



## RESEARCH ARTICLE

## PREVALENCE OF POSTOPERATIVE COMPLICATIONS IN GYNECOLOGIC SURGERY

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Received: 15 August 2023 / Accepted: 25 September 2023 / Published online: 31 December 2023

## Abstract

The prevalence of surgical complications in gynecological surgery varies depending on the population. The time of occurrence of complications may range from the time of surgery itself to several weeks after the procedure. This study was conducted to determine the prevalence of postoperative complications after gynecologic surgeries and to identify the common complications after gynecologic surgeries. This is a cross sectional hospital based study included 200 patients underwent various types of gynecologic procedures in Al-Sadaqa Teaching Hospital in Aden, from Jan.1<sup>st</sup> to Dec. 31<sup>st</sup>, 2020. The study included patients from 13 years to 80 years (mean age: 43.7 ± 13.2 years), subjected to any type of gynecologic procedures (major or minor) during the study period. The prevalence of postoperative complications after gynecology surgery was (30.5%) with minor more than major complications (86.9% vs. 13.1). Common complications were pain at site of operation (24.6%), fever (12.3%), nausea and vomiting (19.7%), SSI (8.2%), URTI (6.6%), and hematoma (4.9%). Significant higher percentage of postoperative complications were reported in association with major surgeries than with minor surgeries (95.1% vs. 4.9%, respectively) ( $p < 0.05$ ). Among major gynecologic surgeries, the common postoperative complications were reported significantly in association with abdominal hysterectomy (29.3%), vaginal hysterectomy (20.7%), uterine myomectomy (17.2%) and Colporrhaphy (12.1%). Among minor gynecologic surgeries, the common postoperative complications were reported in association with dilatation and curettage for biopsy (66.7%) and Clitoral abscess drainage (33.3%). Other minor gynecologic surgeries did not show any association to postoperative complications. This study concluded that postoperative complications are common after gynecologic surgeries, so that operated women need to be fully investigated and evaluated prior to elective gynecologic surgeries.

**Keywords:** Gynecology surgery, Prevalence, Postoperative, Complications, Pain.

## Introduction

Every surgeon tries to perform surgeries in the best possible way without any complications or harm to their patients; however, despite their best possible efforts, complications can arise in any surgery, thereby affecting the prognosis.[1]

All surgical procedures may have complications; a complication is any undesirable and involuntary outcome derived from the surgery that affects the patient, which would not have occurred if the surgery had been performed following the corresponding procedures.[2]

The prevalence of surgical complications in gynecological surgery varies depending on the population, according to studies carried out in different institutions, the rate of

complications associated with gynecological surgery varied between 0.2% and 26.0%.[3]

In the study of Weaver F et al.,[4] the prevalence of all postoperative complications after gynecologic procedures was reported to be 9.0%, with an overall mortality of 0.06%, whereas Erekson E et al.,[5] reported a prevalence of 3.7% for major complications only.

In 2004 the classification system was re-evaluated and refined by Clavien and Dindo et al.,[6] grading is now solely based on the required intervention for complications and has been widely adopted. All postoperative complications were classified as either minor, labelled by Clavien-Dindo grades I and II or major complications, consisting of grades III, IV and V.[7]

The most common surgeries performed in gynecology are hysterectomy, salpingectomy, and cystectomy.[8] The time of occurrence of complications may range from during the surgery itself to several weeks after the procedure.[9] Complications can be diverse and include fever, upper respiratory infections, surgical site infections (SSIs), urinary tract infections (UTI), urinary retention, and abdominal distension.[1]

There is no previous study conducted in Aden for postoperative complications after gynecologic surgery. This gave us the justification to conduct this study to identify the prevalence of postoperative complications after gynecologic surgery in Al-Sadaqa Teaching Hospital, in Aden, as well as the common morbidities and mortality following these gynecological surgeries.

## Objectives

To determine the prevalence of postoperative complications and to identify the common complications after gynecologic surgeries.

