

# We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

6,900

Open access books available

186,000

International authors and editors

200M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index  
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?  
Contact [book.department@intechopen.com](mailto:book.department@intechopen.com)

Numbers displayed above are based on latest data collected.  
For more information visit [www.intechopen.com](http://www.intechopen.com)



# Subtotal Versus Total Abdominal Hysterectomy for Benign Gynecological Conditions

Zouhair Amarin

*Jordan University of Science and Technology,  
Jordan*

## 1. Introduction

Abdominal hysterectomy is the most commonly performed major gynecologic operation for women (1). It is considered a safe procedure with a low mortality rate for benign indications (2). In addition, it is associated with higher rates of patient satisfaction than other treatments for dysfunctional uterine bleeding (3). However, operative morbidity can be high since hysterectomy disrupts the local nerve supply and anatomical relationships (4).

Until the late 1930s, the standard type of abdominal hysterectomy was subtotal, but this was gradually replaced by total abdominal hysterectomy, although the subtotal approach still remained popular (5). In the last few years there has been a major shift to less invasive means of treating benign gynaecological disorders. Total abdominal hysterectomy involves removing the body of the uterus and the cervix, whereas subtotal abdominal hysterectomy conserves the cervix. Although sometimes the indication for the operation necessitates removal of the cervix, the commonest conditions, menstrual disorders and fibroids, do not involve the cervix.

In the United Kingdom, according to the Department of Health and Social Security in 1985, 18600 hysterectomies were performed for menstrual disorders (6). In the series of Vessey et al. of 1992, 38.5% and 35.5% respectively were for fibroids and menstrual disorders, while 6.5% were for malignant disease. In this Oxford Family Planning Association study of 1985 hysterectomies, 87.2% were by the abdominal route, and only 0.7% were subtotal hysterectomies (7). The proportion of subtotal hysterectomies for benign diseases of the female genital organs in the USA in 1997–2005 was around 6% (8), much lower than that of 22% in Denmark in 1998 (9). Stang et al. reported that around 4% of the 305 015 hysterectomies carried out in Germany in the period 2005–2006 were subtotal abdominal procedures (10).

With the advent of laparoscopic hysterectomy, the popularity of laparoscopic subtotal hysterectomy started to rise during the 1990s as a new modality of treatment for abnormal uterine bleeding, with an increase in the overall number of subtotal hysterectomy procedures (5). However, there is a lack of well-designed randomized, controlled trials that compare laparoscopic subtotal hysterectomy with total abdominal hysterectomy, with attention to short- and long-term morbidity.

In a multi-centre retrospective cohort analysis to evaluate the peri- and postoperative outcomes in women undergoing laparoscopic subtotal hysterectomy versus laparoscopic total hysterectomy, the overall number of short-term and long-term complications was comparable for both procedures. Laparoscopic subtotal hysterectomy as compared with laparoscopic total hysterectomy and laparoscopically assisted vaginal hysterectomy was associated with more long-term postoperative complications, whereas laparoscopic total hysterectomy was associated with more short-term complications (11). The relatively large sample size may partially compensate for the major limitation of the retrospective nature of the design of this study.

Rate estimates of conversion from laparoscopic to open abdominal hysterectomy are sparse. Published conversion rates vary considerably and may depend on patient-related factors such as uterine size, pelvic and bowel adhesions, physician-related factors such as surgeons' competence, and intra-operative events such as viscous injuries and extensive bleeding (12-16). In a study from Germany the rates of conversion were highest for neoplastic disorders. The crude rates of conversion from laparoscopic to open abdominal hysterectomy for benign conditions were 10.5% (17).

Excising the uterine cervix at total abdominal hysterectomy is anatomically the most disruptive part of the operation. Subtotal abdominal hysterectomy requires less mobilization of the bladder and minimizes the risk of injury to the ureters. Subtotal hysterectomy is also associated with less anatomical disruption, and perhaps, it is associated with less adverse effects than total hysterectomy.

