Rectal prolapse: enlightenment of the obscure
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Citation for published version (APA):

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Enterocoele is a marker of severe pelvic floor weakness

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Colorectal Disease 2010; 12(7 Online):e158-62
Abstract

Objective: The aim was to evaluate the relationship between the presence of an enterocoele and severity of rectal prolapse grade.

Method: Defaecating proctograms of consecutive patients presenting to the Oxford Pelvic Floor Clinic between January 2004 and November 2008 were analysed. Patients were included if they had full thickness internal [grades 1-4 prolapse] or external rectal prolapse [grade 5 prolapse]. All those included were analysed with regards the presence of an enterocoele.

Results: 371 patients (322 (87%) female and 49 (13%) male) were found to have a degree of rectal prolapse (RP). 1/8 (13%) patients with grade 1 RP, 10/54 (19%) with grade 2 RP, 34/125 (27%) with grade 3 RP, 62/135 (46%) with grade 4 RP and 23/49 (47%) with grade 5 full thickness external RP had an enterocoele present. This was a statistically significant trend (Pearson X2 test p<0.0002). There was a significantly higher proportion of enterocoeles in women (125/322 (39%)) than in men (5/49(10%)) (p<0.0001) and a higher likelihood of having an enterocoele with advancing age (p<0.0001). Within the study, there was no significant difference in the proportion of nulliparous and parous women with enterocoeles (p=0.8); there were a significantly higher proportion of enterocoeles in hysterectomised women (p=0.015).

Conclusion: Enterocoele is increasingly seen with advancing rectal prolapse severity. This suggests the two findings are part of the same pelvic floor process. These data support the hypothesis that enterocoele is a marker of severe pelvic floor weakness. Enterocoele is seen more frequently in females particularly after hysterectomy.
Introduction

An enterocoele is a herniation of a peritoneal sac along the ventral wall of the rectum into the recto-genital space. The sac is filled most commonly with small bowel but also sometimes sigmoid colon (sigmoidocoele) or omentum. Enterocoeles are difficult to detect on physical examination and are therefore most commonly diagnosed radiologically. Dynamic MRI and endovaginal ultrasonography have both been used, although the diagnosis is most often made at defaecating proctography (DPG). The technique of DPG for detailing enterocoeles has included vaginal coating, peritoneography and small bowel opacification to further aid both grading and diagnosis. Other pelvic floor diagnoses may also be made and it allows evaluation of anatomical and functional findings and may determine their contributions to the symptoms of obstructed defaecation for which the test is most commonly carried out. Whether an enterocoele contributes to obstructed defaecation physically itself by ‘pressing’ on the rectum, or whether it is part of more widespread pelvic floor pathology and frequently associated with other more significant anatomical derangements has been open to debate.

The primary aim was to evaluate the relationship between the presence of an enterocoele and grades of rectal prolapse (on a severity spectrum from low-grade, through high-grade internal rectal prolapse, to external rectal prolapse). We also aimed to study the influence of sex, age, vaginal delivery and hysterectomy on presence of an enterocoele.

Method

The technique of DPG was standardised. Small bowel was opacified with a 310ml mixture containing 100ml Baritop (Barium sulphate 94.6%w/w; Sanochemia Ltd., UK) and 10ml Gastrograffin (Schering Health Care Ltd., UK), ingested 30 minutes prior to the procedure. The rectum was prepared with 100ml of E-Z-Paste (Barium sulphate cream, 60% w/w; E-Z-EM, Canada), injected per anum using a 50ml bladder catheter tipped syringe. Lateral x-ray images were taken with the Siemens Sireskop SD image intensifier at 3 pulses/second, with the patient seated on a Perspex commode. Images were taken at rest, squeeze and evacuation (for at least 30 seconds).

The DPGs of consecutive patients to the Pelvic Floor Clinic between January 2004 and November 2008 were analysed. In this clinic DPG is carried out if patients have a full thickness rectal prolapse or suspicion thereof and in all patients with symptoms of constipation, obstructed defaecation (OD), resistant faecal incontinence (FI), mixed OD
and faecal incontinence, pelvic pain and/or discomfort. The extent of rectal prolapse was graded 1-5 using the Oxford Rectal Prolapse Grade (ORPG) (figure 2, table 1, page 12,13). Patients were included in the study if they had full thickness internal [grades 1-4 prolapse] or external rectal prolapse [grade 5 prolapse]. Invagination of the full thickness of the rectal wall was taken to be the case if the width of the intussucipiens was greater than 3mm16. DPGs were analysed separately by three investigators with regards to the presence of an enterocoele and ORPG. Studies were excluded if defaecation was not achieved during the study, if the image quality was too poor to identify small bowel or if all investigators read the scan differently. This only occurred in a hand full of cases but was felt to be important with regards reproducibility of proctogram assessment.

The patients’ sex and age at presentation were documented. The obstetric history of female patients was documented; nullips and those with children born by Caesarean section only were classified in the ‘no vaginal delivery’ group (V0) and those with one or more vaginal deliveries in the vaginal delivery group (V+). Hysterectomy status was also documented. Comparison primarily between rectal prolapse grade and the presence of an enterocoele was made. The presence of an enterocoele was evaluated with regards the age, sex and parity of patients and whether or not the patient had had a hysterectomy.