## Methods

This is a cross sectional hospital based study included 200 patients underwent various types of gynecologic procedures in Al-Sadaqa Teaching Hospital in Aden, from Jan.1<sup>st</sup> to Dec. 31<sup>st</sup>, 2020. The inclusion criteria were any patient of any age, who underwent any type of gynecological surgery (minor or major) in the hospital during the study period. Excluding women operated in other hospitals, and laparotomy for ectopic pregnancy. This study included patients with wide range of age (from 13 years to 80 years) with a mean age of  $43.7 \pm 13.2$  years.

They were subjected to any type of gynecologic procedures (major or minor) during the study period. Data were collected from patients' medical records in hospital archive.

Statistical analysis: Data collected were analyzed by the SPSS program version 26. Presented as two groups (complicated versus non-complicated group), tested by the Chi-square and Fisher exact tests as appropriate at the 95% confidence interval. A p-value of  $\leq 0.05$  was considered statistically significant.

Ethical considerations: This study was approved by the committee of postgraduate studies of the Faculty of Medicine and Health Sciences, Aden University.

## Results

The Postoperative complications in gynecology surgery were reported among 61(30.5%) of them, while in the remainder 139(69.5%) no any postoperative complications reported [Figure 1]. Among the 61 patients with postoperative complications, the most common complications were minor postoperative complications 53(86.9%); like pain at site of operation (24.6%), fever

(12.3%), nausea and vomiting (19.7%), SSI (8.2%), URTI (6.6%), urine retention (3.3%) and UTI (1.6%). Major complications represented 8(13.1%); like hematoma (4.9%), abdominal wound dehiscence, uterine perforation, venous thromboembolism (VTE), reoperation and death (1.6% for each) [Table 1].

Major gynecologic surgeries were performed among 140(70.0%) patients while minor gynecologic surgeries among 60(30.0%) patients. Among the 61 patients who developed postoperative complications, there is significant higher percentage of postoperative complications in association with major surgeries than with minor surgeries (95.1% vs. 4.9%, respectively) ( $p < 0.05$ ) [Figure 2].

Among major gynecologic surgeries, the common postoperative complications were reported significantly in association with abdominal hysterectomy (29.3%), vaginal hysterectomy (20.7%), uterine myomectomy (17.2%) and Colporrhaphy (12.1%). Other major surgeries with lower postoperative complications such as Salpingoophorectomy (6.9%), Manchester and sacrocolpopexy (3.4% for each), ovarian cystectomy, colpocleisis, fistulotomy, and vaginoplasty (1.7% for each) [Table 2].

Among minor gynecologic surgeries, the common postoperative complications were reported in association with dilatation and curettage for biopsy (66.7%) and Clitoral abscess drainage (33.3%). Other minor gynecologic surgeries did not show any association to postoperative complications [Table 3].

## Discussion

Postoperative complication may be considered as any negative outcome perceived by the surgeon or by the patient.[10] The current study depicted a prevalence of (30.5%) for postoperative complications in gynecologic surgeries conducted in our hospital. Our prevalence is similar to that reported by Siddiqua F et al.,[11] in Bangladesh (2014) where (30.0%) of their gynecologic surgeries developed postoperative complications. It is consistent with that reported by Lambrou N et al.,[12] in Baltimore, Maryland (USA, 2000), where (33.0%) developed postoperative complications after gynecologic surgeries as well as the study of Thomasson J,[13] in Sweden (2017), with (31.8%) postoperative complications, and the study of Esmaeil A et al.,[14] in Egypt (2017), with (35.6%) postoperative complication for gynecologic surgeries.

Our prevalence is higher than that reported in different studies, as the study of Bahadur et al.,[1] in India (2021) with a prevalence of (24.16%), the study of Coelho S et al.,[15] in Brazil (2015), with a prevalence of (11.9%), and the study of Ibrahim and Abdalla,[16] in Zagazig (Egypt) 2021, with a prevalence of (11.3%). The higher prevalence for postoperative complications in our study may be attributed to the difference in inclusion criteria, where we

included all minor and major gynecologic surgeries while such studied included only minor gynecologic surgeries.