As residual amounts of endometrial tissue could result in vaginal bleeding after subtotal abdominal hysterectomy, the author routinely performs "reverse conization" of the cervix, followed by endocervical cautery to ablate the cervical epithelium down to the transformation zone. In the author's series of subtotal abdominal hysterectomy there have been no cases of cyclical vaginal bleeding in women whose ovaries were conserved, or in those who were prescribed hormone replacement therapy. Nevertheless, after subtotal abdominal hysterectomy, women need to have regular Papanicolaou smears and a minority of women may experience slight cyclical bleeding (18).

The concern that cancer might develop in the cervical stump should not be considered a justification for routine use of total abdominal hysterectomy as continued screening would cover this concern, considering that the risk of cervical cancer after subtotal abdominal hysterectomy is less than 0.1 percent (19).

Subtotal abdominal hysterectomy is often combined with removal of the ovaries. There are inconsistencies in the prescription of hormone replacement therapy following subtotal abdominal hysterectomy, and evidence is lacking to guide hormone replacement prescription following subtotal abdominal hysterectomy and bilateral oophorectomy (20). Until such evidence become available, it is felt that women should be counseled prior to subtotal abdominal hysterectomy regarding hormone replacement therapy, which should include progesterone.

The main objectively measurable parameters in the comparison between subtotal and total abdominal hysterectomy are morbidity and mortality. The main short-term and long-term comparative events and complications of subtotal versus total hysterectomy for benign uterine diseases are listed in Table 1.

<b>Intra-operative parameters</b>
Anaesthesia-related complications
Blood loss
Blood loss requiring transfusion
Technical problem
Conversion
Duration of operation
<b>Post-operative parameters</b>
<b>Short term</b>
Pain score
Pyrexia
Haemoglobin level
Blood transfusion
Urinary tract infection
Retention of urine
Vault hematoma
Wound hematoma
Ileus
Vaginal bleeding
Hospital stay
<b>Long term</b>
Re-Admission rate
Bowel obstruction
Vault granulation
Cyclical vaginal bleeding
Prolapse of vaginal vault or cervical stump
Dyspareunia
Ureter lesion
Urinary incontinence
Persistent pain
Bowel function
Quality of life (SF-36)/Psychological outcome
<b>Overall</b>
Mortality

Table 1. Short-term and long-term comparative events and complications of subtotal versus total abdominal hysterectomy for benign uterine diseases

Generally, the mortality rates for hysterectomy, standardized for age and race, are higher for procedures associated with pregnancy or cancer than for procedures not associated with these conditions. Although hysterectomies associated with pregnancy or cancer constitute around 10% of all hysterectomies, the majority of deaths occur in women with pregnancy or cancer related conditions (2). Mortality rate after abdominal hysterectomy for benign indications are low at 6 per 10,000 (2). As mortality at abdominal hysterectomy is such an infrequent event, there are no meaningful statistical comparisons comparing mortality of subtotal abdominal hysterectomy versus total abdominal hysterectomy.

In a study by the author to assess the standard of hysterectomy, so as to improve the quality of patient care and outcome, 134 patients undergoing hysterectomy for benign gynaecological conditions were included in a retrospective analytic study, 90 (67%) having total abdominal hysterectomies, and 44 (33%) having subtotal abdominal hysterectomies. Menorrhagia constituted the commonest indication for both types of procedure (89.5%). The majority of patients undergoing total abdominal hysterectomy (79%) were given prophylactic antibiotics, in contrast to only 32% of those undergoing subtotal abdominal hysterectomy.

The overall incidence of complications that included post-operative pyrexia, blood loss, hematoma formation, need for post-operative analgesia, low post-operative haemoglobin levels, blood transfusion, wound infection, wound re-suturing, urinary tract infection, presence of vaginal vault granulation tissue, duration of surgery, and length of hospital stay for subtotal abdominal hysterectomy were lower than those for total abdominal hysterectomy. In all, 75% of the subtotal abdominal hysterectomies were performed by trainees, while for total abdominal hysterectomy, all were performed by specialists, or had specialists as first assistants (21).

These findings are consistent with other studies which found that subtotal abdominal hysterectomy required less operative time and was associated with less blood loss, versus higher incidence of abscesses, wound infection with higher incidence of pyrexia and use of antibiotics and longer hospital stay in the total-hysterectomy group (22).

