Frequency of anal incontinence and results of pelvic viscerography in 291 women with pelvic organ prolapse

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SUMMARY

Objectives — To determine the prevalence of anal incontinence in a population of 291 women with pelvic organ prolapse and evaluate the results of pelvic viscerography in this situation.

Materials and methods — Each patient answered a standardized questionnaire on medical, obstetric and surgical past histories and answers were logged in a database. The viscerograms were performed by a single specialized radiologist.

Results — All patients but one were parous. The prevalence of anal incontinence was 26.1%. Stress urinary incontinence and urge urinary incontinence were significantly associated with anal incontinence. No obstetric or surgical risk factor for anal incontinence was demonstrated. Viscerography demonstrated rectoceles (n=86, 29.1%), enterocoeles (n=77, 26.5%), cystoceles (n=174, 59.8%), and intra-anal rectal prolapse (n=106, 36.4%). A significant association was found between intra-anal rectal prolapse and anal incontinence.

Conclusion — Anal incontinence is frequent in patients with pelvic organ prolapse, even more so in the presence of urinary incontinence, and should be investigated by pelvic viscerography. Pelvic floor dysfunction is frequently associated with enterocoeles, rectoceles and rectal prolapse. Pelvic viscerograms should be systematically performed in the diagnostic work-up in patients with pelvic organ prolapse when surgical treatment is considered.

The full text of this article is available in English free of charge, on the web on: www.2med.com/gcb.

Pelvic organ prolapse is one of the most common indications for gynecological surgery. Urinary incontinence (UI) and anal incontinence (AI) are common in these patients, occurring simultaneously or successively. Reported estimates of the prevalence of such associations vary but a common cause, generally obstetrical, is likely [1, 2]. The prevalence of urinary incontinence in middle-aged women is as high as 30 to 40% [3-5]. The prevalence of anal incontinence in the general population of women aged over 45 years is estimated to be 13% [6], and that of pelvic organ prolapse is certainly higher but is difficult to assess due to the large number of undiagnosed cases. Few studies have been devoted to the frequency of AI among patients with pelvic organ prolapse.

The purpose of our study was to assess the prevalence of AI among 291 patients with pelvic organ prolapse referred for pelvic viscerogram (PV) with opacification of the bladder, vagina, small bowel and rectum and to report the results obtained in this indication.

Material and methods

Two hundred ninety-one women with pelvic organ prolapse were referred to the digestive radiology unit of the Edouard Herriot Hospital, Lyon France, for PV between June 1997 and October 2000. Indications for PV were: 1) major prolapse, grade III (to vulva) or grade IV (beyond the vulva), 2) associated gastrointestinal symptoms (anal incontinence, dyschezia), 3) recurrent prolapse after surgical treatment. All patients answered a standardized questionnaire concerning obstetric and surgical history, associated symptoms, and use or not of protective dressings (figure 1).

Anal incontinence was defined as involuntary loss of stools or daily flatulence incompatible with normal social life and/or requiring protective dressings.
Pelvic viscerogram protocol

All viscerograms were performed by the same specialized radiologist (LH). A barium mixture containing 250 mL barium sulfate (Micropaque®), 150 mL water, and 125 mL corn starch was prepared and warmed one hour before the exploration. Ten milliliters of the preparation were placed in a 20 mL syringe and completed with 10 mL liquid barium sulfate for opacification of the vaginal cavity. The patient was given a 200 mL Micropaque® meal 1.5 hours before PV for opacification of the pelvic small bowel loops. A urinary catheter was introduced into the bladder to infuse 200 mL of a water-soluble contrast medium containing 300 mg/mL iodine (Télébrix 30™). The catheter was left in the bladder to obtain a precise landmark of the bladder neck. The vagina was then opacified before the patient was placed in the left lateral reclining position for intra-rectal injection of 60 mL Micropaque®. The rectal ampulla was filled with 200-300 mL barium paste using an injecting device. The patient sat on a toilet seat for the defecography and viscerograms. Lateral images were obtained at rest, during retention, during straining, during evacuation of the rectal contents (3 or 4 images), during miction (1 or 2 images) after withdrawal of the bladder catheter, and during straining after complete evacuation of the bladder.