The current study showed significantly higher percentage of postoperative complications in association with major gynecologic surgeries than with minor surgeries (95.1% vs. 4.9%, respectively). Our finding is consistent with the study of Siddiqua F et al.,[11] at a referral hospital in Bangladesh (2014), where the majority of their postoperative complications were minor complications. As well as the study of Barbosa et al.,[17] in Colombia (2015), which showed higher percentage for minor postoperative complications than major ones. Similarly, the study of Alshankiti H et al.,[18] in Canada (2019), that revealed minor postoperative complications to be 2.1 times higher than the rate of major postoperative complications.

Gynecological surgeries are some of the most frequent surgeries; however from 4.7 to 26.2% of women experience postoperative pain.[19] In the current study, the most common postoperative complication in gynecological surgery was pain (24.6%).

Gynecologic surgery is characterized by a combination of somatic and predominantly visceral pain. The visceral pain is diffuse and accompanied by autonomic reflexes, such as nausea and vomiting.[20]

Similar to our finding was reported by Good M et al.,[21] with up to (30%) of patients reported that pain interrupted their sleep on the first 2 nights after gynecologic surgery, and difficulty sleeping on the first postoperative night for any reason was related to greater pain during the next 2 days.

Furthermore, Sperber A et al.,[22] observed significantly more surgical patients had abdominal pain (17.0%), which persisted up to 3 months in (15.3%) of them after gynecological surgery.

Postoperative fever after major surgical procedures is a relatively common event with an incidence ranging from 10% to 40%.[23] Generally, fever within 48 hours of surgery is due to inflammatory response proportional to tissue damage and self-resolving within 2-4 days. In the current study fever was observed among (23.0%) of our patients. In consistence with our finding, Fanning et al.,[24] in a retrospective review of 537 patients who underwent gynecologic surgery, found that 211 (39%) developed fever postoperatively, but no infectious etiology was found in most of them.

Postoperative nausea and vomiting (PONV) is another postoperative complication of anesthesia and surgery. It is considered the most common cause of morbidity following anesthesia.[25] Nausea and vomiting are common postoperative complications in gynecology surgery, in our study we observed (19.7%) with nausea and vomiting. This finding is similar to that reported by Bhakta et al.,[26] in Taiwan (2016), where (20.0%) of their gynecologic surgeries complicated with nausea and vomiting.

Wound infection is one of the common postoperative complications in the case of septic wound and is responsible for significant morbidity.[16] In our study there were only 5 patients (8.2%) with septic wounds (surgical site infection). Our finding is running parallel to that observed in a cross-sectional study for 1173 gynecologic surgeries, conducted by Pathak A et al.,[27] in rural India, and reported the rate of SSI as (7.84%).

Respiratory tract infection (RTI) is a very common postoperative complication, which may be associated with anesthesia and poor post-operative ambulance, and prolonged hospital stay associated with nosocomial chest infection. In our study 4 RTI cases were reported with a percentage of (6.6%). In consistence to our finding the study of Bahadur et al.,[1] in India (2021), reported 4 cases with RTI after gynecological surgeries with lower percentage (1.02%).

Our percentage is lower than that reported by the study of Siddiqua et al.,[11] who reported 3 cases with RTI (3.0%), however, it is lower than that reported by the study of Erekson E et al.,[5] among 817 women with gynecologic surgeries, where 66 of them developed lower RTI with a percentage of (8.07%). The differences in percentages for RTI varied according to the associated risk factors in the studied women underwent gynecologic surgeries.

Formation of postoperative hematoma is a nightmare for all surgeons. The frequency of small hematomas is much higher than large ones; however, the latter is associated with higher rates of febrile morbidity.[28]

Hematoma in our study was observed in (4.9%) after gynecology surgery. Our percentage is harmonious to that reported by the study of Segev Y et al.,[29] among 462 patients underwent gynecology surgery, of whom 28 (6.0%) complicated with symptomatic pelvic hematomas.

Urine retention in our study was recognized in (3.3%) of patients, which is near to the previously reported range (4.0% - 25%).[30] Our percentage is convenient with that reported recently by the study of Siedhoff M et al.,[31] in USA (2021), who depicted urine retention among (3.7%) after gynecologic surgeries.

