication nonresponders

- n=69 (min 4-6 trials highest dose PDE5i)
- mean IIEF ↑ (9.0 to 17.6)
- 79% of SEP-2 “no” responders → “yes”
- 70% of SEP-3 “no” responders → “yes”
- 74% “moderately” or “greatly” improved  
Global Pt Assessment Scale (GPAS)

# Specific Applications: SCI

- Alternative modality to ICI & IPP
- Advocated by some as first line Rx prior to PDE5-inhibitor availability
- ~ 50% patient / partner satisfaction
- Decreased penile sensation MAY lead to higher complication rates (SQ hemorrhage, erosion, cellulitis, gangrene, ....)

Seckin et al., *Int Urol & Nephrology*, 1996; 28(2): 235-240

Denil et al., *Arch Phys med Rehabil*; 1996; 77(8): 750-753

Moemen et al, *Int J Imp Research*; 2008; 20(2): 181-187

# Specific Applications: Peyronie's Disease

## Off label use

- Inconsistent data
- Lue 1999: 4 pts + circumferential tunical incision + circular graft + VED → satisfied with outcomes
- Use without constriction ring 10 min daily  
–67% improved, 10% worsened, 23% no change

Lue T et al., J Urol, 1999; 161 (4): 1141-1144  
Hakim LS et al., J Urol. 1996; 155(2): 534-535  
Kim JH et al., J Urol 1993; 149(5)1314-1315

# Specific Applications: Peyronie's Disease

BJUI  
BJU INTERNATIONAL

The role of vacuum pump therapy to mechanically straighten the penis in Peyronie's disease

- 21 of 31 reduced curvature 5–25°
- 3 worse
- 7 no change

# Specific Applications

## Post IPP Explantation or in Combination

- **1989 Moul:** 14 explant patients. 11 used VED.  
91% : satisfactory erections & intercourse
  - 5 / 6 infection-explants successfully used VED
  - **Korenman** : similar data. Also some in combination with IPP
  - **Soderdahl:** Use of VED in combination with implants (n=12)
    - 8 IPP, 4 SR. Increased rigidity in all. 11/12 with increased length and girth.

Moul et al; J Urol. 1989; 142 (3): 729-731

Korenman et al., J Am Ger Soc. 1992; 40 (1):61-64

Soderdahl et al., Tech Urol. 1997; 3 (2)

# Specific Applications

## Penile length enhancement post-IPP

### Revision of Penile Prosthesis Surgery after Use of Penile Traction Therapy to Increase Erect Penile Length: Case Report and Review of the Literature

Daniel J. Moskovic, MA,<sup>\*†</sup> Alexander W. Pastuszak, MD, PhD,<sup>\*</sup> Larry I. Lipshultz, MD,<sup>\*</sup> and Mohit Khera, MD, MBA, MPH<sup>\*</sup>

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J Sex Med 2011;8:607–611

# Specific Applications: “Adjuvant” Rx Pre-IPP

New trend? Emerging data

- Use of VEDs 2-3 months prior to IPP
- 10 min daily stretch protocol + VED → 2-3 cm cylinder length gain at the time of implant

Sellers et al., Presented at the Fall meeting of the Sexual Med Soc North America. Toronto, Canada; Oct 16-19, 2008



# Penile Rehabilitation Post-Prostatectomy

ED rates high despite technical improvements & RARP

- Pathophysiology: Neurogenic and vasculogenic
- VED: Improved flow; ↓ fibrosis & VOD
- ↑ PSV; ↑ corporal oxygenation
- Not dependent on intact nerves for efficacy

Burnett et al., J Urol. 2007; 178: 597-601

Lehrfeld T and Lee D, Int Jour Imp Research. 2009; 21: (158-164)

# Penile Rehabilitation Post-Prostatectomy

- ~ 30% discontinue PDE5-I Rx < 2 mo post-op
  - F/U of 77 men who had NSRAP and enrolled in rehab protocol
- An additional ~ 40% discontinue by 6 mo
- \$ main reason for non-compliance in 65%

# Penile Rehabilitation Post-Prostatectomy

Post-op 15-20% penile shortening possible

➤ 68% - 71% of pts in 2 series experienced ↓ stretched length

➤ 2006: VED 5 min QOD 9 mo post-op:

➤ 23% of VED group vs. 85% of non-VED group reported reduced length and girth

❖ Maximal penile shrinkage occurs within the first few months in the post-op period

Munding et al., Urology. 2001; 58: 567-569

Savoie et al., J Urol, 2003; 169(4). 1462-1464

Gontero et al. J Urol. 2007; 178(2): 602-607

# Penile Rehabilitation Post-Prostatectomy

109 post prostatectomy pts randomized

- Early VED daily (n=74) vs. no Rx
- Spontaneous erections in 17% of VED group at 9 mo (vs. 11%)
- Early vs. late intervention results:
  - 1 mo vs. 6 mo post-op:
    - Improved with early intervention

Raina et al., Int J Imp Research. 2006; 18 (1): 77-81.

Kohler et al., BJU Int. 2007; 100 (4): 858-862.

# Penile Rehabilitation Post-Prostatectomy

Possible suggested protocol:

Daily VED after catheter removal

Use constriction ring for intercourse

30 days: replace VED with PDE5-i if  
erection achieved

Stop after return of spontaneous erections

# Penile Rehabilitation Post-Prostatectomy

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Long-term potency after early use of a vacuum erection device following radical prostatectomy

Rupesh Raina, Geetu Pahlajani, Ashok Agarwal, Stephen Jones and  
Craig Zippe

*Department of Urology, Case Medical Center, Cleveland, OH, USA*

Accepted for publication 12 January 2010

Despite current phosphodiesterase-5 inhibitor treatments for ED, VED is becoming recognized again as having a primary role in early penile rehabilitation ...

# Penile Rehabilitation Post-Prostatectomy

**Penile rehabilitation with a vacuum erectile device in an animal model is related to an antihypoxic mechanism: blood gas evidence**

Hao-Cheng Lin, Wen-Li Yang, Jun-Lan Zhang, Yu-Tian Dai<sup>1</sup> and Run Wang

- (↑) cavernous blood O<sub>2</sub> saturation in rat model
- VED preserves penile size in rats with bilateral cavernous nerve crush injury (4 weeks therapy)

# Penile Rehabilitation Post-Prostatectomy

A pilot study to determine penile oxygen saturation before and after vacuum therapy in patients with erectile dysfunction after radical prostatectomy.

Early penile hypoxia Post-RP → fibrosis → decrease in stretched penile length and ED

N=20

2 to 24 mo post op; 10x use 2 min

No constriction ring



# Penile Rehabilitation Post-Prostatectomy

- Mean age = 58.2 years
- Time from surgery = 12.6 months
- Avg SHIM = 7
- VED significantly (↑) both glanular and corporal oximetry
- An initial **increase of 55%** was seen in corporal oxygenation with VED use.

# Practical Matters

- Medicare part B covers around 80%.
- Many secondary plans will cover the balance but it's not guaranteed.
- Med Advantage plans usually cover the same as Medicare but can vary depending upon the insurer.
- Private plans generally provide some coverage but may require use of a local retailer to maximize benefit.

# Conclusion & Take Home Messages

- Following decline after PDE5-I availability, a resurgence
- Can be used as first-line Rx for ED
- May be an ideal first-line Rx in rehab
- Interim therapy before implant surgery may decrease length loss & fibrosis
- May be used in combination
- Non-invasive & cost effective



Thank You

Paraty Brazil  
HSN 2014