

**To Find Out the Incidence of Post-Operative Wound Infections among Obstetric and Gynaecological Surgeries**Jyoti Praseeth<sup>1</sup>, Deepa Joshi<sup>2</sup>, Prof Nilesh dalal<sup>3</sup>, Sonali Dutt<sup>4</sup><sup>1,2,3&4</sup>Dept. of OBG, MGM Medical College & M.Y. Hospital, Indore, M.P.

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Conflict of interest: Nil

**Abstract:**

**Background & Methods:** The aim of the study is to find out the incidence of post-operative wound infections among obstetric and gynaecological surgeries. Among the patients identified, they are continuously monitored for development of signs of wound sepsis and who had wound gaping and eventually had to undergo resuturing. To identify the risk factors which can lead to wound gaping and to identify the common causative organism.

**Results:** Previous LSCS and PROM was the most common indications of LSCS; 74 (27.1%) and 64 (23.4%) respectively. Fetal distress 46(16.8%), NPOL 35 (12.8%) breech presentation 27 (9.9%), MSL 21 (8.8%) and Failed Induction 3 (1.1%) were other indications of LSCS. Abdominal Pain was the most common clinical feature followed by Fever; 201 (73.6%) and 179 (65.6%) respectively. No patient had septic shock and mortality. GDM and Gestation Hypertension was found in 137 (50.2%), 22 (8.1%) and 69 (34.5%) respectively. All the co-morbidities were found to be statistically significant with the wound gaping.

**Conclusion:** Incidence of wound infection can be reduced if we can manage conditions like anemia, diabetes, hypertension, avoid protracted labour, use strong antibiotics when a membrane bursts, act quickly, and provide a well-equipped ward with a clean environment. Conditions like anemia, pre gestational diabetes and gestational diabetes should be identified as early as possible during the antenatal period itself. All women in the antenatal period should advised to take iron and folic acid supplements. All antenatal women must be screened for diabetes and hypertension. If screened positive appropriate measures must be taken to keep it under control.

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**Introduction**

In the everyday practice of obstetrics and gynecology, surgical treatments are frequently necessary, and infectious morbidity impacting the postoperative course has always been a worry. The most frequent side effect of pelvic surgery is infection at the surgical site.

The three procedures that are most frequently carried out in gynecology are hysterectomy, salpingectomy, and cystectomy [1]. These procedures can be carried out via the abdominal or vaginal routes, using an open approach or a minimally invasive method like laparoscopy or robotic surgery.

An infection at the incision/operative site, including drains, must arise within 30 days of the surgery, if no implant is left in place, or within a year, if an implant is left in place, for it to be considered a surgical site infection. The infection must seem to be connected to the operation. SSI cause considerable psychological and financial burden to society by delaying recovery, lengthening hospitalization, necessitating readmission, raising hospital costs, and contributing to secondary

morbidity and mortality. The Centers for Disease Control and Prevention have identified three separate forms of surgical site infections (CDC). [2] According to the CDC's criteria, SSIs are either incisional or organ/space, with incisional SSIs further divided into superficial (containing only skin and subcutaneous tissue) and deep categories (involving underlying soft tissue) [3].

Infection of the postoperative wound is a common medical issue. The intricate process of wound infection requires molecular interactions between various biological pathways. Infections in the wounds are a major cause of morbidity and mortality [4]. According to recent research, nearly two million nosocomial infections among hospitalized patients in the US are caused by surgery site wound infections. [5]

**Skin and subcutaneous tissues** are the only tissues involved in a superficial incisional infection. Purulent discharge from the site, an isolated organism, at least one infection symptom, and a surgeon's diagnosis are all necessary conditions.

More than 50% of all surgical infections are caused by these illnesses.

**Muscles and fascial planes** are among the deeper tissues affected by deep incisional infections. Purulent discharge from the wound, dehiscence, or purposeful reopening of a deep incision by the surgeon after suspecting an infection, evidence of abscess formation, or other deep infection diagnoses by the surgeon—these are the requirements that must be accomplished.

### Material and Methods

The present study was conducted in the department of obstetrics and gynaecology, M.G.M Medical college, M.Y hospital and M.T.H hospital Indore (M.P) for a period of 1 year. Patients undergoing surgeries (both elective and emergency) in the obstetrics and gynaecology department during the study period.

All women undergoing both obstetric and gynaecological surgeries will be evaluated in the study to identify the patients who are developing any form of wound infection within 30 days from the date of operation.

Among the patients identified, they are continuously monitored for development of signs of wound sepsis and who had wound gaping and eventually had to undergo resuturing. To identify the risk factors which can lead to wound gaping and to identify the common causative organism.

All the women and her legally acceptable representative were explained about the study in detail. All the queries of the women were satisfactorily replied to. After obtaining their verbal consent to participate in the study, a voluntary written informed consent was obtained from them.