Urinary tract infections (UTIs) are one of the most common complications of urogynecological surgeries. The risk of developing a UTI is increased by the catheterization of the bladder during and after surgery. UTI in the current study was recognized among (1.6%), which is similar to the reported by the study of Coelho S et al.,[15] in Northern Brazil (1.7%). It is consistent with that reported by Lambrou et al.,[12] where (2.0%) of their patients had UTI post gynecology surgery.

The incidence of abdominal wound dehiscence varies between (0.4%) and (3.5%).[32] Wound dehiscence post gynecological surgery in the current study was observed in one patient, representing (1.6%). It is coinciding with the reported range (0.4 - 3.5%).[32] Similar to our finding



was reported by the study of Barbosa and Garnica,[17] in Colombia (2015), where wound dehiscence observed among (1.5%) after gynecological surgery.

In the current study, uterine perforation was observed in one patient, representing (1.6%). This is consistent with that reported by the study of Lambrou N et al.,[12] in Maryland, USA (2000), where uterine perforation was reported among (1%).

Regarding the development of postoperative DVT after gynecological surgery, we observed only one patient in our study with postoperative DVT, represented (1.6%). Other studies reported very high rate of DVT after gynecologic surgery. In an analysis of DVT after gynecological surgery among 498 cases in China (2015), Zhang L et al.,[33] reported very high incidence for DVT, reaching (11.6%). In a prospective clinical study of 141 cases treated using gynecological surgery, Liu Y et al.,[34] reported 22 cases suffered from DVT and the incidence was (15.6%).

Our lower percentage for DVT may be attributed to the standard use of prophylactic anticoagulant (low molecular weight heparins) and acetylsalicylic acid (Aspirin) after to our surgeries.

The success of any operation depends on the wellbeing of the patient after surgery. The rate of reoperation have been reported around the world in various studies between (0.6%) and (4.7%).[35] Our study reported one patient with reoperation, represented (1.6%) of the total postoperative complications, which is coinciding with the worldwide reported range.

Our finding is similar to that reported by the study of Erekson E et al.,[5] among 817 women with gynecologic surgeries, where (1.67%) of them were reoperated. As well as the study of Alshankiti H et al.,[18] with (1.5%) of patients reoperated.

On the other hand the operative mortality rate in gynecological interventions is generally low, as the risk adjusted hospital level mortality rate ranged from 0 to 1.12% in a nationwide inpatient study conducted by Wright J et al.,[36] included 741 hospitals in USA.

In the current study, one patient died postoperatively, representing (1.6%), which is not far from that reported by Matsuo K et al.,[37] in California, 2021 (1.8%). Our postoperatively mortality was lower than that reported by the study of Mains L et al.,[38] who reported (3.6%) for postoperative mortality. Their higher percentage may be attributed to their inclusion of major gynecologic surgery only as well as they conducted their study among elderly women.

About the classification of gynecologic surgeries (major or minor), most of the postoperative complications in our study were found post major gynecologic surgeries (95.1%). This is attributed to that major gynecological

surgeries are common interventions in gynecological practice, as well as major gynecologic surgeries are associated with higher rate of injuries, more blood loss and more operative time.[39]

Hysterectomy is the removal of uterus and it is the commonest major surgical procedure performed in gynecology.[40] Our postoperative complications were developed after abdominal hysterectomy more than vaginal hysterectomy (29.3% vs. 20.7%). Similar findings were also reported by other studies conducted in India,[1] Egypt,[16] Colombia,[17] and Tanzania,[41] where the postoperative complications developed after abdominal hysterectomy more than vaginal hysterectomy.

In the current study, most of our patients developed postoperative complications after they were subjected to abdominal hysterectomy (29.3%). Our finding was coinciding with that reported by the study of Shamima M et al.,[42] who reported (27.4%) of their postoperative complications for patients subjected to abdominal hysterectomy, as well as the study of Mohammed H et al.,[43] who reported (24.1%) of their postoperative complications for patients subjected to abdominal hysterectomy.

