

Main Indications and Outcomes of Hysterectomy among Iraqi Women in Al-Najaf –A Clinical Evaluation Study

Masar Raheem Abbas^{1*}, Nadia Abdulmunem Sahib Alhamami¹, Nisreen Hussein Abdulsada¹

1. MBChB, DOG, Al-Forat Al-Awsat Teaching Hospital, Najaf, Iraq

*Corresponding Author , contact email : masardog21@gmail.com

Original Article

ABSTRACT

At present, hysterectomy continues to be the most performed gynecological surgery. Indications and outcomes of this procedure still further assessment to identify the appropriateness of these indications. Therefore we aimed to assess the main indications and pathologies behind performing hysterectomy. Hence 100 women who were underwent hysterectomies at Alforat Alawsat teaching Hospital during the period 2018-2020 in Najaf-Iraq were included and their findings were analyzed. Results revealed that Frequency of hysterectomy appeared to be significantly increased with advancing age. Higher number of pregnancies and parities was associated with high rate of hysterectomy uterine fibroid was the more frequent indication contributed for 41%, Elective and total abdominal hysterectomy were the more frequently performed type, 81% and 79%, respectively. Complications included 13% and infection and 9% urinary bladder injury. 15 cases needed admission to ICU and no mortalities reported among cases. In conclusion, the distribution of indications and outcomes of hysterectomy almost follows a pattern similar to that described by national and international studies.

Keywords: *Hysterectomy, Epidemiology, Indications, complications, outcomes*

1. INTRODUCTION

Among the major gynecological procedures, hysterectomy is the most frequently performed surgery in developed countries (1,2). In the United States, it is estimated that 600,000 hysterectomies are performed each year and that by the age of 60, approximately one third of women will have undergone this procedure (3).

In countries with adequate registration and depending on geographical factors, factors specific to the patient or medical causes, the rate of hysterectomies ranges from 5.4 per 1000 women in the US to 1.8 per 1000 in Norway (4–7). In Iraq, recent study in 2020 showed that incidence of emergency hysterectomy was 3.4/1000 while the incidence was 1.8/1000 in 2012 (8–10).

When analyzing the causes that lead to perform a hysterectomy, historically, more than 90% of them are due to a benign cause, usually leiomyoma, adenomyosis and defects of the pelvic floor. Only 10% of hysterectomies are performed in the context of malignant disease, either originating in the uterus itself (body or cervix) or as part of the staging of a gynecological neoplasia of another origin (2,11–13)

Multiple questions have arisen over time, particularly from health administrators or insurers, about the correct indication for hysterectomy and the costs that derive from it (14–17). It is difficult to establish objective indicators, except the findings in a biopsy, that allow to support the correct indication of a hysterectomy. In our environment, there are no series that refer to the percentage of hysterectomy cases with the absence of significant anatomopathological findings.

The advent of new technologies, both in diagnosis and therapy, have promoted the use of less invasive and conservative procedures of the uterine body for conditions traditionally considered cause of hysterectomy. Among these conditions are uterine leiomyoma and dysfunctional metrorrhagia (18). For the first condition, the use of selective arterial embolization has been proposed (19) and for the second, the use of ablative methods of the endometrium such as resectoscopy or thermal ablation (20). There is no doubt that it is a prerequisite to promoting its use, to know what the anatomical-pathological findings are in patients who were hysterectomized with these diagnoses (21) .

Another relevant issue refers to the mismanagement of certain oncological diseases, through exclusive hysterectomy, the result of an incomplete preoperative study or the lack of

suspicion of cancer in gynecological pathologies classified as presumably benign. In order to know which conditions should be the reason for greater suspicion and a more cautious indication for hysterectomy, it is necessary to know the anatomo-pathological findings in hysterectomy specimens and the occurrence of incidental gynecological cancer.

According to our knowledge, there are no national series that characterize the findings in hysterectomized patients. In particular, studies that analyze the relative frequency of benign and malignant uterine pathology, the coexistence of pathologies and the finding of incidental cancer originating in the uterus. The objectives of this study are to assess the main indications and pathologies behind performing hysterectomy among Iraqi women in Al-Najaf Al-Ashraf during a period of 5 years and to give recommendations for better management to avoid hysterectomy

2. PATIENTS and METHODS

A retrospective study was designed at AlFurat AlAwsat Teaching Hospital in Al-Najaf Al-Ashraf Province where the biopsy reports of hysterectomized women for the period 2018-2020 were reviewed.

