PUEDNDAL CANAL DECOMPRESSION IN THE TREATMENT OF ERECTILE DYSFUNCTION

Ahmed Shafik, MD PhD
Professor and Chairman, Dept. of Surgery and Experimental Research, Faculty of Medicine, Cairo University, Egypt

Erectile dysfunction (ED) caused by neurogenic, arterial, venous, ...... disorders of 323 patients with ED, 7 had neurogenic impotence due to pudendal nerve compression

AIM: clinical picture and results of treatment

SUBJECTS

7 subjects: 46 - 56 y
ED 5 - 9 y
chronic constipation
5 / 7 urinary urgency
Tables

Clinical and investigative findings in the 7 impotent patients with pudendal canal syndrome

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Age (Years)</th>
<th>Impotence Duration (Years)</th>
<th>Urinary Urgency Duration (Years)</th>
<th>Constipation Duration (Years)</th>
<th>Penile, Scrotal, and Perineal Sensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>52</td>
<td>7</td>
<td>11</td>
<td>18</td>
<td>Hypoesthesia</td>
</tr>
<tr>
<td>2</td>
<td>49</td>
<td>5</td>
<td>9</td>
<td>10</td>
<td>Hypoesthesia</td>
</tr>
<tr>
<td>3</td>
<td>56</td>
<td>6</td>
<td>-</td>
<td>8</td>
<td>Hypoesthesia</td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>9</td>
<td>10</td>
<td>16</td>
<td>Anesthesia</td>
</tr>
<tr>
<td>5</td>
<td>56</td>
<td>6</td>
<td>8</td>
<td>14</td>
<td>Hypoesthesia</td>
</tr>
<tr>
<td>6</td>
<td>48</td>
<td>6</td>
<td>8</td>
<td>12</td>
<td>Hypoesthesia</td>
</tr>
<tr>
<td>7</td>
<td>46</td>
<td>5</td>
<td>-</td>
<td>12</td>
<td>Hypoesthesia</td>
</tr>
</tbody>
</table>

Clinical and investigative findings in the 7 impotent patients with pudendal canal syndrome

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Bulbocavernous Reflex Latency (ms)</th>
<th>EMG Activity</th>
<th>PNTML (ms)</th>
<th>Right</th>
<th>Left</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>63</td>
<td>↓ Normal</td>
<td>3.6</td>
<td>3.4</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>57</td>
<td>↓ Normal</td>
<td>3.1</td>
<td>3.2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>44</td>
<td>↓ Normal</td>
<td>2.7</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>65</td>
<td>↓ Normal</td>
<td>4.2</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>48</td>
<td>↓ Normal</td>
<td>2.9</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>53</td>
<td>↓ Normal</td>
<td>3.4</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>45</td>
<td>↓ Normal</td>
<td>3.1</td>
<td>2.8</td>
<td></td>
</tr>
</tbody>
</table>

Note: EUS, external urethral sphincter; EAS, external anal sphincter; PNTML, pudendal nerve terminal motor latency

- hypoesthesia
- ↓ EMG of external urethral sphincter and levator ani
- ↓ EMG of external anal sphincter in 2 / 7
- ↑ bulbocavernosus reflex latency
- ↑ PNTML
Erectile function tests
- normal vascular picture
- absence of NPT
- normal PBPI
- response to intracavernosal injection
- ↑ BCR latency
all indicate neurogenic impotence

↑ PNTML indicates pudendal neuropathy as cause of neurogenic impotence which we call: pudendal canal syndrome

Pudendal canal syndrome
- motor changes:
  - ↓ EMG external urethral sphincter
  - + levator + 2/7 anal sphincter
- sensory changes:
  - hypo- or anesthesia
- ↑ PNTML

Fig. 1. Mechanism of the pudendal nerve stretch. (A) At rest: levator ani muscle is relaxed (cone-shaped). (B) On contraction at defecation: levator muscle is elevated and flattened. (C) Chronic straining at stool or difficult deliveries cause levator subluxation and sagging with a resulting pudendal nerve stretch.

Fig. 2. Mechanism of normal defecation. (a) At rest: levator muscle is relaxed and cone-shaped. (b) During defecation: levator muscle contracts and becomes elevated and flattened.

Etiology
- constipation + straining →
- levator sagging →
- pudendal nerve stretch →
- pudendal neuropathy → PCS
  (Shafik, Dis Colon Rectum 1979; Shafik, Coloproctology 1983; 1991)
Treatment

- Pudendal canal decompression
- follow up 19.6 months (14 - 24)

Fig. 3. Steps of the pudendal canal decompression operation: (A, B) incision; (C) inferior rectal nerve crossing ischiorectal fossa; (D) inferior rectal nerve hooked with index finger; (E) inferior rectal nerve followed to pudendal nerve. Inset: pudendal nerve in and outside the pudendal canal.

RESULTS

- improved urine urgency
- ED improved in 6 patients:
  - 3 patients → 2 - 3 months
  - 3 patients → 4 - 6 months
- improved sensation → 3 - 6 months
- improved EMG → 6 - 9 months
- ↓ BCR latency → 6 - 9 months

Table 2

<table>
<thead>
<tr>
<th>Patient No.</th>
<th>Impotence</th>
<th>Urinary Urgency</th>
<th>Pudendal, Sicirotal, and Perineal Sensation</th>
<th>Bulbocavemosus Reflex Latency (ms)</th>
<th>PNTML (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>41*</td>
<td>2.7, 2.6*</td>
</tr>
<tr>
<td>2</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>42*</td>
<td>2.5, 2.6*</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>33*</td>
<td>2.1, 2.2*</td>
</tr>
<tr>
<td>4</td>
<td>+</td>
<td>-</td>
<td>Anesthesia</td>
<td>60**</td>
<td>4.0**, 3.5**</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>35*</td>
<td>2.0, 2.3*</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>38*</td>
<td>2.6, 2.5*</td>
</tr>
<tr>
<td>7</td>
<td>-</td>
<td>-</td>
<td>Normal</td>
<td>32*</td>
<td>2.3, 2.1*</td>
</tr>
</tbody>
</table>

Note: PNTML, pudendal nerve terminal motor latency. *p < .05; **p > .05

COMMENT

- in PCS main brunt on:
  - dorsal nerve
  - perineal nerve

- dorsal nerve (afferent) → cerebral centers → cavernous nerve (efferent) → erection
- dorsal nerve neuropathy → ED
- perineal nerve → cavernous muscle contraction → ↑ corporeal pressure

Fig. 4. EMG activity of the external urethral sphincter: (a) before pudendal canal decompression showing diminished activity; (b) six months after pudendal canal decompression showing improved activity.
CONCLUSION

- PCS included as cause of neurogenic ED
- Treatment: pudendal canal decompression
- PCD
  - simple
  - easy
  - no complications
  - outpatient

Fig. 5. EMG activity of the levator ani muscle: (a) before pudendal canal decompression showing diminished activity; (b) six months after pudendal canal decompression showing improved activity.