With regard to urological outcome, injury to the urinary tract is a frequent cause of litigation after total abdominal hysterectomy (23). It occurs in 0.5 to 3.0 percent of cases (24). Evidence regarding ureteric or bladder injuries following subtotal abdominal hysterectomy compared to total abdominal hysterectomy in randomized controlled trials is sparse.

Regarding urinary frequency, nocturia and incontinence, a systematic review on urinary function following subtotal abdominal hysterectomy and total abdominal hysterectomy identified five observational studies, three of which, in addition to one randomized, controlled trial showed an increased risk of incontinence after total abdominal hysterectomy (22, 25-27). The remaining two, in addition to one randomized controlled trial showed no difference (20,28,29).

In contrast, another randomised controlled trial showed that a significantly smaller proportion of women had urinary incontinence one year after total abdominal hysterectomy compared with subtotal abdominal hysterectomy (30). In addition, total and subtotal abdominal hysterectomy for benign indications have been compared in a meta-analysis performed to summarize the evidence from randomized clinical trials and observational

studies, where less women suffered from urinary incontinence and prolapse after total than after subtotal hysterectomy (31).

In a review of evidence relating to the potential benefits of subtotal abdominal hysterectomy versus total abdominal hysterectomy for women considering hysterectomy for benign disease, the Cochrane Library, Medline, and Embase were searched for articles published in English from January 1950 to March 2008, where the results were restricted to systematic reviews, randomized control trials, controlled clinical trials, and observational studies, the recommendation was that subtotal abdominal hysterectomy should not be recommended as a superior technique to total abdominal hysterectomy for the prevention of postoperative lower urinary tract symptoms (32).

Although there are some studies on the effect of hysterectomies in general on bowel function, most have not addressed a possible difference between subtotal abdominal hysterectomy and total abdominal hysterectomy in relation to this variable (33-35), except for one randomized, controlled trial which found no difference in any of the measures of bowel function, namely constipation, hard stools, urgency, straining, need for laxatives, and incontinence of flatus, between the two groups before or after surgery or over time (22).

With regard to sexual outcome including coital frequency, desire, orgasm frequency, dyspareunia and overall sexual outcome, a systematic review of effect on sexual function following subtotal abdominal hysterectomy versus total abdominal hysterectomy identified four non-randomized studies, one of which showed that total abdominal hysterectomy had advantages over subtotal abdominal hysterectomy (20), two of which showed that subtotal abdominal hysterectomy had advantages over total abdominal hysterectomy with respect to sexual function (36, 37). The remaining one, in addition to five randomized controlled trials showed no difference (20,38-42).

Regarding psychological outcome, women show improvement following both total and subtotal hysterectomy, with no significant differences between them in the amount of anxiety, depression, and somatic symptoms or social dysfunction, between baseline and post-operative measurements (43).

In a survey regarding the attitudes and practice of gynecologists to total versus subtotal abdominal hysterectomy, nearly half of respondents stated that they always removed the cervix. The most common indication cited was to eliminate the risk of cervical cancer, and the most common reason for subtotal hysterectomy was surgical difficulty leading to an intraoperative conversion. Few counseled women regarding the advantages and disadvantages of both total and subtotal hysterectomy, the majority rarely or never did (44).

As probably would be expected, one randomised controlled trial showed that subtotal hysterectomy was faster to perform, had less intraoperative bleeding, and less intraoperative and postoperative complications (31).

In conclusion as inadequate study power is a major issue in most studies, to identify the advantages and disadvantages of subtotal abdominal hysterectomy and total abdominal hysterectomy, large randomized controlled studies are lacking. Until some further studies become available, and based on some of the known outcomes, it should be reasonable to discuss the advantages and drawbacks of both procedures, and consider patients' preferences. This might further improve satisfaction rates after hysterectomies performed for benign conditions.



