

# An analysis on risk factors and complications of puerperal sepsis in rural area - A retrospective study

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## Abstract

**Objective:** To determine the risk factors and complications of puerperal sepsis. **Study Design:** Observational retrospective study. Place and duration of study: National Institute of Medical Sciences and Hospital, Jaipur from June 2014 to June 2015. **Patients and Methods:** This is an observational retrospective study done in Department of obstetrics and gynaecology. During this study period all the women who were delivered in the hospital or referred to this hospital within 42 days after delivery with puerperal pyrexia/sepsis, diagnosed on clinical examination as well as with relevant investigations included in the study. Women with other ailments like malaria, typhoid fever and postpartum eclampsia were excluded. The data was collected and analyzed. **Results:** During this period there were 3600 obstetrical admissions and out of these 100 women had puerperal sepsis. Out of these patients 66 (66%) were of age 31 years and above, 78 (78%) multiparous and 76 (76%) unbooked cases. The common risk factors found were, absent membranes in 84 (84%) patients, delivered or undelivered and mismanaged referred cases 76 (76%). 53 (53%) Patients are being delivered in the hospital. Morbidities seen were septicemia in 40 (40%), Thromboflebitis in 9 (9%) and disseminated intravascular coagulation in 4 (4%), while 2 (2%) women died due to complications. **Conclusion:** The main risk factors of puerperal sepsis were poor personal hygiene and improper sterilization and anaemia, which causes septicemia, thromboflebitis, disseminated intravascular coagulation and death. It showed that the management of puerperal sepsis required to involve a multidisciplinary collaboration for a better prognosis.

**Keywords:** Puerperal sepsis, Risk factors, Complications.

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## INTRODUCTION

Historically, puerperal sepsis has been a common pregnancy-related condition, which could, eventually lead to obstetric shock or even death.<sup>1</sup> According to The World Health Organization (WHO), puerperal sepsis is defined as the infection of the genital tract occurring at labour or within 42 days of the postpartum period. The puerperal sepsis/pyrexia presents commonly with fever and other symptoms like pelvic pain, foul smelling

vaginal discharge and delayed reduction of the uterine size.<sup>2</sup> WHO reported estimated 358,000 maternal deaths yearly occurring due to complications following child birth. Out of these up to 15% are found to be associated with puerperal sepsis (WHO, 2010). It also ranks maternal sepsis as the sixth leading cause of disease burden for women aged 15-44 years, after depression, HIV/AIDs, tuberculosis, abortion and schizophrenia. The disease is commonly polymicrobial and source of infection can range from nosocomial, exogenous and endogenous.<sup>3</sup> Common predisposing factors leading to puerperal sepsis are anaemia, prolonged labour, frequent vaginal examinations in labour under unsterilized circumstances, premature rupture of membranes for prolonged period.<sup>4</sup> 'Maternal sepsis' is a general term which has been used to include various obstetric and genito-urinary tract infections introduced into the mother.<sup>5</sup> The importance of a strong health system as the essential route to achieving improvements in maternal

health and reductions in maternal mortality is widely accepted.<sup>6</sup>

### MATERIAL AND METHODS

The study was conducted in department of Obstetrics and Gynaecology, National Institute of Medical Sciences and Hospital, Achrol, Jaipur. The period of study done is from July 2014 to July 2015. A total number of 3600 deliveries were conducted during the study period. The selected population of 100 patients were admitted as emergencies in the labour ward, maternity ward, or through the outpatient department. The records were studied and data was collected. The data included the detailed history and clinical examination with all relevant investigations like elevated body temperatures, abdominal distension, dehydration, foul smelling lochia, complete blood picture collection, rise in total leukocyte count, total platelet

count, co agulation profile, serum electrolytes, ultrasound examination for intraperitoneal collection, uterine collection, retained products of conception and those women with other problems like backache, constipation. The variables Included were Age, parity, booking status, socio economic status, labour characteristics like onset of labour, status of membranes, mode of labour, rupture of membranes, repeated vaginal examination during labour, person who conducted the delivery, place of delivery home/ private hospitasl/clinics, hygienic conditions. Maternal morbidities like thromboflebitis, septicaemia, disseminated intravascular coagulation etc were noted. Various factors were noted and data was collected and analyzed by MEDICALC. The result is presented in terms of simple percentage.