Postoperative complications after vaginal hysterectomy in our study was observed among (20.7%) of gynecologic surgeries. This finding is in agreement with that reported by the study of Ortiz-Martínez R et al.,[8] where they observed postoperative complications after vaginal hysterectomy in (21.7%) of their complicated patients.

In the current study, about (17.2%) of postoperative complications were seen post uterine myomectomy. This finding coming in between two other studies conducted in KSA[43] and India[44] where they reported postoperative complications among (19.8%) and (14.2%) respectively, after uterine myomectomy.

We reported (12.1%) of postoperative complications post antero-posterior colporrhaphy. This observation is near to that reported by the study of Coelho S et al.,[15] where (13.2%) of their postoperative complications were observed post antero-posterior colporrhaphy.

About (6.9%) of our postoperative complications developed in patients underwent Salpingoopherectomy, which is slightly lower than that reported by the study of Khatun M et al.,[45] in Bangladesh (2016), which reported (9.3%) for post salpingoopherectomy complications. Our percentage is lower than that reported by the study of Meeuwissen P et al.,[46] in Netherlands (2005), where they observed (11.5%) of complications post salpingoopherectomy.

Post Sacrocolopexy and Manchester operations in our study showed similar percentages of complications (3.4% for each). This finding is near to that reported by the study of Bahadur A et al.,[1] with a percentage of (2.21%).

Complications post Manchester operations in a recent study conducted by Dharmasena D et al.,[47] (2021) showed a complications rate of (2.7%) which is not far from our percentage of post Manchester operations complications.

The most common type of minor gynecological surgeries is D&C for biopsy.[14] This is in agreement with our study, where D&C for biopsy was the most common type of minor gynecology surgery performed for 33 patients, represented (55.0%) of all our minor gynecologic surgeries (n=60).

## Conclusion and Recommendation

This study concluded that postoperative complications are common after gynecologic surgeries, so that operated women need to be fully investigated and evaluated prior to elective gynecologic surgeries.

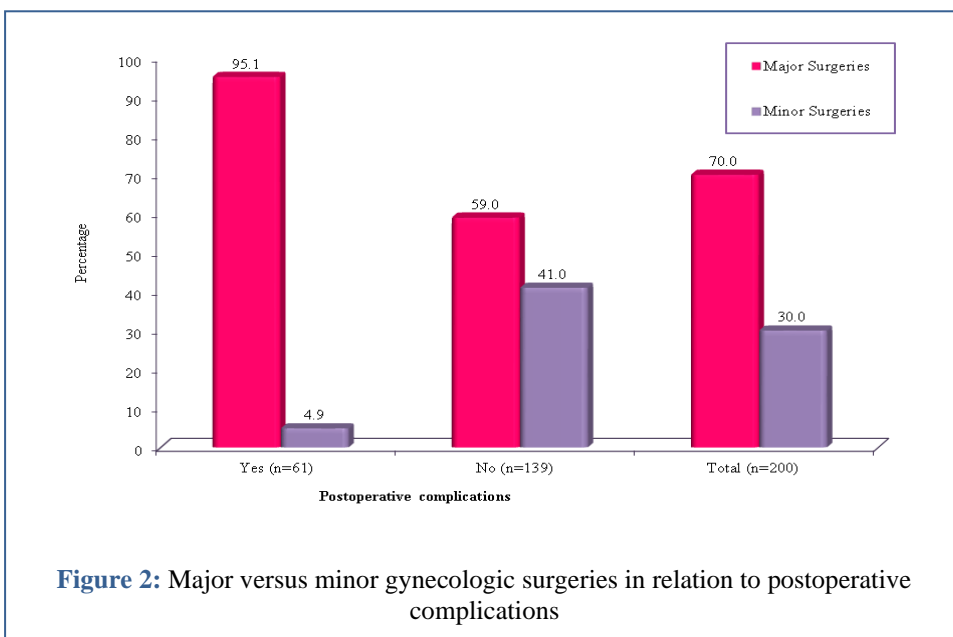
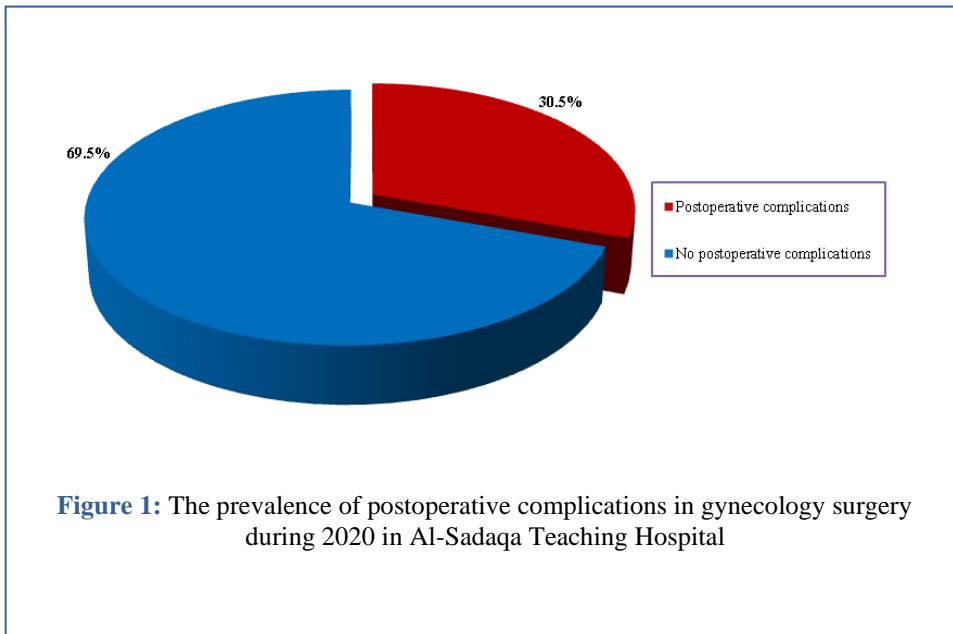
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Figures & Tables