Inclusion criteria:

1. Cases underwent elective or emergency hysterectomy during the period 2018-2020.
2. Medical files and record were available with no missed data.
3. All uterine surgical specimens with or without removal of the adnexa were included.
4. Histopathology reports of the biopsies were available.
5. Histories performed due to uterine pathology as well as those performed for diagnosis of adnexal pathology or a pelvic floor defect.

Exclusion criteria:

1. Cases referred for consultation from other centers.
2. File records with no histopathology reports or missed data

Data collection and sampling:

Medical files of all hysterectomies women were reviewed for the specified period (2018-2020). A total of 100 files of hysterectomy cases that met the inclusion criteria were selected randomly. Data collected using data collection sheet, gathered the following variables: age, reason for surgery, preoperative diagnosis, type of surgical specimen and definitive

pathological report. For each report, all the diagnoses were recorded, both of the uterine corpus and the adnexia or other organs removed. Diagnoses were classified first according to their anatomical location and secondarily according to histological lineage. Thus, in relation to the uterus, the hysterectomy specimen was subdivided into the body and cervix.

In turn, the uterine body was subdivided into pathology originating from the epithelium (endometrium) or non-epithelial (eg myometrium and stroma).

For histological classification, diagnoses were standardized using consensus terms published in classic texts and accepted by the World Health Organization .

The information collected was transferred to a specially designed database.

Data analysis:

Data were analyzed and managed using the statistical package for social sciences (SPSS) version 24 with Assistance of Specialist Expert Biostatistician. Variables presented as frequencies in frequency tables with percentages, mean, standard deviation. For the analysis of proportions between non-parametric variables, the Chi square or Fisher test was used, as appropriate. A p value <0.05 was considered a significant difference.

3. RESULTS

The mean age of the included cases was 45.4 ± 10.2 (range: 18-65) years with a median of 46 years. On the other hand the rate of hysterectomy increased with advancing age ; among the 100 hysterectomies women, 5 aged less than 30 years, 11 at age of 31-40, 19 at age of 41 – 50 , 27 at age of 51 – 60 and 38 aged > 60 years, which indicated that majority of patients aged more than 40 years, i.e. incidence rate is higher among those aged more than 40 years (**Table 1 and Figure 1**) .

Regarding obstetrical history, hysterectomies were more frequent in patients with higher numbers of gravidity and parity while less frequent in patients with history of one or more abortions, (P. value < 0.05), (**Table 2**). Elective Hysterectomy was performed in 81% of cases while emergency Hysterectomy in 19%. On the other hand, Total abdominal , Subtotal abdominal and Subtotal vaginal hysterectomies performed in 79%, 6% and 15%, respectively, (**Table 3**).

The main indication for hysterectomy was uterine leiomyoma (fibroid) in 41 cases (41%), followed by dysfunctional uterine bleeding in 17%, postmenopausal bleeding in 12%,

cervical intraepithelial neoplasia in 10%, endometrial hyperplasia in 8%, ovarian tumor in 6%, uterovaginal prolapse in 4% and adenomyosis in only 2%, (**Table 4**). However, in some cases. Postoperative complications and outcomes of hysterectomies revealed wound infection in 13 cases (13%), pelvic organ injury in 9 cases (9%) and 15 cases (15%) needed admission to intensive care unit (ICU). Fortunately, no mortalities reported giving a mortality rate of 0%, (**Table 5**). However, in some cases, more than one pathology was found, the histological diagnoses of lesions originating in the non-epithelial tissues of the corpus uteri. The most frequent diagnosis was a benign tumor originating in the myometrium. In some hysterectomy specimens, the coexistence of pathology originating in the endometrial epithelium and in non-epithelial tissues of the uterine body was demonstrated. In very low proportion of cases, no lesion was identified in the pathological examination. The preoperative diagnostic analysis showed that large proportion of these cases (with no lesion identified by histopathology) corresponded to patients operated on for a pelvic floor pathologies, where as part of their treatment, hysterectomy was indicated due to suspected endometrial hyperplasia (with or without preoperative biopsy) or dysfunctional menorrhagia .