Statistical analysis was carried out using the JMP 7.0 statistical package (SAS Institute, North Carolina, USA). For categorical data, results were analysed in contingency table format, using the Chi-squared test. Parametric data was compared using a student t-test. A p-value <0.05 (2-sided) was considered significant.

Results

Enterocoele and rectal prolapse

During the period of the study 915 patients were seen in clinic and 680 of these had a defaecating proctogram. 371 patients (55%) were demonstrated to have grades 1 to 4 internal (IRP) or external rectal prolapse (ERP). Of these 322 (87%) were female and 49 male. The age distribution was shown to be parametric with a mean age of 57 years (s.d. 14.0). Of those with an enterocoele present, 1/8 (13%) had grade 1 IRP, 10/54 (19%) grade 2 IRP, 34/125 (27%) grade 3 IRP, 62/135 (46%) grade 4 IRP and 23/49 (47%) with grade 5 full thickness (Figure 2). There was a statistically significant correlation between the presence of an enterocoele and increasingly severe grade of rectal prolapse (Pearson X2 test: p<0.0002).
Figure 2, Diagram comparing the presence of enterocoele with grade of rectal prolapse.  
X-axis: rectal prolapse grade.  
Y-axis: percentage presence of enterocoele.

Enterocoele and other factors
An enterocoele was present in 125/322 women (39%) and 5/49 men (10%). The higher rate in women was statistically significant (Pearson’s X² test: p<0.0001). There was a higher likelihood of having an enterocoele with advancing age. The mean age of those with an enterocoele was significantly higher than in those without an enterocoele (55.1 years (95% CI 53.3–56.8) versus 60.8 years (95% CI 58.4–63.2), Student t-test: p<0.0001).

Of the cohort of 322 women in the study, data on vaginal delivery were available in 303 (94%). Of these 247 (82%) had delivered vaginally (V+) and 56 (18%) had not (V0). There was no significant difference in the proportion of V+ and V0 women with enterocoeles (39% versus 38%, respectively, Pearson X² test: p=0.8). Data on hysterectomy status were available in 292 (91%) of the study cohort of 322 women. Of these 184 (63%) had undergone hysterectomy and 108 (37%) had not. There was a significantly higher proportion of enterocoeles in women who had undergone a hysterectomy (49% vs. 34%, Pearson X² test: p=0.015).

Discussion
Anatomical levels in the posterior pelvic compartment have been described which help to explain how rectal intussusception, rectocele and enterocoele may all be part of a rectal prolapse syndrome. It has been previously shown that rectal prolapse (internal or external) is more common in those with enterocoele. In studies by Lapalus et al. and Mellgren et al. rectal intussusception was found in 52% and 55% and external rectal prolapse in 4% and 38% of cases of patients with enterocoele. However, because particularly internal rectal prolapse is rarely graded, the relationship of enterocoele to
grade or degree of prolapse, has not been shown. This work supports the concept that enterocoele is increasingly seen with advancing severity of rectal prolapse grade as seen on defaecating proctography. Enterocoele is therefore a marker of severity of pelvic floor weakness.

It is interesting to note that 13% of grade I rectal prolapses had an enterocoele in this study which is about the same as the figure of 10% of healthy female volunteers who have been shown to have an enterocoele in other studies\(^1\). This suggests consistency with the published literature.

With regard to the levels of support in the posterior pelvic compartment women having had hysterectomies lose the pelvic visceral support of the uterosacral and cardinal ligaments (level I support)\(^4\). They were found to be more likely to have an enterocoele than those who had not. This is supported by previous studies that have shown that up to two thirds of women with symptomatic enterocoeles have undergone previous hysterectomy\(^{15,18-20}\). It was also noted that enterocoele was more common with advancing age. This has also been demonstrated with regards to advancing grades of internal and external rectal prolapse. The lack of association found between enterocoele and parity has been found to be the case in previous studies\(^5\).

There has been a debate as to symptoms caused directly by an enterocoele and those associated with it as a result of other simultaneous / concomitant pathologies. An association has been drawn between enterocoele and obstructed defaecation\(^{18,21-23}\) and also with symptoms of pelvic discomfort, pelvic heaviness and pressure and feelings of prolapse\(^{24-25}\). Chou et al.\(^{26}\) compared signs and symptoms in females with and without enterocoeles and concluded that there were no significant differences related to bowel function and indeed Halligan et al.\(^9\) concluded that patients with enterocoele evacuated more rapidly.

Surgical approaches aimed purely at correcting the enterocoele at the pelvic inlet, such as that described by Gosselink et al.\(^{24}\), result in improvement in symptoms in only 25% of patients. Symptoms of pelvic discomfort and pressure, attributable to the enterocoele itself have been shown to improve, but obstructed defaecation symptoms persisted in all patients. Oom et al.\(^{27}\), Mellgren et al.\(^{28}\) and Jean et al.\(^{25}\) have shown persisting symptoms of obstructed defaecation in 75%, 80% and 85% of patients respectively. This suggests that other associated pathology is responsible for these residual symptoms, and argues against enterocoele being a major cause of obstructed defaecation. It suggests that enterocoele is associated with other symptom-generating, advanced pelvic floor pathology.
Conclusion

Enterocoele is increasingly seen with advancing severity of rectal prolapse grade. This suggests that the two findings are part of the same pathological pelvic floor process. These data support the hypothesis that enterocoele is a marker of severe pelvic floor weakness. Enterocoele is seen more frequently in females particularly after hysterectomy.
References