## 2. References

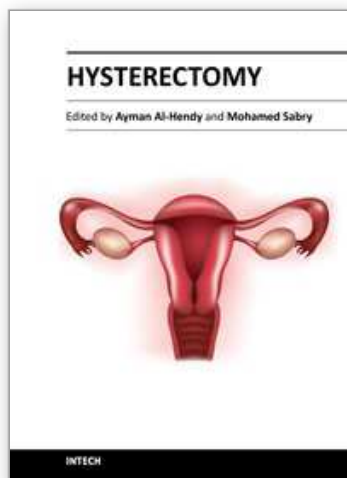
- [1] DeFrances CJ, Lucas CA, Buie VC, Golosinskiy A. 2006 National Hospital Discharge Survey. *Natl Health Stat Report*. 2008;5:1-20.
- [2] Wingo PA, Huezo CM, Rubin GL, Ory HW, Peterson HB. The mortality risk associated with hysterectomy. *Am J Obstet Gynecol*. 1985;152:803-808.
- [3] Halmesmäki K, Hurskainen R, Teperi J, Grenman S, Kivelä A, Kujansuu E, Tuppurainen M, Yliskoski M, Vuorma S, Paavonen J. The effect of hysterectomy or levonorgestrel-releasing intrauterine system on sexual functioning among women with menorrhagia: a 5-year randomised controlled trial. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2007;114:563-568.
- [4] Dicker RC, Greenspan JR, Strauss LT, Cowart MR, Scally MJ, Peterson HB, DeStefano F, Rubin GL, Ory HW. Complications of abdominal and vaginal hysterectomy among women of reproductive age in the United States. The Collaborative Review of Sterilization. *Am J Obstet Gynecol*. 1982;144:841-848.
- [5] Sutton C. Past, present, and future of hysterectomy. *J Minim Invasive Gynecol*. 2010;17:421-435.
- [6] Department of Health and Social Security and Office of Population Censuses and Surveys. Hospital in-patient enquiry. DHSS:London,HMSO:1985.
- [7] Vessey MP, Villard-Mackintosh L, McPherson K, Coulter A, Yeates D. The epidemiology of hysterectomy: findings in a large cohort study. *Br J Obstet Gynaecol*. 1992;99:402-407.
- [8] Merrill RM. Hysterectomy surveillance in the United States, 1997 through 2005. *Med Sci Monit*. 2008;14:CR24-CR31.
- [9] Gimbel H, Settnes A, Tabor A. Hysterectomy on benign indication in Denmark 1988-1998 A register based trend analysis. *Acta Obstet Gynecol Scand*. 2001;80:267-272.
- [10] Stang A, Merrill RM, Kuss O. Hysterectomy in Germany: A DRG-Based Nationwide Analysis, 2005-2006. *Dtsch Arztebl Int*. 2011;108:508-514.
- [11] van Evert JS, Smeenk JM, Dijkhuizen FP, de Kruif JH, Kluivers KB. Laparoscopic subtotal hysterectomy versus laparoscopic total hysterectomy: a decade of experience. *Gynecol Surg*. 2010;7:9-12.
- [12] Leonard F, Chopin N, Borghese B, Fotso A, Foulot H, Coste J, et al. Total laparoscopic hysterectomy: preoperative risk factors for conversion to laparotomy. *J Minim Invasive Gynecol*. 2005;12:312-317.
- [13] Ng CC, Chern BS, Siow AY. Retrospective study of the success rates and complications associated with total laparoscopic hysterectomy. *J Obstet Gynaecol Res*. 2007;33:512-518.
- [14] Tohic AL, Dhainaut C, Yazbeck C, Hallais C, Levin I, Madelenat P. Hysterectomy for benign uterine pathology among women without previous vaginal delivery. *Obstet Gynecol*. 2008;111:829-837.
- [15] Eisenkop SM. Total laparoscopic hysterectomy with pelvic/aortic lymph node dissection for endometrial cancer - a consecutive series without case selection and comparison to laparotomy. *Gynecol Oncol*. 2010;117:216-223.
- [16] Tunitsky E, Citil A, Ayaz R, Esin S, Knee A, Harmanli O. Does surgical volume influence short-term outcomes of laparoscopic hysterectomy? *Am J Obstet Gynecol*. 2010;203:24-26.