**Table 1.** Types of postoperative complications in the studied patient with gynecologic surgeries

Postoperative complications	(n=61)	
	No	%
<b>- Minor complications: (n=53, 86.9%)</b>		
Abdominal pain	15	24.6
Fever	14	23.0
Nausea and vomiting	12	19.7
Surgical site infection	5	8.2
Upper respiratory tract infection	4	6.6
Urine retention	2	3.3
Urinary tract infection	1	1.6
<b>- Major complications: (n=8, 13.1%)</b>		
Hematoma	3	4.9
Abdominal Wound Dehiscence	1	1.6
Uterine perforation	1	1.6
Deep Vein thrombosis	1	1.6
Reoperation	1	1.6
Death	1	1.6
Percentages were calculated from the total patients with postoperative complications (n=61)		

**Table 2.** Major gynecologic surgeries according to postoperative complications

Major gynecologic surgeries	Postoperative complications				Total (n = 140)*		Chi-Square p-value
	Yes (n = 58)		No (n = 82)		No	%	
	No	%	No	%			
Colporrhaphy	7	12.1	28	34.1	35	25.0	<b>0.001*</b>
Abdominal hysterectomy	17	29.3	16	19.5	33	23.6	
Vaginal hysterectomy	12	20.7	16	19.5	28	20.0	
Uterine myomectomy	10	17.2	8	9.8	18	12.9	
Ovarian cystectomy	1	1.7	7	8.5	8	5.7	
Salpingoopherectomy	4	6.9	4	4.9	8	5.7	
Manchester	2	3.4	1	1.2	3	2.1	
Sacrocolpopexy	2	3.4	0	0.0	2	1.4	
Others**	3	5.2	2	2.4	5	3.6	
Percentages were calculated from the total of each column. # Excluded 60 patients with minor surgeries. *p-value ≤0.05 is statistically significant. **Include: Colpocleisis, fistulotomy, vaginoplasty, resuturing, and laparotomy.							