Table 1. Age distribution of 100 hysterectomy cases			
Age (year)*	No.	%	P. value
≤ 30	5	5.0	0.001
31 - 40	11	11.0	
41 - 50	19	19.0	
51 - 60	27	27.0	
> 60	38	38.0	
Total	100	100.0	
*Mean age ± SD: 45.6 ± 10.4 , Median: 46.0, Range: 21 – 67			

SD: Standard deviation

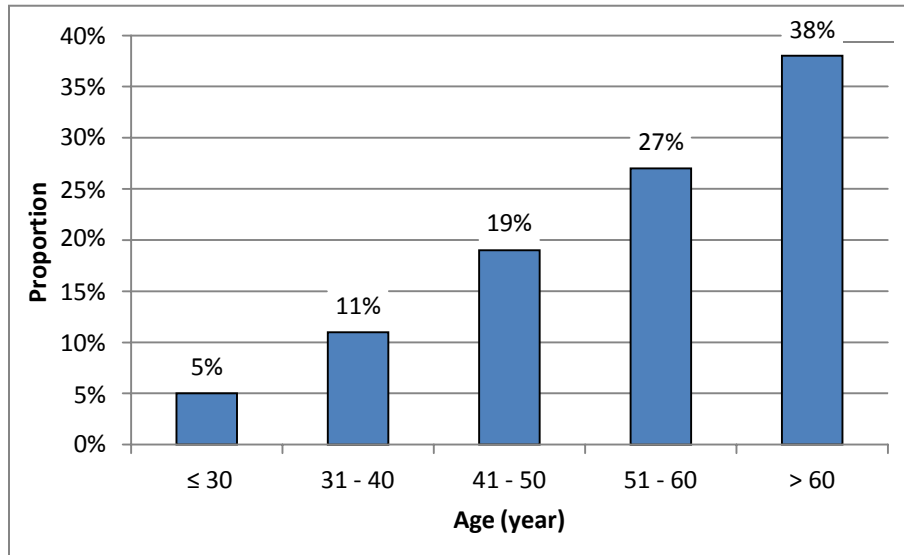


Figure 1. Proportional distribution of hysterectomies according to age of patients

Variable	No.	%	P. value
Gravidity			
1 - 2	19	19.0	0.002
3 - 4	43	43.0	
5 - 6	27	27.0	
≥ 7	11	11.0	
Parity			
Nulliparous	4	4.0	0.001
1 - 2	28	28.0	
3 - 4	39	39.0	
5 - 6	20	20.0	
≥ 7	9	9.0	
Abortion			
None	57	57.0	0.001
1 - 2	35	35.0	
3 - 4	8	8.0	

Variable		No.	%
Type of surgery	Elective	81	81.0
	Emergency	19	19.0
Type of hysterectomy	Total abdominal	79	79.0
	Subtotal abdominal	6	6.0
	subtotal vaginal	15	15.0

Indication \ cause	No.	%
Uterine leiomyoma	41	41.0
Dysfunctional uterine bleeding	17	17.0
Postmenopausal bleeding	12	12.0
Cervical intraepithelial neoplasia	10	10.0
Endometrial hyperplasia	8	8.0
Ovarian tumor	6	6.0
Uterovaginal prolapse	4	4.0
Adenomyosis	2	2.0
Total	100	100.0

Complication\ outcome	No.	%
Wound infection	13	13.0
Pelvic organ injury	9	9.0
ICU admission	15	15.0
Mortality	0	0.0
Total	100	100.0

4. DISCUSSION

At present, hysterectomy continues to be the most performed gynecological surgery. The present study found that majority of cases older than 40 years, and hysterectomy was less frequently performed in younger (< 30 years) age group, these findings agreed that reported in previous studies; in recent Iraqi study, Mosa and Jasim (10) found that more than 70% of hysterectomy cases underwent in Tikrit city were older than age of 30 years. In other Iraqi study, Hassan and Abdulzahra (8) reported almost similar findings. In India, Shekhar et al. documented that hysterectomy prevalence increased with advancing age (22) , however, in India the median age of hysterectomies women was lower than that reported in our study, 34 years vs. 46, respectively, which indicated that India had higher rates of hysterectomies in younger population. Age documented as a significant predictor of hysterectomy and this could be due to doctor advise to do hysterectomy, or woman herself to overcome her health problem after they got the desired number of children (22).