**Table 1: Socio demographic characteristics (N=100)**

Sr. No	Socio demographic Status	No of Cases (%)
	Booking Status:	
1.	a. Booked	24(24%)
	b. Unbooked	76(76%)
	Age:	
2.	a. Below 20 years	21(21%)
	b. Between 21-30years	13(13%)
	c.31 and above years	66(66%)
	Parity:	
3.	a. Primiparous	15(15%)
	b. Para 1-4	7(7%)
	c. Para 5 and above	78(78%)
	Labour characteristics:	
	A: Mode of onset of Labour:	
	1.Spontaneous	60(60%)
	2.Induced	40(40%)
	B: Status of membranes at admission:	
	1.Intact	16(16%)
	2.Absent	84(84%)
4.	C.Mode of delivery:	
	1.Vaginal	60(60%)
	2.Instrumental vaginal	17(17%)
	3.Caesarean section	23(23%)
	D:Place of delivery:	
	1.In Hospital	
	Referred from periphery	29(29%)
	Booked	24(24%)
	2. In periphery	47(47%)

**Table 2: Investigations (N = 100)**

Sr. No	Investigations	No of Cases (%)
	Blood complete picture:	
	A: Haemoglobin level:	
1.	1. < 7gm% (Severe anemia)	20(20 %)
	2. Between 7-9.9 gm% (Moderate Anaemia)	68(68%)
	3. Between 10-11.9gm%	11(11%)

(Mild Anaemia)		
	B:Total leukocyte count:	28(28%)
	1.7000-1100 cumm <sup>2</sup>	72(72%)
	2.>1100 cumm <sup>2</sup>	
High vaginal swab culture and sensitivity:		
2.	Yes	56(56%)
	No	44(44%)
Ultrasonography		
3.	1.Retained products of conception	15(15%)
	2.Pyometra	1(1%)

**Table 3:** Clinical features and maternal morbidity and mortality (n=100)

Sr. No	Clinical Features and Maternal Morbidity Mortality	No of Cases	%
	Clinical Features	90	
1	1.Fever	22	90%
	2.Abdominal distension	39	22%
	3.Wound Infection	86	39%
	4.Prolonged hospital stay(>7 days)	40	86%
	5.Septicemia	20	40%
	6.Thromboflebitis	20	9%
2	Maternal Morbidity	4	
	1.Disseminated intravascular coagulation	4	4%
3	Maternal Mortality	2	
	1.Death	2	2%

Common symptoms were fever, wound infection, septicemia; complication was disseminated intravascular coagulation.

## RESULT

In our study the problems were commonly seen in unbooked patients 76(76%) and less commonly in booked patients 24 (24%). Majority of women admitted in hospital with puerperal sepsis were above thirty years of age 66(66%), 21 (21%) were below 20 years and 13 (13%) women were between 21 to 30 years of age respectively. Out of 100 patients maximum number of affected patients 78 (78%) were having parity 5 and above. 15 (15%) women were primiparous and 7 (7%) patients were belong to parity 1-4. 77 (77%) patients had spontaneous onset of labour whereas, in 40 (40%) patients labour was induced. At the time of admission 84(84%) patients were seen with absent membranes and having history of leaking per vagina for more than 10 hours, whereas 16 (16%) patients were with intact membranes.60(60%) patients were underwent spontaneous vaginal delivery whereas,17 (17%) patients had instrumental intervention due to prolonged second stage of labour and 23 (23%) patients underwent caesarean section due to cephalopelvic disproportion, fetal distress, obstructed labour. Out of 76 (76%) referred patients 29 (29%) patients were delivered in our hospital while 47% (47%) patients were delivered in periphery. A