A cystocele was defined as descent of the bladder floor below a horizontal line drawn through the lower border of the pubic symphysis and cervicocystoptosis was defined as descent of the bladder neck below...
the same line. Enterocele was defined as loss of contact between the anterior wall of the rectum and the posterior wall of the vagina. Perineal descent was defined as an anal-rectal junction descending more than 30 mm below the lower border of the ischi (on the resting image) and/or on the straining and/or rectal evacuation images. A rectocele was defined as a deformation of the anterior wall of the rectum with displacement more than 30 mm anteriorly in relation to the axis of the anal canal. Intra-anal prolapse was defined as intussusception of the rectal wall.

**Statistical analysis**

Questionnaire data were logged in a database. Values were expressed as mean ± standard deviation. Analysis of variance (ANOVA) was used to compare PV data with clinical findings. Statistical significance was accepted at P < 0.05. Statistical analysis was performed with Statview VF 4.5 on a Macintosh computer (Abacus Concept, Berkeley, CA).

**Results**

Two hundred ninety-one patients were studied, mean age (± SD) 60.2 ± 12 years (range 20-86). All patients were parous except one. Stress UI was reported by 123 patients (42.3%) and AI by 76 patients (26.1%), mean age 59.4 ± 13 years. Two hundred fifteen patients (mean age 60.4 ± 12 years) did not have AI. Obstetric and surgical histories were not significantly different between the two groups (table I).

Stress UI was significantly associated with AI: 47 (62%) of the 76 patients with AI had stress UI versus 76 (35%) of the 215 patients without AI (P=0.0001) (table II). There was also a significant correlation between urge UI and AI with 47 (62%) of the 76 patients with AI versus 90 (41.9%) of the 215 patients without AI (P = 0.0042). The insurveys presented demonstrated a rectocele in 86 patients (29.6%), an enterocele in 77 (26.5%), a cystocele in 174 (59.8%), and intra-anal rectal prolapse (IARP) in 106 (36.4%). There was a significant correlation between IARP and AI: 38 (50%) of the 75 patients with AI had IARP versus 68 (32%) of the 215 patients without AI (P = 0.0065) (table III). There was also a significant correlation between the absence of cystocele on the PV and presence of AI: 47% in the AI group versus 64% in the other group (P = 0.01). Other abnormal findings identified on the PV are presented in table III. The number of associated anomalies per patient was similar in both groups (table IV).

<table>
<thead>
<tr>
<th>History</th>
<th>Anal incontinence n = 76</th>
<th>No anal incontinence n = 215</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forceps delivery (1st pregnancy), n (%)</td>
<td>15 (19.7)</td>
<td>60 (27.2)</td>
<td>NS</td>
</tr>
<tr>
<td>Forceps delivery (any pregnancy), n (%)</td>
<td>20 (23)</td>
<td>67 (31)</td>
<td>NS</td>
</tr>
<tr>
<td>Number of vaginal deliveries, mean ± SD</td>
<td>2.6 ± 1.6</td>
<td>2.6 ± 1.4</td>
<td>NS</td>
</tr>
<tr>
<td>Weight of 1st infant g, mean ± SD</td>
<td>3311 ± 521</td>
<td>3431 ± 532</td>
<td>NS</td>
</tr>
<tr>
<td>Hemorrhoidectomy, n (%)</td>
<td>6 (8.3)</td>
<td>12 (5.6)</td>
<td>NS</td>
</tr>
<tr>
<td>Hysterectomy, n (%)</td>
<td>23 (30)</td>
<td>65 (30.2)</td>
<td>NS</td>
</tr>
<tr>
<td>Cholecystectomy, n (%)</td>
<td>11 (14.5)</td>
<td>24 (11.2)</td>
<td>NS</td>
</tr>
</tbody>
</table>

NS: not significant; SD: standard deviation.

**Table II. – Associated symptoms in 291 patients undergoing pelvic viscerography.**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Anal incontinence n = 76</th>
<th>No anal incontinence n = 215</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress urinary incontinence, n (%)</td>
<td>47 (62)</td>
<td>76 (35)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Urge urinary incontinence, n (%)</td>
<td>47 (62)</td>
<td>90 (41.9)</td>
<td>0.0042</td>
</tr>
<tr>
<td>Dyschesia, n (%)</td>
<td>48 (63.2)</td>
<td>117 (54.4)</td>
<td>NS</td>
</tr>
<tr>
<td>Anal maneuvers to facilitate defecation, n (%)</td>
<td>10 (13.2)</td>
<td>21 (9.8)</td>
<td>NS</td>
</tr>
<tr>
<td>Perineal maneuvers to facilitate defecation, n (%)</td>
<td>21 (27.6)</td>
<td>51 (23.7)</td>
<td>NS</td>
</tr>
<tr>
<td>Pelvic discomfort, n (%)</td>
<td>46 (60.5)</td>
<td>116 (54)</td>
<td>NS</td>
</tr>
</tbody>
</table>

NS: not significant.