- [17] Stang A, Merrill RM, Kuss O. Nationwide rates of conversion from laparoscopic or vaginal hysterectomy to open abdominal hysterectomy in Germany. *Eur J Epidemiol.* 2011;26:125-133.
- [18] Gimbel H, Zobbe V, Andersen BM, Gluud C, Ottesen BS, Tabor A; Danish Hysterectomy Group. Total versus subtotal hysterectomy: an observational study with one-year follow-up. *Aust N Z J Obstet Gynaecol.* 2005;45:64-67.
- [19] Herbert A. Cervical screening in England and Wales: its effect has been underestimated. *Cytopathology.* 2000;11:471-479.
- [20] Maina WC, Morris EP. Management of women requesting subtotal hysterectomy. *Menopause Int.* 2010;16:152-155.
- [21] Jamal H, Amarin Z. Subtotal Versus Total Abdominal Hysterectomy. *Bahrain Med Bull* 2001;23:119-123.
- [22] Thakar R, Ayers S, Clarkson P, Stanton S, Manyonda I. Outcomes after total versus subtotal abdominal hysterectomy. *N Engl J Med* 2002;347:1318-1325.
- [23] Whitelaw JM. Hysterectomy: a medical-legal perspective, 1975 to 1985. *Am J Obstet Gynecol.* 1990;162:1451-1458.
- [24] Hendry WF. Urinary tract injuries during gynaecological surgery. In: Studd J, ed. *Progress in obstetrics and gynaecology.* Vol. 5. Edinburgh, Scotland: Churchill Livingstone, 1985:362-377.
- [25] Iosif CS, Bekassy Z, Rydhstrom H. Prevalence of urinary incontinence in middle-aged women. *Int J Gynaecol Obstet.* 1988;26:255-259.
- [26] Kilkku P. Supravaginal uterine amputation versus hysterectomy with reference to subjective bladder symptoms and incontinence. *Acta Obstet Gynecol Scand.* 1985;64:375-379.
- [27] Kilkku P, Hirvonen T, Gronroos M. Supra-vaginal uterine amputation vs. abdominal hysterectomy: the effects on urinary symptoms with special reference to pollakisuria, nocturia and dysuria. *Maturitas.* 1981;3:197-204
- [28] Lalos O, Bjerle P. Bladder wall mechanics and micturition before and after subtotal and total hysterectomy. *Eur J Obstet Gynecol Reprod Biol.* 1986;21:143-150.
- [29] Virtanen HS, Makinen JI, Tenho T, Kiiholma P, Pitkanen Y, Hirvonen T. Effects of abdominal hysterectomy on urinary and sexual symptoms. *Br J Urol.* 1993;72:868-872.
- [30] Gimbel H, Zobbe V, Andersen BM, Filtenborg T, Gluud C, Tabor A. Randomised controlled trial of total compared with subtotal hysterectomy with one-year follow up results. *BJOG.* 2003;110:1088-1098.
- [31] Gimbel H. Total or subtotal hysterectomy for benign uterine diseases? A meta-analysis. *Acta Obstet Gynecol Scand.* 2007;86:133-144.
- [32] Kives S, Lefebvre G, Wolfman W, Leyland N, Allaire C, Awadalla A, Best C, Leroux N, Potestio F, Rittenberg D, Soucy R, Singh S. Supracervical hysterectomy. *J Obstet Gynaecol Can.* 2010;32:62-68.
- [33] Taylor T, Smith AN, Fulton PM. Effect of hysterectomy on bowel function. *BMJ.* 1989;299:300-301.
- [34] Prior A, Stanley K, Smith ARB, Read NW. Effect of hysterectomy on anorectal and urethrovesical physiology. *Gut.* 1992;33:264-267.