We found that hysterectomies were more frequently performed in women with higher gravidity and parities, similar findings also supported ours where Desai et al. (23) documented that high parity associated with high prevalence of hysterectomy, which also supported by results of Shekhar et al. study (22).

In majority of our cases, elective hysterectomy was performed in 81% of cases, while emergency one in only 19%, this was not unexpected as in majority of international studies and in gynecological practice the elective surgeries are the more commonly performed (2,7–

10,15). On the other hand Total abdominal hysterectomy was the more common type of hysterectomy performed in our hospital and this was also expected because , this type of hysterectomy is preferred by gynecologists due to its advantages and lower risks and adverse outcome compared to other techniques (18,24).

As in most international series, the main indication for hysterectomy is the presence of symptomatic leiomyomas (15). In our study, Uterine leiomyoma (fibroid) was the main indication pathology, where hysterectomy is often performed due to technical needs or due to coexistence of adnexal and uterine pathology. Other common causes are dysfunctional uterine bleeding. These findings supported that reported in previous studies where dysfunctional uterine bleeding is one of the significant indications of hysterectomy (20,25,26). In our study we found that Postmenopausal bleeding was the indication of hysterectomy in 12 women. Hysterectomy proved to be important option in the management of postmenopausal bleeding (27,28). With no doubt , in cases with neoplasia tumors (benign or malignant) hysterectomy could be the treatment of choice in these cases, hence our findings revealed that cervical intraepithelial neoplasia , endometrial hyperplasia and ovarian tumor, represented a significant proportion of all indications despite are not common conditions. Tribmle et al. documented that hysterectomy is the typical treatment for endometrial hyperplasia (29). Endometrial intraepithelial neoplasia reflect their clonal origin with non-invasive growth or incipient carcinoma (29–31). Pelvic floor dysfunction, gynecologic cancers, adenomyosis, metrorrhagia, and chronic pelvic pain all are reported among the indications of hysterectomy with some vsriation in their frequencies in hysterectomies women. When comparing the relative frequency of each of these causes with that reported by international series, we observe that the distribution is almost similar. Most series agree that a third of hysterectomies are performed for uterine leiomyomas (representing 41% of cases in our series) and that other frequent causes are adenomyosis (with or without coexisting endometriosis), bleeding dysfunctional uterus, pelvic floor defects, pelvic pain, and endometrial hyperplasia. Although the distribution is almost similar, there are some differences with our series that can be explained by the non-inclusion in some of these series (15,18,20,23,32). However, When deciding to perform this intervention, it is important to consider that for most clinical scenarios the reasons for recommending it are based on expert opinions rather than on well-designed studies. For the

rest of the conditions, the most important elements when defining the need and the moment of its indication are the symptoms reported by the patient and the clinical judgment of the treating physician. Regarding complication, Wound infection, Pelvic organ injury (bladder injury) reported in 13 and 9 cases respectively and ICU admission in 15 cases there is wide variation in the complications and outcomes after hysterectomy and the variation based mainly on the differences between different populations, countries, health system, and medical facilities in each country and setting (12,33–38). Fortunately we have no mortalities among the studied group, however, the mortalities associated with hysterectomies ranged 0.6 – 1.6 per 1000 procedures (14,39).

5. CONCLUSIONS

The distribution of indications for hysterectomy almost follows a pattern similar to that described by international studies. For most cases, the indication for hysterectomy was uterine fibroid. This work also shows that, the finding of incidental cancer is very low.

Ethical Clearance: Ethical clearance and approval of the study are ascertained by the authors. All ethical issues and data collection were in accordance with the World Medical Association Declaration of Helsinki 2013 for ethical issues of researches involving humans, informed consent obtained from all patients. Data and privacy of patients were kept confidentially.