### Inclusion Criteria

- All women undergoing surgeries in the obstetrics and gynaecology department during the study period

### Exclusion Criteria

- Patients who were operated outside.
- Cases with history of surgery before 30 days
- Immunocompromised patients

### Result

**Table 1: Burden of SSI**

Total Surgeries	Total SSI reported(wound gaping)	Burden of SSI
3702	179	4.83%

In this study, 3702 was the total number of surgeries performed during study period. It was found that 179 (4.83%) was the burden of SSI.

**Table 2: Distribution of patients according to complications**

Complication	Count	Column N %
Wound Gaping	179	65.6%
No Complication	94	34.4%

Of all 273 surgeries, 179 (65.6%) had wound gaping as complication of surgery and needed resuturing and rest 94 (34.4%) had no complication (had only serous or seropurulent discharge which was managed by wound dressing and higher antibiotics and did not lead to wound gaping) following surgery.

**Table 3: Procedure wise burden of SSI(wound gaping)**

Total number of procedures	Total SSI reported	Burden of SSI
Obstetric-3310	158	4.7 %
Gynaecology- 392	21	5.3 %

Out of total 3702 surgeries, 3310 were obstetric surgeries and 392 were Gynaecological surgeries. Burden of SSI in obstetric surgery was 158 (4.7%) and in gynaecology surgeries was 21 (5.3%).

**Table 4: Distribution of patients according to time of surgery**

Time of surgery	Count	Column N %
Emergency	183	67.0%
Elective	90	33.0%

Above table shows that out of all surgeries, 183(67%) were performed in emergency hours, and 90(33%) were performed electively.

**Table 5: Distribution according to types of surgeries**

Type of Surgery	Count	Column N %
LSCS	240	87.9%
Exploratory Laparotomy with Ectopic	8	2.9%
Total Abdominal Hysterectomy	19	7.0%
Cystectomy	5	1.8%
Exploratory Laparotomy	1	.4%

Of all surgeries, 240 (87.9% were LSCS, 19 (7%) were total abdominal hysterectomy, 8 (2.9%) were Exploratory Laparotomy with Ectopic, 5(1.8%) were cystectomy and 1 (0.4%) were Exploratory Laparotomy.

**Table 6: Distribution of patients according to indication of LSCS**

Indications of LSCS	Count	Column N %
PROM	64	23.4%
Previous LSCS	74	27.1%
Fetal Distress	46	16.8%
NPOL	35	12.8%
Failed Induction	3	1.1%
Twin	8	2.9%
Breech presentation	27	9.9%
BOH	16	5.9%
Meconium-Stained Liquor	21	8.8%

Previous LSCS and PROM was the most common indications of LSCS; 74 (27.1%) and 64 (23.4%) respectively. Fetal distress 46(16.8%), NPOL 35 (12.8%) breech presentation 27 (9.9%), MSL 21 (8.8%) and Failed Induction 3 (1.1%) were other indications of LSCS.

**Table 7: Distribution of patients according to Clinical Features**

Clinical Features	Count	Column N %
Fever	179	65.6%
Vomiting	85	31.1%
Abdominal Pain	201	73.6%
Septic Shock	0	0.0%
Mortality	0	0.0%

Abdominal Pain was the most common clinical feature followed by Fever; 201 (73.6%) and 179 (65.6%) respectively. No patient had septic shock and mortality.

**Table 8: Comparison and Association of patients according to Comorbidity as Risk factors**

		Count	Column N %	Complication				Chi square value	p value
				Wound Gaping		No Complication			
				Count	Column N %	Count	Column N %		
Anemia	Yes	137	50.2%	109	60.9%	28	29.8%	23.856	.000*
	No	136	49.8%	70	39.1%	66	70.2%		
GDM	Yes	22	8.1%	19	10.6%	3	3.2%	4.584	.032*
	No	251	91.9%	160	89.4%	91	96.8%		
GHT	Yes	69	25.3%	52	29.1%	17	18.1%	3.924	.048*
	No	204	74.7%	127	70.9%	77	81.9%		

\* - Fischer Exact Value

Above table explains that anemia, GDM and Gestation Hypertension was found in 137 (50.2%), 22 (8.1%) and 69 (34.5%) respectively. All the co-morbidities were found to be statistically significant with the wound gaping.

**Table 9: Comparison and Association of patients according to obstetric Complications as Risk factors**

		Count	Column N %	Complication				Chi square value	p value
				Wound Gaping		No Complication			
				Count	Column N %	Count	Column N %		
PROM	Yes	34	12.5%	28	15.6%	6	6.4%	4.847	.028*
	No	239	87.5%	151	84.4%	88	93.6%		
Parity	Primigrav- ida	116	42.5%	74	41.3%	42	44.7%	.281	.596
	Multigrav- ida	157	57.5%	105	58.7%	52	55.3%		
Num- ber of PV	0 - 4	116	42.5%	59	33.0%	57	60.6%	19.325	.000*
	4-8	46	16.8%	35	19.6%	11	11.7%		
	> 8	111	40.7%	85	47.5%	26	27.7%		
Vaginal Dis- charge	Present	146	53.5%	97	54.2%	49	52.1%	.105	.745
	Absent	127	46.5%	82	45.8%	45	47.9%		