- [35] Heaton KW, Parker D, Cripps H. Bowel function and irritable bowel symptoms after hysterectomy and cholecystectomy - a population based study. *Gut*. 1993;34:1108-1111.
- [36] Kilkku P, Gronroos M, Hirvonen T, Rauramo L. Supravaginal uterine amputations vs. hysterectomy: effects on libido and orgasm. *Acta Obstet Gynecol Scand*. 1983;62:147-152.
- [37] Kilkku P. Supravaginal uterine amputation vs. hysterectomy: effects on coital frequency and dyspareunia. *Acta Obstet Gynecol Scand*. 1983;62:141-145.
- [38] Virtanen HS, Makinen JI, Tenho T, Kiiholma P, Pitkanen Y, Hirvonen T. Effects of abdominal hysterectomy on urinary and sexual symptoms. *Br J Urol*. 1993;72:868-872.
- [39] Gorlero F, Lijoi D, Biamonti M, Lorenzi P, Pullè A, Dellacasa I, Ragni N. Hysterectomy and women satisfaction: total versus subtotal technique. *Arch Gynecol Obstet*. 2008;278:405-410.
- [40] Flory N, Bissonnette F, Amsel RT, Binik YM. The psychosocial outcomes of total and subtotal hysterectomy: A randomized controlled trial. *J Sex Med*. 2006;3:483-491.
- [41] Kuppermann M, Summitt RL Jr, Varner RE, McNeeley SG, Goodman-Gruen D, Learman LA, Ireland CC, Vittinghoff E, Lin F, Richter HE, Showstack J, Hulley SB, Washington AE. Sexual functioning after total compared with supracervical hysterectomy: a randomized trial. *Obstet Gynecol*. 2005;105:1309-1318.
- [42] Zobbe V, Gimbel H, Andersen BM, Filtenborg T, Jakobsen K, Sørensen HC, Toftager-Larsen K, Sidenius K, Møller N, Madsen EM, Vejtorp M, Clausen H, Rosgaard A, Gluud C, Ottesen BS, Tabor A. Sexuality after total vs. subtotal hysterectomy. *Acta Obstet Gynecol Scand*. 2004;83:191-196.
- [43] Thakar R, Ayers S, Georgakapolou A, Clarkson P, Stanton S, Manyonda I. Hysterectomy improves quality of life and decreases psychiatric symptoms: a prospective and randomised comparison of total versus subtotal hysterectomy. *BJOG*. 2004;111:1115-1120.
- [44] Zekam N, Oyelese Y, Goodwin K, Colin C, Sinai I, Queenan JT. Total versus subtotal hysterectomy: a survey of gynecologists. *Obstet Gynecol*. 2003;102:301-305.

IntechOpen



## **Hysterectomy**

Edited by Dr. Ayman Al-Hendy

ISBN 978-953-51-0434-6

Hard cover, 426 pages

**Publisher** InTech

**Published online** 20, April, 2012

**Published in print edition** April, 2012

This book is intended for the general and family practitioners, as well as for gynecologists, specialists in gynecological surgery, general surgeons, urologists and all other surgical specialists that perform procedures in or around the female pelvis, in addition to intensives and all other specialties and health care professionals who care for women before, during or after hysterectomy. The aim of this book is to review the recent achievements of the research community regarding the field of gynecologic surgery and hysterectomy as well as highlight future directions and where this field is heading. While no single volume can adequately cover the diversity of issues and facets in relation to such a common and important procedure such as hysterectomy, this book will attempt to address the pivotal topics especially in regards to safety, risk management as well as pre- and post-operative care.

### **How to reference**

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Zouhair Amarin (2012). Subtotal Versus Total Abdominal Hysterectomy for Benign Gynecological Conditions, Hysterectomy, Dr. Ayman Al-Hendy (Ed.), ISBN: 978-953-51-0434-6, InTech, Available from: <http://www.intechopen.com/books/hysterectomy/subtotal-versus-total-abdominal-hysterectomy-for-benign-gynaecological-conditions>

**INTECH**  
open science | open minds

### **InTech Europe**

University Campus STeP Ri  
Slavka Krautzeka 83/A  
51000 Rijeka, Croatia  
Phone: +385 (51) 770 447  
Fax: +385 (51) 686 166  
[www.intechopen.com](http://www.intechopen.com)

### **InTech China**

Unit 405, Office Block, Hotel Equatorial Shanghai  
No.65, Yan An Road (West), Shanghai, 200040, China  
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元  
Phone: +86-21-62489820  
Fax: +86-21-62489821

© 2012 The Author(s). Licensee IntechOpen. This is an open access article distributed under the terms of the [Creative Commons Attribution 3.0 License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

IntechOpen

IntechOpen