total of 53 (53%) patients were delivered in hospital. Most of the patients 68 (68%) were anaemic with haemoglobin levels 7 to 9.9gms%, while 11 (11%) patients were having haemoglobin levels up to 10-11.9 gms % and 20 (20%) patients were having haemoglobin levels less than 7 gms%. Total leukocyte count was found more than 11000/cumm<sup>2</sup> in 72 (72%) patients. High vaginal swab culture and sensitivity report was seen positive in 56 (56%) patients, while 44 (44%) patients showed no bacterial growth. In ultrasonography 15 (15%) patients were showing retained products of conception whereas 1 (1%) patients were showing pyometra. Common presenting symptoms were fever in 90 (90%) patients, wound infection in 39 (39%) patients, abdominal distension in 22 (22%) patients and thromboflebitis in 9 (9%) patients. Majority of these patients 86 (86%) were admitted in hospital for more than 7 days. Septicemia was seen as most common morbidity 40 (40%), disseminated intravascular coagulation was seen as common morbidity in 4 (4%) patients while death was seen in 2 (2%) patient.

## DISCUSSION

Pregnancy, although being considered a normal healthy state, carries serious risk of morbidity and at times death

– maternal death. In our study the puerperal sepsis was highly reported in women of above 31 years of age 66(66%) and un booked patients of having parity 5 or above 76 (76%). The study done by Adenola. F *et al*<sup>7</sup> confirmed that most of the grand multiparous women were un booked; this may be as a result of over-confidence of the patient from previous parous experiences or due to their low socio-economic status. In most of the developing countries there are number of women who were suffering from infective complications, due to poverty, illiteracy, malnutrition. These women do not usually seek for routine antenatal visits or advice for contraception. In our study 76 (76%) cases are referred from periphery. Unnecessary induction of labour was done in 40 (40%) patients by unskilled/ untrained personals or dais, this can be the reason for their puerperal complication. Maximum patients 84 (84%) were having prolonged rupture of membranes at the time of admission in our hospital, in these women second stage of labour was prolonged and intervention is done by emergency caesarean section 23 (23%) and instrumental delivery 17 (17%) which was comparatively high in second stage of labour. The same is reported by *Khaskheli MN et al*<sup>2</sup>, and other studies done by Seale AC *et al*<sup>8</sup> and Shamshad *et al*<sup>9</sup> that specific interventions necessary for prevention and treatment of infection are good hand hygiene, use of antiseptic solution and appropriate antibiotic coverage. Our study also showed higher number of patients were suffering from anaemia same is reported by Chandra M *et al*<sup>10</sup> which showed that anemia is a major predisposing risk factors which could lead to puerperal sepsis. In our study most common morbidities seen were septicemia in 40 (40%) patients, thrombophlebitis in 9 (9%) patients, disseminated intravascular coagulation in 4 (4%) patients and death in 2 (2%) patients same is reported by *Khaskheli MN et al*<sup>2</sup>, *Shamshad et al*<sup>9</sup> and *Razia Iftikhar et al*<sup>10</sup>. The high rate of morbidities and mortality could be because of late referral, and operative interventions in established infected malnourished women. Characteristic problems related to infection control in developing countries includes prescribing of bad antibiotics, poorly functioning laboratories. Puerperal sepsis an important public health problem and a leading cause of preventable maternal death in both developed and developing world. Poor services, lack of surveillance data and suboptimal design or construction of buildings and water and sanitation systems. Overcrowding of facilities and insufficient number of health workers are commonly noted. Increased bed numbers, nurse to patient ratio and bed space are known to have negative effects on infection transmission. Prophylactic antibiotics during operation

reduces endometritis by 66-75% and also reduces rate of wound infection.<sup>11</sup>

## CONCLUSION

The main risk factors of puerperal sepsis were poor personal hygiene and improper sterilization and anaemia, which causes septicemia, thrombophlebitis, disseminated intravascular coagulation and death. It needs proper implementation of protocols for antenatal, intranatal and post natal care, continuing perinatal education programs for midwives, TBAs and doctors for proper management during labour, aseptic measures, prophylactic antibiotics, proper hand washing, avoiding unnecessary repeated vaginal examinations, prolonged labour, observing partograms, avoiding unnecessary interventions in premature/prelabour rupture of membranes, proper and timely referrals to health facilities. The management of puerperal sepsis required to involve a multidisciplinary collaboration for a better prognosis.

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