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. 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 1980s, 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. 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. However, a series of publications from Finland in the early 1980s indicated that subtotal hysterectomy may have benefits over total hysterectomy.

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 so-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,
urethra and vagina and the intimate supply of the pelvic
organ is derived from it. It is, therefore, susceptible to damage
to the autonomic innervation during pelvic surgery may
result in functional disorders of the pelvic viscera and,
indeed, it has been suggested that coagulation following
hysterectomy may cause by autonomic denervation of
the hindgut. Similarly, sympathetic damage produces
loss of proximal urethral pressure and parasympathetic
damage may cause detrusor arteries.5

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.6
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 paravesical tissue may disrupt
the pelvic nerves passing from the lateral aspect of the
vagina.7 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 sexual
dysfunction.8

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 55.3%
of women prior to hysterectomy, although urodynamic
dysfunction was found to only 28.4%. Postoperatively, they
found an increase in urinary symptoms (79.6%), new
urodynamic abnormalities (an additional 30%) and pelvic
neuropathy as evidenced by sacral reflex latencies. By
contrast, Langer and coworkers,9 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.10 It has been
hypothesized that decreased urinary stress incontinence
following hysterectomy may be due to elevation of the
bladder neck by fixation of the vaginal vault to the
urogenital profile.11

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, Kittka12 extolled the virtues of
subtotal hysterectomy with respect to urinary and sexual
function, such that in Finland, where Kittka carried out his
studies, 53% of abdominal hysterectomies from 1961 to
1980 were subtotal. In the total hysterectomy group, 26.6% 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.9 However, subsequent studies
by Virtanen and co-workers8 from the same institute did
not concur with Kittka's findings and by 1991 the rate of
subtotal hysterectomy had dropped to 13%.10 The two
studies are not comparable, as Kittka compared total and
subtotal hysterectomy while the study concluded by
Virtanen was a longitudinal assessment of total
hysterectomy only. Lalis and Bjørken4 performed a rand omission comparison of 22 patient, 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

Golfeng et al15 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 urogenital 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.\(^{21}\) The other factors contributing to sexual problems could be a reduction in cervical mucous contributing to the vaginal dryness and vaginal shortening.\(^{22}\)

Kimku and his associates compared coital frequency, dyspareunia, libido and frequency of orgasm before surgery and at 6 weeks, 6 months, 1 year and 5 years post-surgery.\(^{24}\) 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.\(^{27}\) 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-Bloos and co-workers found a lower morbidity rate with subtotal compared to total hysterectomy while they complicated 21% of total hysterectomies.\(^{26}\) 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%.\(^{25}\) It is, therefore, questionable whether the gynaecologist should persist removing a healthy cervix. It is, thus, the responsibility of gynaecologist 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.

References