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Total versus Subtotal Hysterectomy : Risks and Benefits

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Introduction

Hysterectomy is one of the most common major gynaecological operations, and the vast majority of this procedure is performed for benign disease. This operation disrupts the intimate anatomical relationship between the uterus, bowel, bladder and vagina, and inevitably the local nerve supply. It is, therefore, conceivable that hysterectomy may alter the function of these organs. The procedure may be total, when both the body of the uterus and the cervix are removed, or subtotal, when the cervix is conserved. In the UK, subtotal hysterectomy is an unpopular procedure, accounting for only 1.47% of the hysterectomies in 1994-1995.¹ This is apparently largely due to a perceived risk of cervical stump carcinoma. However, there are a number of compelling reasons why gynaecologist might review his/her views: the incidence of cervical cancer is falling due to more effective screening; the increased risk of ureteric and bladder damage associated with total, but minimised by subtotal, hysterectomy might persuade some to consider whether the former operation is always necessary; and, finally, the conflicting report from Scandinavia in the early and late 1980, where the issue was whether one or the other operation conferred benefit in terms of urinary, bowel and sexual function, have brought the whole controversy into the public domain.

The evolutionary path of hysterectomy

The first recorded hysterectomy was performed by Charles Clay in 1843. The patient unfortunately died in the immediate postoperative period. Clay performed another hysterectomy the following year. This was a subtotal

hysterectomy and the patient lived for 15 days.² Subsequent hysterectomies were all subtotal until 1929, when Richardson performed a hysterectomy which included removal of the cervix. From then on total hysterectomies became more common. When the 1940s heralded antibiotics, blood transfusion, modern anaesthesia and improved surgical techniques, total hysterectomy took off as the preferred procedure over subtotal hysterectomy. To this day, most gynaecologists have little time for this operation: in the UK only 1.47% of the 72,821 hysterectomies performed during 1994-1995 were subtotal.¹ However, a series of publications from Finland in the early 1980 indicated that subtotal hysterectomy may have benefits over total hysterectomy.³⁻⁵ Unfortunately, subsequent studies from the same institute could not corroborate the earlier findings, while critics of the latter studies point out that these studies were not comparable to the earlier studies. This has created a controversy at a time when there is emphasis on the practice of evidence-based medicine. This article, therefore, is aimed to review the results of most, if not all, studies comparing the risks/benefits associated with total/subtotal hysterectomies in hope that this will provide a more up to date information regarding this aspect for the currently-practiced gynecologists.

Hysterectomy : anatomical considerations

Normally the cardinal and the uterosacral ligaments hold the cervix firmly in place, while the rest of the uterus is free and mobile. Thus the cervix serves as the anchor of support for the entire organ. The pelvic plexus, which is of paramount importance in the co-ordinated contractions of

the smooth muscle of the bladder and bowel, is formed by the junction of the pelvic parasympathetic and sympathetic nerves. This plexus is intimately related to the bladder, cervix and vagina and the nerve supply of the pelvic organs is derived from it.⁶ It is, therefore, conceivable that damage to this autonomic innervation during pelvic surgery may result in functional disorders of the pelvic viscera and, indeed, it has been suggested that constipation following hysterectomy may be caused by autonomic denervation of the hindgut.⁷ Similarly, sympathetic damage produces loss of proximal urethral pressure and parasympathetic damage may cause detrusor areflexia.⁸

While performing total hysterectomy, the pelvic plexus may be at risk in four areas. Firstly, the main branches of the plexus passing beneath the uterine arteries may be damaged during the division of the cardinal ligaments.⁹ Secondly, the major part of the vesical innervation, which enters the bladder base before spreading throughout the detrusor muscle, may be damaged during blunt dissection of the bladder from the uterus and cervix. Thirdly the extensive dissection of the paravaginal tissue may disrupt the pelvic neurons passing from the lateral aspect of the vagina.¹⁰ Finally, the removal of the cervix will result in loss of a large segment of the plexus which is intimately related to it. The remaining portion of the plexus may be inadequate to deal with afferent impulses from the rectum and the bladder, possibly leading to bladder and rectal dysfunction.¹¹

Hysterectomy and bladder function

Dissection of the bladder from the uterus is necessary while performing hysterectomy. Bladder innervation may, therefore, be altered, but studies have yielded conflicting results. Pary and colleagues, carried out a prospective study with both subjective and objective assessments of urinary function and found subjective symptoms in 58.3% of women prior to hysterectomy, although urodynamic dysfunction was found in only 38.9%. Postoperatively, they found an increase in urinary symptoms (75%), new urodynamic abnormalities (an additional 30%) and pelvic neuropathy as evidenced by sacral reflex latencies. By contrast, Langer and coworkers¹² evaluated 16 asymptomatic premenopausal women and performed cystometry and uroflowmetry pre-operatively, and again at 4 weeks and 4 months post-hysterectomy, and found no difference in symptoms or urodynamic results. Another study has even reported a statistically significant decrease in stress incontinence, frequency and nocturia 12 months after total abdominal hysterectomy.¹³ It has been hypothesised that decreased urinary stress incontinence

following hysterectomy may be due to elevation of the bladder neck by fixation of the vaginal vault to the uterosacral ligaments.¹⁴

