Prevalence of rectocele in young nulliparous women

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Abstract

Background: It is generally assumed that fascial defects in the rectovaginal septum are the result of childbirth. However, rectoceles do occur in women who have never delivered vaginally.

Aims: To determine the incidence of rectocele in a cohort of asymptomatic, young nulliparous women.

Methods: Observational cohort study on 178 nulliparous caucasian women (aged 18–24) recruited for a twin study of pelvic floor dysfunction. All women were interviewed and examined by translabial ultrasound, supine and after voiding. In 52 women, 3D imaging was obtained and 171 datasets were complete and available for analysis. Ultrasound findings were reviewed for rectovaginal septal integrity by an assessor blinded against interview and demographic data for rectovaginal septal integrity.

Results: A discontinuity of the anterior rectal wall with extrusion of rectal mucosa or contents (depth of ≥ 10 mm) was observed in 21/171 (12%). The depth of this herniation ranged from 10 to 25 mm and was filled with stool (n = 10) or rectal mucosa (n = 11). Defects were associated with a higher BMI (P = 0.049), with the complaint of constipation (P = 0.049) and non-significantly with straining at stool (P = 0.09). Descent of the ampulla to beyond the level of the symphysis pubis without fascial defect, that is, significant perineal relaxation, was observed in 23/171 (13%).

Conclusions: Twelve percent of 171 young nulligravid caucasian women showed a defect of the rectovaginal septum. Associations were observed with higher body mass index and a history of constipation. It is hypothesised that in some women defects of the rectovaginal septum and perineal hypermobility may be congenital in nature.

Key words: 3D ultrasound, pelvic floor trauma, prolapse, rectocele, vaginal delivery.

Introduction

A true rectocele, that is, a defect in the rectovaginal septum or Denonvillier’s fascia, is traditionally regarded as the archetypal traumatic pelvic floor lesion.1 A perinatal causation appears plausible since the levator hiatus has to distend from a resting area of 6–18 cm² in young nulligravid women to an area of 70–100 cm² in order to admit passage of a term-size fetal head.2 It has been hypothesised that the lateral insertion of the rectovaginal septum may be separated from the puborectalis muscle, and that transverse tears may open up in the weaker cranial aspects of the rectovaginal septum during crowning.1

If those assumptions were correct, one would not expect to find defects of the rectovaginal septum in young women prior to childbirth. While it is generally acknowledged that rectocele does occur in older nulliparous women, such cases are attributed to longstanding bowel dysfunction such as abnormal defaecation habits, very unlikely to be an issue in young women. There is little information on either prevalence or aetiology of rectocele1 which is not surprising if one considers that a clinically apparent rectocele may be due to perineal hypermobility or a true defect of the rectovaginal septum or even be mimicked by an isolated enterocele.4 This study defines the incidence of true rectocele, enterocele and perineal hypermobility in a cohort of 171 young nulliparous women.

Methods

We report an observational cohort study on 178 young nulliparous caucasian women (aged 18–24), recruited through the Australian Twin Registry for a twin study of pelvic floor anatomy and function. Unrelated results from this study have been published elsewhere.5,6 In an interview, we asked questions regarding bladder (stress and urge incontinence, frequency, nocturia, symptoms of voiding dysfunction and urinary tract infections) and bowel symptoms (straining at stool and chronic constipation), as well as a history of complaints associated
with connective tissue dysfunction (dislocations, epistaxis and herniae), a history of bedwetting beyond school age and knowledge and/or practice of pelvic floor muscle exercises. A family history of urinary incontinence, prolapse or surgery for these conditions was also elicited.

Translabial ultrasound, increasingly used in urogynaecology, has recently been shown to be highly reproducible and to correlate well with clinical prolapse assessment. The imaging assessment was performed in the supine position and after bladder emptying, either under the direct supervision of the principal investigator or by staff trained by him for a minimum of 100 consecutive assessments. We used a Toshiba EccoCee system with curved array 5 MHz transducer (Toshiba Australia, Ryde, New South Wales, Australia). The transducer was covered with a glove and placed on the vulva and perineum in the midsagittal plane. The labia were parted to improve imaging quality. Images were taken both at rest and on maximal valsala (best of at least three attempts). No attempt was made to standardise Valsalva strength since this would have required catheter placement.

