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The retroverted uterus: ignored to date but core to prolapse

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Abstract The retroverted uterus has been largely ignored in urogynaecological research to date. The prevalence of the retroverted uterus is 79% more common in the urogynaecological patient population (34%) than in the general gynaecological population (19%). Its diagnosis requires the use of (a) transvaginal ultrasound with (b) an empty bladder. Recent data demonstrate that the prevalence of grade 2–4 uterine prolapse for a retroverted uterus is 4.5 times that for an anteverted uterus. Alternatively, 69% grade 2–4 uterine prolapse involves the retroverted uterus. The retroverted uterus, when diagnosed by transvaginal ultrasound (bladder empty), is far more common in urogynecology patients due to their higher incidence of prolapse.

Keywords Uterine retroversion · Retroverted uterus · Prolapse · Transvaginal ultrasound

Introduction

The retroverted uterus has been largely ignored in urogynaecological research to date. Until now, there has been only one citation in the urogynaecological literature [1]. There are only two other citations referencing the retroverted uterus in association with bladder dysfunction [2, 3].

The remaining 71 of a total of only 74 references in the peer-reviewed and published literature concerning the retroverted uterus address general obstetric and gynaecological issues. Obstetric issues, related to incarceration of the gravid retroverted uterus, occur in 12 papers, e.g. [4]. Associated gynaecological issues involve (a) the additional technical difficulty in chorionic villus sampling (5 papers,

e.g. [5]), (b) the greater likelihood of failure with endometrial resection and thermal balloon ablation (5 papers, e.g. [6]), (c) pelvic pain and dyspareunia treated with laparoscopic ventrosuspension (15 papers, e.g. [7]), (d) increased difficulties with embryo transfer (4 papers, e.g. [8]), (e) issues regarding the insertion and performance of IUDs and diaphragms (3 papers, e.g. [9]), (f) sonography and surgical issues (18 papers, e.g. [10]), (g) infertility issues (6 papers, e.g. [11]) and (h) abortion issues (3 papers, e.g. [12]).

Retroversion implies that the axis of the body of the uterus is directed towards the hollow of the sacrum away from its normal (anteverted) position overlying the bladder [13]. The longitudinal axis of the anteverted uterus is approximately at right angle to the vagina [14], whereas the axis of the retroverted uterus tends to be similar to that of the vagina (Fig. 1). The cervix of the retroverted uterus is anteriorly placed in the vagina close to the bladder or urethra as opposed to the position of the cervix of the anteverted uterus lying in the posterior fornix and directed infero-posteriorly. If angulation of the corpus on the cervix is extreme, the retroverted uterus might be additionally or alternatively termed “retroflexed” [15].

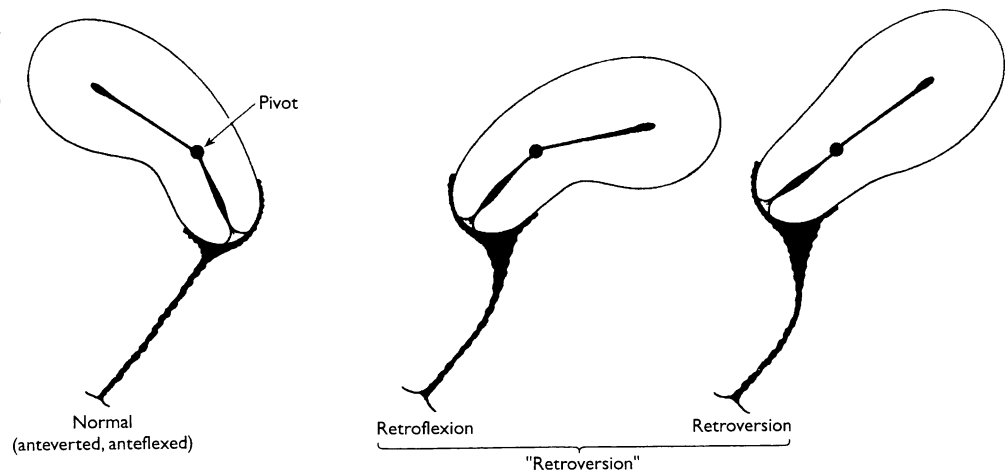
Diagnosis and incidence

Where clinical examination allows, an anteriorly placed cervix and a clearly retroverted fundus can be palpated. Bladder volume should be empty. Too often, the version of the uterus is clinically unclear.

