Chapter 2
Biothesiometry

John P. Mulhall and Lawrence C. Jenkins

Background

The biothesiometry device is used to measure the threshold of appreciation of vibration in patients. A decreased sensitivity to these vibrations may indicate the presence of a penile sensory neuropathy. This is a quantitative measure of the vibratory sense of the penis. The biothesiometer vibrates at a known frequency, and it is compared to other parts of the body with known vibration thresholds. The effectiveness of this test in documenting sensory neuropathy of the penis has not been established but is considered as a useful screening test. It is worth noting two important points: (1) this is only assessing sensory nerve function (and not motor or autonomic nerve integrity) and (2) this test may not be covered by the patient's insurance plan.

When patients complain of penile sensation loss, the andrology practitioner can utilize biothesiometry to screen for a sensory neuropathy. As the symptom of sensation loss may be organically based (penile sensory neuropathy) or perceptual in nature (psychogenic), biothesiometry is a useful diagnostic tool. Biothesiometry cannot locate the focus of the lesion nor its severity. For this we refer the patient for dorsal penile nerve somatosensory evoked potential (SSEP) analysis. Generally, any etiology of neuropathy can lead to penile sensation loss, but the most commonly encountered in routine andrology practice is diabetes mellitus.

While not well appreciated, reduced penile sensation may be a secondary psychosexual dysfunction. Typically anxiety-prone men, especially young men, develop multiple sexual dysfunctions, become increasingly focused on the penis, and may complain of reduced penile sensation. This increased focus on the penis, or penocentricity, may lead to a form of genital dysmorphophobia.

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Table 2.1 Nomogram

Nomogram for penile biothesiometry			
Age	Fingertip	Shaft	Glans
18–29	3	3	3
30–39	4	4	4
40–49	4	5	5
50–59	5	6	7
60–69	5	7	7

Biothesiometry is a useful way to detect neurologic disease in at-risk men (i.e., spinal cord injury or diabetes). It is also used to establish a baseline level of function prior to any surgical procedure that may compromise sensation to the head of the penis. Normalcy is determined by referring to the nomogram as shown in Table 2.1.

Indications

1. Patient complaining of penile numbness
2. Delayed orgasm
3. Prior to penile reconstructive surgery

Pre-procedural Considerations

Familiarize yourself with the device prior to starting the procedure (Figs. 2.1, 2.2, and 2.3). The patient should be supine on the examination table in a calm and relaxed state. The patient should be undressed from the waist down with a sheet covering their lower body prior to starting. The examiner should check finger and penile positions to be examined (Fig. 2.4). A standardized report should be ready to document findings (a sample report is shown in Fig. 2.5).

Procedure

With the patient undressed and ready, place the device on a stand or table near the patient (examination table). You should start by placing the probe on the tip of the patient's index finger (examine both the right and left fingers) and slowly increase the intensity of the vibration until the patient declares they are feeling the vibration. This is then used as a baseline so the patient can compare to the vibration sense of the penis.

The device is placed on the left and right mid-shaft of the penis, the left and right mid-glans, and finally the frenulum. The probe should be held perpendicular to the

Fig. 2.1 Main unit

Fig. 2.2 Dial

Fig. 2.3 Handheld probe

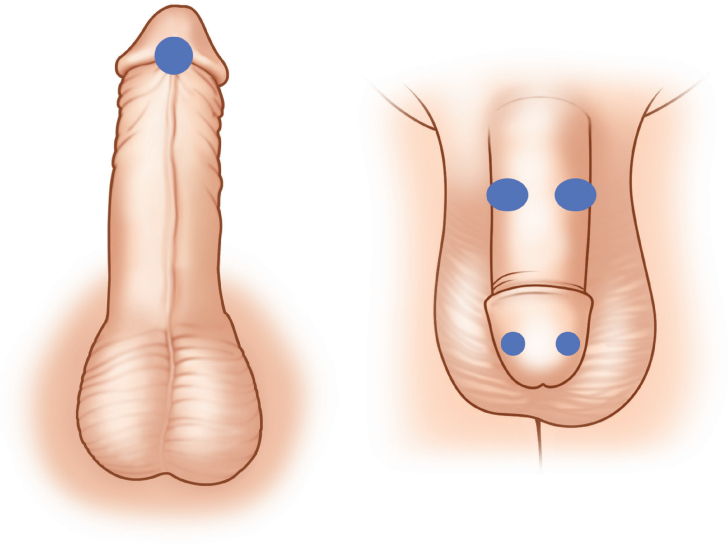


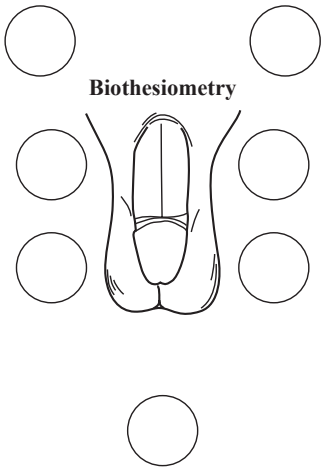
Fig. 2.4 Locations for assessment

skin surface to assure the probe tip has full and even contact with the skin. At all locations, intensity of vibration is slowly increased until the vibration is felt. This location is repeated twice and the average result should be documented on the report sheet.

BIOTHESIOMETRY

Patient: _____ Date: _____

MRN: _____



NOMOGRAM FOR BIOTHESIOMETRY

AGE	Pulp	Shaft	Glans
18-29	3	3	3
30-39	4	4	4
40-49	4	5	5
50-59	5	6	7
60-69	5	7	7

DIAGNOSIS:
- □ Consistent with neuropathy
- □ Normal

TREATMENT:
- □ Neurology consult
- □ SSEP
- □ Monitor

Comments:

_____

_____
Provider's Signature

Fig. 2.5 Report sheet

Complications

None.

Post-procedural Instructions and Management

If abnormal we suggest to all of our patients to consider referral for pudendal nerve SSEP testing for confirmation as well to define the severity of the sensory neuropathy as well as the location of the lesion within the neural arc. If the SSEP is abnormal, we would recommend a full consultation with a neurologist to investigate further.

Suggested Reading

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