A defect of the rectovaginal septum was rated present if there was an obvious discontinuity in the ventral contour of the anorectal muscularis, and if the resulting herniation measured ≥ 10 mm in depth (Fig. 1). This low cutoff was chosen since many clearly evident defects measured less than 20 mm in depth, the figure used for defecation proctography. The assessment of rectocele depth on translabial ultrasound, which has been reported by others, is similar to techniques used on defaecation proctography and correlates well with measurements obtained by that technique.

If there was displacement of contents of the rectal ampulla, that is, stool (hyperechoic and coarse or irregular appearance, often with distal shadowing) or air (total reflection and reverberations) below a reference line through the inferior symphyseal margin without evidence of an actual fascial defect, this was defined as perineal hypermobility (see Fig. 2). This cutoff is not entirely arbitrary as ampullary descent below the symphysis pubis has been shown to be associated with clinically diagnosed rectocele. The inferior margin of the symphysis pubis was chosen as reference rather than the central axis since the latter is often difficult to image in conjunction with a rectocele due to the limited footprint of most abdominal transducers, especially in women with marked enlargement of the levator hiatus on Valsalva and perineal hypermobility.

We did not use the POP-Q classification of prolapse as we do not believe that it is particularly helpful for the diagnosis of rectocele. In our opinion, POP-Q can diagnose posterior compartment descent, but cannot distinguish between enterocele, rectocele and perineal hypermobility.

Ethics Committee approval had been obtained for the main study which included translabial pelvic floor imaging (QIMR P434 (H0202-01-004)), and all subjects gave written informed consent. They received a shopping voucher valued at A$100 for their participation. Statistical analysis was performed after Normality testing (histogram analysis and/or Kolmogorov–Smirnov testing), using Minitab V. 13 (Minitab Inc., State College, PA, USA). Pearson’s correlations were used to compare normally distributed continuous variables. Student’s t-test and χ² table statistics were also employed. P < 0.05 was considered statistically significant.

Results

One hundred and seventy-eight women were enrolled in the study. The mean age was 20.4 years (range 18–24), mean BMI was 23 (SD 3.5). Twenty two reported frequent straining at stool, 19 chronic constipation. In seven cases the posterior compartment could not be assessed fully, generally due to faulty transducer alignment. One hundred and seventy-one responded to the question about a full scan and were therefore the subject of analysis in this study. A discontinuity of the anterior rectal wall with extrusion of rectal mucosa or contents (depth of 10 mm or more) was observed in 21/171 (12%).

The depth of this herniation ranged from 10 to 25 mm and was filled with stool on 10 occasions, with rectal mucosa in 11 cases. In only one case this defect measured ≥ 20 mm. None of the 171 women showed an enterocele. Descent of the rectal ampulla or anorectal junction to beyond the level
Table 1 Ultrasound findings in 171 nulligravid caucasian females

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean</th>
<th>SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximal bladder descent (mm)</td>
<td>13.2</td>
<td>9.8</td>
<td>30.3 to −15.6</td>
</tr>
<tr>
<td>Maximal uterine descent (mm)</td>
<td>30</td>
<td>15.3</td>
<td>67 to −12</td>
</tr>
<tr>
<td>Maximal rectal descent (mm)</td>
<td>8.4</td>
<td>16.5</td>
<td>55 to −24.5</td>
</tr>
<tr>
<td>Depth of defect (when present, in mm)</td>
<td>16</td>
<td>4.5</td>
<td>10 to 25</td>
</tr>
<tr>
<td>Descent below the symphysis pubis (‘perineal hypermobility’)</td>
<td>23/171 (13%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rectovaginal fascial defect</td>
<td>21/171 (12%)</td>
<td></td>
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Negative figures for bladder, uterine and rectal descent signify descent below the symphysis pubis. The first three parameters describe maximal organ descent reached on Valsalva, relative to the symphysis pubis.

Table 2 Associations between patient history, clinical data and the presence of a defect of the rectovaginal septum (n = 171)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Mean SD</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI (t-test)</td>
<td>22.7 (3.1) vs. 25 (4.9)</td>
<td>P = 0.049</td>
</tr>
<tr>
<td>Age in years (t-test)</td>
<td>20.3 (1.5) vs. 20.6 (2.1)</td>
<td>P = n.s.</td>
</tr>
<tr>
<td>Chronic constipation (χ² Test)</td>
<td>P = 0.049</td>
<td></td>
</tr>
<tr>
<td>Frequent straining at stool (χ² Test)</td>
<td>P = 0.09</td>
<td></td>
</tr>
<tr>
<td>History of epistaxis, dislocations, herniae</td>
<td>P = n.s.</td>
<td></td>
</tr>
<tr>
<td>Family history of incontinence or prolapse</td>
<td>P = n.s.</td>
<td></td>
</tr>
</tbody>
</table>

NS, not significant.

of the symphysis pubis without actual fascial defect, that is, significant perineal relaxation, was observed in 23/171 (13%) of the study population. The average position of the ampulla relative to the symphysis pubis was −1.3 mm on Valsalva. Table 1 summarises ultrasound findings for all three compartments.