Ultrasound provides the most accurate diagnosis, although conditions for optimal imaging had not been clarified. In a recent study of 204 women attending a subspecialist gynaecological ultrasound unit [16], it was determined that an accurate diagnosis of a retroverted uterus required (a) the use of transvaginal ultrasound because of the superior resolution and the proximity of the probe to the area of interest and (b) a completely empty bladder. These results confirm the identical observations of Freimanis and Jones [17]. It was noted that with six women [16], the uterus was anteverted with a full bladder and

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Fig. 1 Anteverted and retroverted uteri. (Adapted from [15]. Permission to reproduce was obtained from Elsevier, Australia)



retroverted with an empty bladder (a retroverted uterus never became anteverted).

There were no clear prevalence figures for the retroverted uterus in gynaecological patients. The above study [16] using the outlined diagnostic criteria determined that 39 of the 204 women had a retroverted uterus, a prevalence rate of 19% in a general gynaecological patient population. This compares with a mean prevalence figure of 20% (range 10–38%) from 15 of the aforementioned 74 citations [2, 4, 5, 8, 9, 13–15, 18–20, 21–24] which contained prevalence figures. All these latter studies, however, were not systematic.

Similarly, there were no prevalence figures for women with a retroverted uterus in a urogynaecological patient population. In a further study [25] of 592 women attending for the first urogynaecological assessment including urodynamics, it was determined that 133 (34%) of women with uteri in situ had a retroverted uterus and 262 (66%) women had an anteverted uterus. Thus, the prevalence of the retroverted uterus in a urogynaecological patient population is 79% more frequent than in the general gynaecological patient population. The main reason for this, as will be further clarified in the next section, is the much greater incidence of prolapse amongst women with a retroverted uterus.

Aetiology

The retroverted uterus is normally a developmental occurrence [15], although acquired retroversion can occur with the effects of endometriosis, pelvic inflammatory disease and pelvic tumours [13, 15]. The retroverted uterus appears to have a familial tendency.

There are strongly held traditional theories, however, that a much greater percentage of retroverted uteri may be acquired, hypothesizing that an anteverted uterus can often become retroverted as it prolapses [23]. There is no evidence for this theory in the literature. In the author's clinical practice over the past 16 years, with each of over 10,000 new urogynaecology patients, all of whom were

subject to transvaginal ultrasound (bladder empty), there has been no objective evidence to support this theory. A majority of women presenting with a prolapsing retroverted uterus will have been given some indication of this orientation of their uterus in the past, with no woman, so far, having produced clear prior ultrasonic evidence of an anteverted uterus.

It is acknowledged that a longitudinal study is required to prove that uterine retroversion is mainly developmental with little acquired component.

Clinical features

Developmental retroversion is symptomless [15]. However, due to the greater association with prolapse, women with the retroverted uterus are more likely to experience pelvic dragging sensation or pain, sacral backache (due to taut or turgescient utero-sacral ligaments [13]) or, eventually, a more obvious lump. It is well recorded that the anteriorly placed cervix is far more likely to be impinged upon with intercourse [7], especially if it is prolapsing, causing dyspareunia on deep penetration.

Research connecting the retroverted uterus with the different urinary symptoms is not available. The following have been the author's clinical observations. Women presenting with cyclical symptoms of lower urinary tract dysfunction are more likely to have a retroverted uterus. Cyclical symptoms of voiding difficulty are typical of the retroverted uterus representing most likely a degree of extrinsic impingement of the anteriorly placed cervix on the urethra, most commonly premenstrual. This effect generally serves to exacerbate some degree of underlying voiding difficulty. Some cyclical urgency can accompany these symptoms.