**Discussion**

Several studies have suggested that pelvic organ prolapse and urinary and anal incontinence arise from a common cause: traumatic injury of the pelvic floor muscles and connective tissue and the pudendal nerve [1, 2]. Suggested causes of pudendal nerve injury include delivery and dyschesia [7, 8], “idiopathic” AI in elderly women is classically described as a neurogenic deterioration related to a long history of dyschesia almost always aggravated by obstetric trauma [7, 9]. Obstetric trauma plays an essential role, recognized as the cause of sphincter rupture in about one-third of women with AI [9-13]. Nerve injury by...
elongation of the pudendal nerve is frequently associated. Forceps delivery, long labor (particularly during the second phase), large heavy infants, and midline episiotomy are risk factors for pudendal nerve injury [7, 14]. Women with obstetric sphincter injury are clearly exposed to UI and AI 2 to 4 years postpartum: 56% develop UI and/or AI [15]. Chronic constipation with difficult evacuation of stools, or dyschezia, could also be a cause of elongation of the pudendal nerve and the branches of the sacral plexus eventually leading to neuropathy [2, 7].

In a recent study, Manning et al. confirmed the well-established link between lower urinary tract dysfunction and fecal incontinence, but questioned the notion of a single obstetrical cause. These authors suggest other factors should be incriminated, including connective tissue weakness or obesity [16]. Our findings confirm the frequent association of pelvic organ disorders involving the genital, urinary and anorectal systems: prevalence of AI in our series was 26%, compared with an estimated 13% in the general population of women aged over 45 years [6]. Our figure is nevertheless probably an overestimation because of the criteria retained for performing defecography. We also demonstrated a strong statistically significant correlation between stress UI and AI and between urge UI and AI. These associations have also been emphasized in other studies [17, 18]. This confirms the classical notion of a common cause for UI and AI. The obstetric origin is undeniable in most women, as strongly suggested by the parity of our patients (only one non-parous patient), although the different factors usually associated with AI (e.g. forceps delivery) were not significantly associated. Dyschezia was more frequent in the AI group but the difference was not statistically significant, probably because of small sample size. It is known that dyschezia favors AI [7, 8]. Prior hysterectomy, hemorrhoidectomy and cholecystectomy have also been described as factors associated with AI [18-20]. We did not find that these events were risk factors for AI in our women with pelvic organ prolapse.

The viscerograms demonstrated a significant relationship between AI and ARP. This relationship has been reported by others [21, 22]. Intra-rectal rectal prolapse (IRRP) is a common anomaly in patients explored for defecation disorders. Since small IRRPs can also be observed in about half of asymptomatic patients, their significance could be questioned. IARP is however generally pathologic and associated with clinical manifestations such as constipation and evacuation disorders with mucosal prolapse obstructing evacuation, or, paradoxically, incontinence, overt rectal prolapse being a typical example. While IARP can be diagnosed clinically, defecography can be useful to confirm the diagnosis and assess the extent of the prolapse [23, 24]. Our study also demonstrated a statistically significant correlation between cystocele and absence of AI. This is the first time this correlation has been demonstrated and for us could be a fortuitous association. There is however the possibility that the cystocele could have an impact by exerting pressure on the posterior perineum. AI might then be unmasked after surgical cure of the cystocele. The prevalence of enteroceles was 26.5% in our series and that of sigmoidoceles 6.5%. These findings are in agreement with the high frequency of these anomalies which are quite difficult to identify clinically. Their presence would justify PV which thus would modify the surgical approach. Other anomalies associated with the disorder leading to consultation may also be underestimated at physical examination, with the risk of decompensation postoperatively. This raises the unresolved question of the appropriateness of preventive surgery. In patients who have already undergone surgery, PV can identify elements requiring repair and, in the event of treatment failure, may provide an explanation a posteriori. The PV can also be a useful legal document.

In conclusion, AI is frequent in patients with pelvic organ prolapse referred for defecography. AI is significantly associated with stress urinary incontinence and urge urinary incontinence. Our study confirms the common obstetric cause of these disorders. Pelvic viscerography demonstrates that enteroceles are frequent in these patients and that they should be taken in consideration for surgical planning in order to favor long-term success. Pelvic viscerography should be performed before surgery for pelvic organ prolapse.

REFERENCES