The ultrasound diagnosis of a rectovaginal septal defect was weakly associated with a higher BMI (P = 0.049) and with the complaint of chronic constipation (P = 0.049), and there was a weak trend towards an association with frequent straining at stool (P = 0.09). There also was an association with higher anterior compartment descent (P = 0.01). Neither a history of indicators of connective tissue abnormality (such as dislocations, epistaxis or herniae) nor a family history of prolapse or prolapse surgery, were associated with defects (see Table 2).

Discussion

In this study of 171 nulligravid caucasian women aged 18–25, defects of the rectovaginal septum were demonstrated in 12% of subjects. This is surprising in view of the currently accepted theories on the aetiology of such defects that hold that rectocele is due to perinatal trauma and/or arises from longstanding bowel dysfunction. Neither of these two aetiological factors explains the fascial defects seen in the cohort examined for this study.

There is currently no consensus on what constitutes a rectocele, largely due to the absence of objective assessment tools. The most logical definition seems to be that of a herniation of rectal mucosa and/or contents into the vagina. Clearly, such a diagnosis is impossible without imaging. A clinical assessment can only provide information on posterior compartment descent, which may be due to a true rectocele, an enterocele, or perineal hypermobility, or even just a deficient perineum.\(^7\) In fact, posterior compartment descent probably should not be termed ‘rectocele’ unless this diagnosis is backed up by imaging.

Pelvic floor ultrasound can provide anatomical information on the posterior compartment that is very likely to be superior to any other imaging method or clinical assessment. However, it is acknowledged that the clinical relevance of such findings and their correlation with other diagnostic methods (such as defecation proctography) have to be investigated in more detail than currently available.\(^10,11\) The authors are conducting studies that will hopefully further validate the diagnostic technique used in this study.

The methodology for detecting defects of the rectovaginal septum by translabial ultrasound is very recent\(^7\) but seems to be highly reproducible, with a test-retest series in 50 women showing a Cohen’s kappa of 0.72 for the diagnosis of a defect of the rectovaginal septum (own unpubl. data). In this test-retest series the intraclass correlations between measurements of ampullary descent were 0.75, of rectocele depth 0.93 and of rectocele width 0.91. The technique seems to correlate well with defaecation proctography,\(^10,11\) although varying rectal filling is bound to reduce reproducibility unless filling is standardised similar to the radiological technique.

There are a number of other potential confounders arising from the fact that the diagnosis of rectocele by translabial ultrasound relies on an effective Valsalva manoeuvre rather than actual evacuation. Suboptimal Valsalva pressures and levator activation (the latter being very common in nulliparous women\(^7\)) would however, tend towards minimisation of pelvic organ descent and rectocele development. Consequently, the prevalence figures obtained in this study are likely to be an underestimate.

Associations were observed between the presence of fascial defects on the one hand, and higher BMI as well as a history of constipation on the other hand. This suggests that in some young women with bowel dysfunction, such defects could be acquired in childhood and/or early adulthood, which
agrees with the theory that rectoceles can be caused by abnormal defaecation habits. However, the observed associations were weak and may be spurious in view of the number of statistical tests performed. It is possible that in some women, the observed defects are in fact congenital in nature.

Though our data was obtained in a twin study, the power of this study is much too low (with a prevalence of 12%) to report on any differences between twins, and to analyse for heritability of defects of the rectovaginal septum.

It remains to be pointed out that the prevalence observed in this group of young nulliparous women is much lower than the prevalence in parous (symptomatic or asymptomatic) women which seems to be between 30 and 80%, both on clinical examination and radiological or ultrasound imaging. Vaginal childbirth is very likely to be a major aetiological factor. A recently completed study using ultrasound methodology showed a fourfold increase in prevalence after a first vaginal delivery.

In conclusion, defects of the rectovaginal septum can be visualised on translabial ultrasound and are found in a surprising number of young nulligravidae, raising the possibility of a congenital aetiology in some women.

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References