Conflict of interest: Authors declared none

Funding: None, self-funded by the authors

REFERENCES

1. Radnia N, Manouchehrian N, Shayan A, Shirmohamadi N, Eskandarloo T, Otagara M. Frequency and causes of emergency hysterectomy along with vaginal delivery and caesarean section in Hamadan, Iran. *Electron physician*. 2017;9(6):4643.
2. Hammer A, Rositch AF, Kahlert J, Gravitt PE, Blaakaer J, Sjøgaard M. Global epidemiology of hysterectomy: possible impact on gynecological cancer rates. *Am J Obstet Gynecol*. 2015;213(1):23–9.
3. Cohen SL, Ajao MO, Clark N V, Vitonis AF, Einarsson JI. Outpatient hysterectomy volume in the United States. *Obstet Gynecol*. 2017;130(1):130–7.
4. Whiteman MK, Kuklina E, Hillis SD, Jamieson DJ, Meikle SF, Posner SF, et al. Incidence and

- determinants of peripartum hysterectomy. *Obstet Gynecol.* 2006;108(6):1486–92.
5. Johanson ML, Dögl M, Lieng M. *Hysterectomy in Norway 2008–18.* Tidsskr Den Nor legeförening. 2020;
 6. Mukhopadhaya N, Manyonda IT. *The hysterectomy story in the United Kingdom.* *J Midlife Health.* 2013;4(1):40.
 7. Wright JD, Herzog TJ, Tsui J, Ananth C V, Lewin SN, Lu Y-S, et al. *Nationwide trends in the performance of inpatient hysterectomy in the United States.* *Obstet Gynecol.* 2013;122(2 0 1):233.
 8. AbdulHassan M, Abdulzahra T. *Emergency Peripartum Hysterectomy.* *Iraqi J Comm Med.* 2011;24(3):219–21.
 9. Heshemi SJ Al. *Peripartum Hysterectomy in Misan Province during 2014-2016.* Vol. 07, *Open Journal of Obstetrics and Gynecology.* 2017. p. 258–68.
 10. Mosa RH, Jasim SS. *The incidence of peripartum hysterectomy in Tikrit citypdf.* *Ann Trop Med Public Heal.* 23(9):1–12.
 11. Aarts JWM, Nieboer TE, Johnson N, Tavender E, Garry R, Mol BWJ, et al. *Surgical approach to hysterectomy for benign gynaecological disease.* *Cochrane database Syst Rev.* 2015;(8).
 12. Mamik MM, Antosh D, White DE, Myers EM, Abernethy M, Rahimi S, et al. *Risk factors for lower urinary tract injury at the time of hysterectomy for benign reasons.* *Int Urogynecol J.* 2014;25(8):1031–6.
 13. Forsgren C. *Hysterectomy on benign indications and pelvic floor dysfunction clinical and epidemiological aspects.* 2010.
 14. Augusto KL, Brilhante AVM, Modesto GCD, Saboia DM, Rocha CFC, Karbage SAL, et al. *Costs and mortality rates of surgical approaches to hysterectomy in Brazil.* *Rev Saude Publica.* 2018;52.
 15. Hakkarainen J, Nevala A, Tomás E, Nieminen K, Malila N, Pitkäniemi J, et al. *Decreasing trend and changing indications of hysterectomy in Finland.* *Acta Obstet Gynecol Scand.* 2021;100:1–8.
 16. Chao YM, Tseng T-C, Su C-H, Chien L-Y. *Appropriateness of hysterectomy in Taiwan.* *J Formos Med Assoc Taiwan yi zhi.* 2005;104(2):107–12.
 17. Müller A, Thiel FC, Renner SP, Winkler M, Häberle L, Beckmann MW. *Hysterectomy—a comparison of approaches.* *Dtsch Arztebl Int.* 2010;107(20):353.
 18. Perveen S, Tayyab S. *A clinicopathological review of elective abdominal hysterectomy.* *J Surg Pakistan.* 2008;13(1):26–9.
 19. Ludwig PE, Huff TJ, Shanahan MM, Stavas JM. *Pregnancy success and outcomes after*