**Table 3:** Minor gynecologic surgeries according to postoperative complications

Minor Gynecologic surgeries	Postoperative complications				Total (n = 60)#		Chi-Square p-value
	Yes (n = 3)		No (n = 57)		No	%	
	No	%	No	%			
D & C for biopsy	2	66.7	31	54.4	33	55.0	<b>--*</b>
Marsupialization	0	0	8	14	8	13.3	
Polypectomy	0	0	6	10.5	6	10.0	
Vaginal wall tear repair	0	0	6	10.5	6	10.0	
Hymenotomy	0	0	2	3.5	2	3.3	
Clitoral abscess drainage	1	33.3	0	0.0	1	1.7	
Others**	0	0.0	4	7.0	4	6.7	
D & C: dilatation and curettage. Percentages were calculated from the total of each column. # Excluded 140 patients with major surgeries. *Chi square is invalid due to multiple zero values. **Include: Cervical dilatation, labial mastectomy, and labial abscess drainage.							

## معدل إنتشار المضاعفات بعد الجراحة بين الجراحات النسائية

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## المُلخَص

يختلف معدل إنتشار المضاعفات الجراحية في الجراحة النسائية باختلاف السكان. قد يتراوح وقت حدوث المضاعفات من وقت بدء الجراحة نفسها إلى عدة أسابيع بعد العملية. أجريت هذه الدراسة لتحديد مدى إنتشار مضاعفات ما بعد الجراحة النسائية والتعرف على المضاعفات الشائعة بعد العمليات الجراحية النسائية. تمت هذه الدراسة بصورة قطاعية في المستشفى وشملت 200 مريضة خضعن لأنواع مختلفة من العمليات النسائية في مستشفى الصداقة التعليمي بعدن، خلال الفترة 1 يناير إلى 31 ديسمبر 2020م. وشملت الدراسة المرضى من 13 سنة إلى 80 سنة (متوسط العمر:  $43.7 \pm 13.2$  سنة)، واللات خضعن لأنواع مختلفة من الإجراءات النسائية (عضمي أو صغرى) خلال فترة الدراسة. كان معدل إنتشار مضاعفات ما بعد الجراحات النسائية (30.5%) وهي مضاعفات صغرى أكثر من المضاعفات الكبرى (86.9% مقابل 13.1%). المضاعفات الشائعة كانت الألم في موقع العملية (24.6%)، الحمى (12.3%)، الغثيان والقيء (19.7%)، عدوى الموقع الجراحي (8.2%)، عدوى المسالك البولية (6.6%)، والتورم الدموي (4.9%). تم رصد نسبة مئوية أعلى في مضاعفات ما بعد الجراحة مع العمليات الجراحية العضمي مقارنة بالعمليات الجراحية الصغرى (95.1% مقابل 4.9% ، على التوالي). من بين جراحات أمراض النساء الكبرى، تم رصد المضاعفات الشائعة بعد الجراحة المرتبطة باستئصال الرحم في البطن (29.3%)، واستئصال الرحم المهبلي (20.7%)، واستئصال الورم العضلي الرحمي (17.2%) والتهاب المهبل (12.1%). من بين العمليات الجراحية النسائية البسيطة، تم رصد المضاعفات الشائعة بعد الجراحة بالاقتران مع التوسيع والكشط للخزعة (66.7%) وتصريف خراج البظر (33.3%). لم تظهر جراحات أمراض النساء الصغرى الأخرى أي ارتباط بمضاعفات ما بعد الجراحة. خلصت هذه الدراسة إلى أن مضاعفات ما بعد الجراحة شائعة بعد العمليات الجراحية لأمراض النساء، لذلك تحتاج النساء اللاتي يخضعن للجراحة للفحص والتقييم بشكل كامل قبل الجراحة النسائية الاختيارية.

الكلمات المفتاحية: الجراحات النسائية، معدل الانتشار، ما بعد العملية، مضاعفات، الألم.

## How to cite this article:

I. A. A. Ahmed, D. W. M. Jaffar, "PREVALENCE OF POSTOPERATIVE COMPLICATIONS IN GYNECOLOGIC SURGERY", *Electron. J. Univ. Aden Basic Appl. Sci.*, vol. 4, no. 4, pp. 295-304, December. 2023. DOI: <https://doi.org/10.47372/ejua-ba.2023.4.295>



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