

The Chronology And Severity of Penile Sensory Changes after Plaque Incision and Grafting Surgery for Peyronie's Disease

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Background

- Peyronie's disease surgical treatment
 - Plication- various techniques
 - Penile implant
 - Plaque incision (excision) & grafting (PIG)
- Complications of PIG surgery
 - Erectile dysfunction
 - Residual deformity
 - Penile sensation changes



Penile Sensory Loss

- Dorsal nerve trauma during NVB elevation
 - Transection
 - Cautery
 - Traction



Penile Sensory Loss

Author	Year	Patient #	Graft material	Full correction	Postop ED	Sensory loss	Length loss
Kalsi	2005	113	Vein	80%	23%	-	35%
Shiohvili	2005	26	BM	92%	8%	-	15%
Levine	2003	40	HP	98%	30%	-	-
Hatzichristou	2002	17	TA	100%	0%	-	47%
Schwarzer	2003	16	TA	75%	-	-	-
Hsu	2003	24	Vein	96%	-	12%	-
Egydio	2002	33	BP	88%	0%	-	-
Sampaio	2002	40	DA	95%	15%	2.5%	-
Adeniyi	2002	51	Vein	82%	8%	-	35%
Hauck	2002	13	Vein	-	31%	-	54%
Knoll	2001	12	IS	92%	0%	0%	0%
Akkus	2001	58	Vein	86%	7%	-	22%
Teloken	2000	7	TA	86%	-	0%	-
Montorsi	2000	50	Vein	80%	6%	-	40%



Penile Sensory Loss

- Poorly documented in the literature
- Poorly characterized
- No standardized methodology for measurement
 - Self-report
 - Biothesiometry



Biothesiometer



Breda et al: Nomogram for penile biothesiometry. Eur Urol. 1991;20(1):67-9



Biothesiometry Nomogram

**TABLE 4.2 — PENILE BIOTHESIOMETRY:
AGE-ADJUSTED NOMOGRAM**

Age	No. of Patients	Right Shaft	Left Shaft	Glans Penis
17-29	15	5	5	6
30-39	22	6	6	7
40-49	31	6	6	7
50-59	31	8	8	9
60-69	10	9	9	10
70-75	9	14	14	16

This nomogram represents the upper limit (mean +3 standard deviations) of normal values for perception thresholds in a population of potent men.

Padma-Nathan H: Medical Management of Erectile Dysfunction: A Primary Care Manual, 1st ed. 1999.