- uterine fibroid embolization: updated review of published literature. *Br J Radiol.* 2020;93(1105):20190551.
20. Dickersin K, Munro MG, Clark M, Langenberg P, Scherer R, Frick K, et al. Hysterectomy compared with endometrial ablation for dysfunctional uterine bleeding: a randomized controlled trial. *Obstet Gynecol.* 2007;110(6):1279–89.
 21. Clayton RD. Hysterectomy. *Best Pract Res Clin Obstet Gynaecol.* 2006;20(1):73–87.
 22. Shekhar C, Paswan B, Singh A. Prevalence, sociodemographic determinants and self-reported reasons for hysterectomy in India. *Reprod Health.* 2019;16(1):1–16.
 23. Desai S, Sinha T, Mahal A. Prevalence of hysterectomy among rural and urban women with and without health insurance in Gujarat, India. *Reprod Health Matters.* 2011;19(37):42–51.
 24. Garry R, Fountain J, Mason SU, Hawe J, Napp V, Abbott J, et al. The eVALuate study: two parallel randomised trials, one comparing laparoscopic with abdominal hysterectomy, the other comparing laparoscopic with vaginal hysterectomy. *Bmj.* 2004;328(7432):129.
 25. van der Meij E, Emanuel MH. Hysterectomy for heavy menstrual bleeding. *Women's Heal.* 2016;12(1):63–9.
 26. Reich H, Ribeiro SC, Vidali A. Hysterectomy as treatment for dysfunctional uterine bleeding. *Best Pract Res Clin Obstet Gynaecol.* 1999;13(2):251–69.
 27. Brand AH. The woman with postmenopausal bleeding. *Aust Fam Physician.* 2007;36(3).
 28. Bakour SH, Timmermans A, Mol BW, Khan KS. Management of women with postmenopausal bleeding: evidence- based review. *Obstet Gynaecol.* 2012;14(4):243–9.
 29. Trimble CL, Method M, Leitao M, Lu K, Ioffe O, Hampton M, et al. Management of endometrial precancers. *Obstet Gynecol.* 2012;120(5):1160.
 30. Martin- Hirsch PPL, Paraskevaidis E, Bryant A, Dickinson HO, Keep SL. Surgery for cervicalintraepithelial neoplasia. *Cochrane database Syst Rev.* 2010;(6).
 31. Petry KU. Management options for cervical intraepithelial neoplasia. *Best Pract Res Clin Obstet Gynaecol.* 2011;25(5):641–51.
 32. Shiber L-DJ, Pasic R. Choosing the Correct Hysterectomy Technique. In: *Hysterectomy.* Springer; 2018. p. 143–7.
 33. Lake AG, McPencow AM, Dick-Biascoechea MA, Martin DK, Erekson EA. Surgical site infection after hysterectomy. *Am J Obstet Gynecol.* 2013;209(5):490-e1.
 34. Clarke-Pearson DL, Geller EJ. Complications of hysterectomy. *Obstet Gynecol.* 2013;121(3):654–73.
 35. Ramdhan RC, Loukas M, Tubbs RS. Anatomical complications of hysterectomy: A review. *Clin Anat.* 2017;30(7):946–52.

36. Vakili B, Chesson RR, Kyle BL, Shobeiri SA, Echols KT, Gist R, et al. *The incidence of urinary tract injury during hysterectomy: a prospective analysis based on universal cystoscopy. Am J Obstet Gynecol.* 2005;192(5):1599–604.
37. Heinonen S, Tyrväinen E, Penttinen J, Saarikoski S, Ruokonen E. *Need for critical care in gynaecology: a population-based analysis. Crit care.* 2014;6(4):1–5.
38. Jain S, Guleria K, Vaid NB, Suneja A, Ahuja S. *Predictors and outcome of obstetric admissions to Intensive Care Unit: A comparative study. Indian J Public Health.* 2016;60(2):159.
39. Wilson LF, Pandeya N, Byles J, Mishra GD. *Hysterectomy status and all-cause mortality in a 21-year Australian population-based cohort study. Am J Obstet Gynecol.* 2019;220(1):83-e1.