As a further observation, the symptom of stress incontinence tends to be different in women with a retroverted uterus. There is a slightly protective effect of the retroverted uterus akin to that of mild prolapse, making occult stress urine leakage more likely than is the case for an anteverted uterus. Direct coughing (applying downward

pressure on the uterus) might enhance this protective effect leading to reduced leakage than the equivalent situation with an anteverted uterus. Leakage is exposed more with jolting movements, such as running, jumping and jolting-type sports, where the protective effect of the retroverted uterus is lost. That protective effect can be also lost with a fuller bladder akin to the situation with prolapse [26].

Coital leakage may often be a reflection of the interaction of a retroverted uterus with underlying diagnosis of urodynamic stress incontinence. The protective effect of the retroverted uterus on the latter diagnosis is lost as the cervix of the retroverted uterus is impinged upon with intercourse.

Signs

Due to the anteriorly placed cervix, the anterior vaginal wall of women with a retroverted uterus can be observed to be functionally if not actually shorter than those with an anteverted uterus. This has some surgical implications, which will be discussed below. In contrast, the posterior vaginal wall tends to be functionally longer because there is no cervix filling the posterior fornix, as is the case with the anteverted uterus. However, no significant increase has been demonstrated in the incidence of posterior vaginal wall prolapse in women with retroverted uteri compared to women with anteverted uteri [25].

In seeking the sign of clinical stress leakage, due to the slightly protective effect of the retroverted uterus, this examination might be best performed with retroverted uterus reduced, e.g. in the left lateral position and using a Sims speculum. Incidentally, access to the anteriorly positioned cervix for obtaining a cervical smear is often easier with the patient also in the left lateral position.

Retroverted uterus and prolapse

The greatest relevance of the retroverted uterus is in relation to its close association with prolapse. Of the 395 women with uterus in situ [25], the prevalence of grade 2–4 uterine prolapse in women with a retroverted uterus was found to be 4.5 times that in women with an anteverted uterus. Sixty-nine percent of grade 2–4 uterine prolapse was found to involve the retroverted uterus. There were also greater prevalences of grade 2–3 cystocele (1.9 times) and at least grade 1 enterocele (4.7 times) in association with a retroverted uterus than is the case with an anteverted uterus.

Women with a retroverted uterus [25] presented earlier (median age 52) with urogynaecological problems than their equivalents with an anteverted uterus (median age 56) or an absent uterus (median age 64). There was no significant difference in women with anteverted and retroverted uteri in relation to parity.

Pathogenesis of the increased association of the retroverted uterus and prolapse

Symmonds [13] noted that a uterus that is in a retroverted position is especially subject to prolapse; with the corpus aligned with the axis of the vagina, anything increasing intra-abdominal pressure exerts a piston-like action on the uterus, driving it down into the vagina. This would seem a very logical mechanism, one likely to be behind the majority of uterine prolapse and much vaginal prolapse associated with that uterine descent. In contradistinction, intra-abdominal pressure on an anteverted uterus tends to force it infero-posteriorly towards the rectum, where prolapse is far less likely.

Retroverted uterus and other urodynamic diagnoses

There were no significant differences demonstrated [25] between women with (a) an anteverted uterus, (b) a retroverted uterus and (c) an absent uterus in relation to the major urodynamic diagnoses: urodynamic stress incontinence, overactive bladder, voiding difficulty (abnormally slow and/or incomplete micturition) or recurrent urinary tract infections (two or more in the previous 12 months).

Surgical implications of retroverted uterus

The tendency towards a shorter anterior vaginal wall for women with a retroverted uterus carries surgical implications. There is less vaginal wall available for elevatory continence procedures such as colposuspensions. It is more likely the uterine cervix (if present) might be drawn into a difficult position behind the “ridge” created by the colposuspension, jeopardising the longer term success of the procedure. Fortunately, the availability of effective non-elevatory sling-type continence procedures, such as the tension-free vaginal tape, avoids this issue.

Conclusion

The retroverted uterus has been ignored for too long. Its greater prevalence in the urogynaecological than in the general gynaecological population reflects its much greater association with uterine and other associated vaginal prolapse.

For 69% uterine prolapse and much associated vaginal prolapse to be associated with uterine retroversion, that entity becomes “core” to an appreciation of prolapse. Abdominal “pulsion” forces in an “axial” direction provide the most logical pathogenesis of at least the uterine prolapse component.

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