	Complication				t Value	p value
	Wound Gaping		No Complication			
	Mean	Standard De- viation	Mean	Standard Deviation		
Number of PV	6.16	3.06	4.53	3.29	4.062	.000

34 (12.5%) PROM as found in this study. 116(42.5%) had up to 4 PV examination, 111 (40.7%) had > 8 PV examination and remaining 46 (16.8%) had 4 – 8 PV examination. Vaginal discharge was present in 146 (53.5%) of participants. On comparison of all these variables with the presence of complication, it was found that presence of wound gaping, and number of PV examination > 8 was statistically significant. On comparison of Mean of Number of PV with presence of complication (wound gaping), it was found that higher mean number of PV was more associated with wound gaping, and it was to be statistically significant.

### Discussion

Present study was a prospective longitudinal study titled “Study to evaluate post-operative wound infections among obstetric and gynaecological surgeries” conducted at MGM medical college Indore. Patients undergoing surgeries in the obstetrics and gynaecology department during the period of study were included in the study. Keeping in mind aims and objectives of the study statistical analysis was carried out [6-9]. Salient results of the study are discussed below-

Due to the possibility of harmful bacteria coming from the skin or ascending from the vagina and endocervix to the surgical sites, such as the abdominal incision and vaginal cuff, gynaecologic treatments present a special difficulty. The endogenous vaginal flora is a dynamic and complex mixture of facultative and obligate anaerobic gram-positive and gram-negative pathogenic and non-

pathogenic bacteria [10]. As a result of incisions made in the vagina and perineum, gynaecologic SSIs are more likely to be polymicrobial and may contain gram-negative bacilli, enterococci, group B streptococci, and anaerobes [11].

In this study, 3702 was the total number of surgeries performed and were eligible for analysis during study period. Post-operative wound infection was found in 179 patients with overall post-operative wound infection rate was 4.83%. Out of 3702 total procedures, 3310 were obstetric and 392 were gynaecological procedures giving SSI among obstetric procedures as 4.7% (158/3310) and among gynaecological procedures (21/392) as 5.3% [12].

Incidence of post-operative wound infection (S.S.I.) was more in emergency patient 183(67%).

In present study, Previous LSCS and PROM was the most common indications of LSCS; 74 (27.1%) and 64 (23.4%) respectively. Fetal distress 46(16.8%), NPOL 35 (12.8%) breech presentation 27 (9.9%), MSL 21 (8.8%) and Failed Induction 3 (1.1%) were other indications of LSCS.

Commonest indications for LSCS were fetal distress (25.77%) and previous LSCS (19.58%). The least common incidence was twin gestation [13].

In present study, **Anemia, GDM and Gestation Hypertension** was found in 50.2%, 8.1% and 25.3% respectively. All the co-morbidities were found to be statistically significant with the SSI (wound gaping).

In present study, PROM was present in 12.5% of the study participants among which 15% had SSI. SSI were also most common among study participants who had >8 P/v (47.5%). Mean number of P/v among study participants with SSI was 6.16 as compared to 4.53 in study participants without SSI and this difference between mean P/v was statistically significant. This may be due to ascending infection leading to secondary spread to the surgical site [14-16].

Mean operative time among those with SSI and those with no SSI was 3.77 hours and 2.5 hours respectively and this difference was statistically significant [17].

In present study, **Staphylococcus aureus** was the most commonly involves organism in 22.3%, followed by E coli in 17.9%. Pseudomonas and Multiple organisms in culture was found in 10.6% each.

In present study, Abdominal Pain was the most common clinical feature followed by Fever in 73.6% and 65.6% respectively [18]. No patient had septic shock and mortality. According to Tayde et al(10), fever (31.25%) was the most common clinical feature followed by distension of abdomen (26.25%) and vomiting (15%).

### Conclusion

The most prevalent type of nosocomial infection is surgical site infection (SSI), which raises the morbidity of patients having surgery. Surgical site infections affect not only the morbidity, but also how a procedure turns out. Even while surgical care is crucial to preventing wound infection, various pre- and post-operative measures can also help to lower wound infections after surgery.

Incidence of wound infection can be reduced if we can manage conditions like anemia, diabetes, hypertension, avoid protracted labour, use strong antibiotics when a membrane bursts, act quickly, and provide a well-equipped ward with a clean environment. Conditions like anemia, pre gestational diabetes and gestational diabetes should be identified as early as possible during the antenatal period itself. All women in the antenatal period should advised to take iron and folic acid supplements. All antenatal women must be screened for diabetes and hypertension. If screened positive appropriate measures must be taken to keep it under control.

The study's contribution was to begin the active surveillance of surgical site infections using accepted criteria and procedures, which would be maintained with the help of the surgical team and infection control specialists. The infection control team should maintain all the data and conduct monthly audits for SSI and take appropriate measures to reduce it.

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