Besides all that controversy, however, the more interesting issue is that whether subtotal hysterectomy confers any benefits over total hysterectomy. In a series of publications from 1983, Kilkku³⁻⁵ extolled the virtues of subtotal hysterectomy with respect to urinary and sexual function, such that in Finland, where Kilkku carried out his studies, 53% of abdominal hysterectomies from 1981 to 1986 were subtotal. In the total hysterectomy group, 28.6% of the patients reported preoperative incomplete bladder emptying, which fell to 22.1% post-surgery. In contrast, 35.5% of the subtotal hysterectomy group reported incomplete bladder emptying prior to surgery and, by 1 year, the figure had fallen to only 10.3%. Similar trends were found for urinary incontinence and frequency. The authors, therefore, concluded that subtotal hysterectomy was more advantageous.⁵ However, subsequent studies by Virtanen and co-workers¹³ from the same institute did not concur with Kilkku's findings and by 1991 the rate of subtotal hysterectomy had dropped to 13%.¹⁵ The two studies are not comparable, as Kulkku compared total and subtotal hysterectomy while the study conducted by Virtanen was a longitudinal assessment of total hysterectomy only. Laos and Bjerle¹⁶ performed a randomised comparison of 22 patients, equally divided between total and subtotal hysterectomy. They found no differences in either urodynamic evaluation or in subjective symptoms such as frequency and incontinence. However, the numbers in these studies were so small that the findings were not statistically significant.

Hysterectomy and bowel function

Goffeng et al¹⁷ conducted a longitudinal study, pre-operatively and at 3 and 11-18 months after hysterectomy. Anorectal physiology was normal after hysterectomy and no adverse bowel symptoms were noted except for a significant improvement in abdominal pain. There was no difference between total hysterectomy and subtotal hysterectomy.

Hysterectomy and female sexuality

Anatomical changes induced by hysterectomy might affect sexuality. Disturbance of the innervation of the cervix and the upper vagina after total hysterectomy could interfere with lubrication and orgasm. The so-called 'internal orgasm' is essentially a 'cervical orgasm' caused by stimulation of nerve endings in the uterovaginal plexus, which intimately surround the cervix and attach to the upper

vagina. Since much of the sensory and autonomic information from the pelvic organs, including the uterus, is channelled through the uterovaginal plexus, it is understandable that loss of a major portion of the uterovaginal plexus through excision of the cervix might have an adverse effect on sexual arousal and orgasm in women who previously experienced internal orgasm. Women who achieve orgasm through clitoral stimulation might not be affected. In those women who had experienced both types of orgasm or in whom sexual response is blended, a decrease in sexual response following hysterectomy might be noted.¹¹ The other factors contributing to sexual problems could be a reduction in cervical mucous contributing to the vaginal dryness and vaginal shortening.¹⁸

Kilku and his associates compared coital frequency, dyspareunia, libido and frequency of orgasm before surgery and at 6 weeks, 6 months, 1 year and 3 years post-surgery.³⁻⁵ Both groups showed an equal, but slight reduction in coital frequency, dyspareunia decreased in both groups but statistically more in the subtotal hysterectomy group; the frequency of orgasm was significantly reduced in the total hysterectomy group but not in the subtotal hysterectomy group. Such findings lend credence to Master's observation that many women will certainly describe cervical sexual pressure as a trigger mechanism for coital responsibility.¹⁹ Such women may be handicapped sexually when such a trigger mechanism is removed surgically.

Conclusions

Subtotal hysterectomy is undoubtedly the safer operation, whatever the skill of the surgeon; there is less bleeding and mobilisation of the bladder, and potentially less disruption of autonomic nervous pathways. Nathorst-Boos and co-workers found a lower morbidity rate with subtotal compared to total hysterectomy while they complicate 21% of total hysterectomies.²⁰ However, in general, most gynaecologists have negative views to subtotal hysterectomy. Leaving the cervix behind is often regarded as reflecting surgical inexperience, and advocates of total hysterectomy also argue that cancer may subsequently develop in the cervical stump. However, screening for cancer of the cervix by regular smears has begun to pay dividends, and perspectives on the risk of cancer developing in the stump in patients carefully selected for subtotal hysterectomy. The risk is currently quoted at less than 0.3%.²¹ It is, therefore, questionable whether the gynecologist should persist removing a healthy cervix. It is, thus, the responsibility of gynecologist

performing surgery to weigh the risks/benefits associated with total versus subtotal hysterectomy and carefully select the most appropriate procedure to each individual patient rather than following the 'routine total hysterectomy' policy in their current practices.

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