Biothesiometry Nomogram

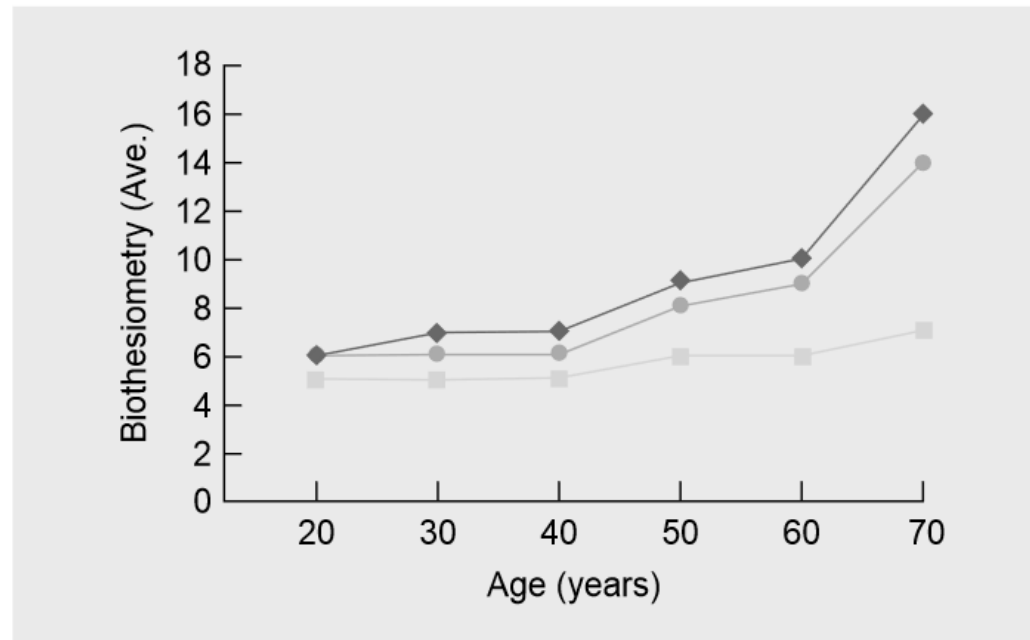


Figure 19.5 A standard nomogram for vibratory sensation and age was compiled by measurement of biothesiometry on 350 normal patients. (Courtesy of C Carson, MD.)

Carson CC et al: Textbook of Erectile Dysfunction, 2nd ed. 2009.



Aim

To define the rate, chronology and predictors of penile sensory loss following PIG surgery



Methods

- Study population
 - Men who underwent PIG surgery
 - All forms of deformity
 - Demographics, PD factors recorded

- PIG surgery
 - NVB elevation – loupe assisted
 - ≥6 months follow-up
 - Schedule: 1week, 1month, 6months, 1 year



Methods

- Penile sensation visual analog scale (0-10)
 - 0 – completely numb
 - 10 – perfect sensation
- Penile sensation loss grade (greatest dimension)
 - Extensive (any single area >5cm)
 - Major (2-5cm)
 - Minor (≤ 2 cm)
- Penile sensation loss distribution
 - Focal (single site)
 - Multi-focal (>1 site)



Statistical Analysis

- To define predictors of sensory loss
- Multivariate analysis
- Factors entered into model Age
 - Diabetes Mellitus
 - Peyronie's disease duration
 - Operation duration
 - Laterality of deformity
 - Type of plaque incision



Results

- 63 patients
- Mean operation duration = 3.5 ± 1.8 hours
- PIG: H-incision = 24/63
- PIG: Egidio incision = 39/63
- Graft types
 - Vein = 6
 - Human cadaveric pericardium = 53
 - Intestinal submucosa = 4
- 50/63 had preop and postop biothesiometry



Results

Variable	Result (\pm SD)
N	63 patients
Mean age (y)	56 \pm 10
Mean follow-up (m)	14 \pm 12
Mean PD duration (m)	15 \pm 7 (12-38)
Mean duration of self-reported stable PD (m)	8
Curvature alone (%)	75%
Indentations/Hour Glass Deformity (%)	25%
Mean primary curvature (degrees)	64 \pm 28



Results

Any Sensation Loss	(%)
At 1 week	21%
At 1 month	21%
At 6 months	8%
At 12 months	3% (2/63)
>1 year	1.5% (1/63)



Results

Sensation Loss Parameters

Parameter	1 Month (13)	6 Months (5)	12 months (1)
Mean VAS	3±2	5±3	7±3
Grade			
Extensive (>5cm)	1	1	1
Major (2-5cm)	4	2	0
Minor (<2cm)	8	2	0
Distribution			
Focal (1 site)	3	3	1
Multi-focal (>1 site)	10	2	0



Results

Median (IQ Range) Biothesiometry Score

≤7 defined as normal

Parameter	Baseline	1 Month	6 months	12 months
All patients (frenulum)	3 (2,4)	5 (2,22)	5 (2,17)	4 (2,6)
Patients with loss (site of worst loss)	3 (2,4)	11 (8,27) (n=13)	10 (8,11) (n=5)	25 (n=1)



Multivariable Analysis

Sensation Loss at 6 Months

- Only duration of operation was a predictor of penile sensory loss at 6 months post-PIG surgery

Parameter	OR	95% CI	P Value
Duration >4h	2.1	1.2-3.0	<0.01



Conclusions

- Sensation loss is not uncommon after PIG surgery
- It decreases in frequency and severity with time with only rare cases occurring beyond 12 months
- Longer operations are more likely to be associated with sensation loss, likely related to difficult neurovascular bundle elevation

