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Perianal Complications in Puerperium and Associated Risk Factors

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Abstract

Introduction Puerperium is defined as the period of about 6 weeks after childbirth during which the mother's reproductive organs return to their original nonpregnant condition. Perianal problems, including constipation, hemorrhoids, and fissure, are among the most common digestive complications among women in puerperium, observed in about 30 to 50 percent of women. Considering this great prevalence and the paucity of similar research in this aspect in an Indian population, the present study was done to assess the prevalence of perianal problems seen in puerperium and the risk factors associated with it.

Methods This was a prospective observational cohort study done over the span of 3 years on 902 puerperal women. A self-structured questionnaire covered detailed history and per-rectal and proctoscopy examination. Patients were followed up telephonically for regression of perianal problems post management.

Results The total prevalence of all the perianal problems in puerperium encountered in the present study, out of 902 subjects, was 36.3% (327 subjects). The perianal problems encountered were fissure in 185 patients (20.5%) followed by hemorrhoids in 110 patients (12.2%), perianal episiotomy infections in 25 patients (2.8%), and perineal tears in 7 patients (0.8%). On comparative analysis, positive family history, macrosomia, past history of perianal diseases, and second stage of labour > 50 minutes showed a higher prevalence in the perianal disease group as compared with the healthy group. Out of these, positive family history of perianal diseases ($p = 0.015$) and past history of perianal diseases ($p = 0.016$) were statistically significant. The percentage of multipara with hemorrhoids was more when compared to primipara ($p = 0.01$), patients who had a past history of any perianal disease have a higher chance of hemorrhoids during puerperium ($p = 0.00$). Patients with constipation in pregnancy have higher chance of hemorrhoids in pregnancy ($p = 0.00$). Patients who had a past history of any perianal disease had higher chance of fissure during puerperium ($p = 0.00$). A total of 27.74% of the study subjects with macrosomic babies had fissure in their puerperal period which on comparison with patients with non macrosomic babies was only 19.22%, which was statistically significant ($p = 0.02$).

Conclusion Constipation, hemorrhoids, and anal fissures are the most common perianal problems in postpartum period causing significant reduction in the quality of life of those afflicted with them.

Keywords
- puerperium
- constipation
- haemorrhoids
- anal fissures

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Introduction

Puerperium is an extremely important period for a woman. Extensive physiological, biochemical, and dietary changes occur during pregnancy and puerperium. The body secretes a large amount of progesterone which causes decreased muscle tone and lower motility of the gastrointestinal tract. About one-third of women after childbirth complain of perianal symptoms. Patients in puerperium show a significant increase in the incidence of perianal symptoms compared with the normal population. Perianal problems, including constipation, hemorrhoids, and fissure, are among the most common digestive complications among women in puerperium. Due to the recurring physical and psychological problems they cause for the patient, these disorders can cause a significant reduction in the quality of life of those afflicted with them.

Considering the results of the previous studies, the great prevalence of perianal problems during puerperium, and the paucity of similar research of this kind conducted in India, we set out with an aim to assess the various perianal problems seen in women during their puerperal period, their prevalence, and the risk factors which cause it.

Methodology

This is a prospective observational cohort study conducted over a span of 2.5 years in which 902 puerperal women who have delivered in our institute and were admitted in our PNC ward were enrolled. Informed consent form and patient information sheet regarding the study were provided to every patient. Institutional Ethical committee approval was obtained before the start of the study. Patients who developed perianal complaints anytime during their puerperium were considered as a positive case. A detailed history using a self-structured questionnaire and a thorough clinical examination, per-rectal examination and proctoscopic examination was done in all the patients enrolled. Patients were followed up telephonically about regression of the problems post management. All the data was filled in a Microsoft Excel (Microsoft Corporation, Redmond, WA, USA) spreadsheet; the Student t test was used to find the significance of study parameters on continuous scale between two groups on metric parameters. The chi-squared/fisher exact test were used to find the significance of study parameters on a categorical scale between two or more groups. Data was analyzed using IBM SPSS Statistics for Windows software trial version 22 (IBM Corp., Armonk, NY, USA).

Results

The present study included a total of 902 study subjects who were in the puerperal period. The highest number of patients presented with constipation (24.2%) as their main symptom followed by bleeding from the rectum (11.6%) as seen in ►**Table 1**.

The total prevalence of all the perianal problems in puerperium was 327 (36.3%). According to ►**Table 2**, The perianal problems encountered were fissure (20.5%) followed by hemorrhoids (12.2%). Other perianal problems encountered were perianal episiotomy infections and perineal tears.

Table 1 DISTRIBUTION OF PERIANAL SYMPTOMS

Sr. No	Symptoms	Frequency (*n*)	Percentage (%)
1	Constipation	218	24.2
2	Bleeding from rectum	105	11.6
3	Pain in perianal region	30	3.3
4	Perianal itching	12	1.3
5	Perianal discomfort	51	5.7
6	Painful protrusion at the anus	21	2.3
7	Perianal burning	23	2.5
8	Mucus discharge	14	1.6
9	None	428	47.5

Table 2 PREVALENCE OF PERIANAL PROBLEMS IN PUERPERIUM IN THE STUDY POPULATION

Sr. No	Perianal problem	Frequency (*n*)	Percentage (%)
1	Hemorrhoids	110	12.2
2	Fissure	185	20.5
3	Perianal episiotomy infections	25	2.8
4	Perineal tear	7	0.8
5	None	575	63.7
Total	Prevalence of perianal problems in puerperium	327	36.3%

On comparative analysis of suspected risk factors of perianal diseases in puerperium, it was seen that positive family history, macrosomia, past history of perianal diseases, second stage of labor > 50 minutes showed a higher prevalence in the perianal disease group as compared to the healthy group, in which positive family history of perianal diseases ($p = 0.015$) and past history of perianal diseases ($p = 0.016$) were the risk factors that were statistically significant, as seen in ►**Table 3**.

Constipation

The highest prevalence of constipation among current delivery type was seen in those with forceps delivery followed by those with vacuum delivery, but this was not statistically significant. There was no statistically significant correlation between occurrence of constipation and age, parity, past history of perianal disease, family history of perianal disease,

Table 3 RISK FACTORS FOR PERIANAL DISEASES OF PUERPERIUM

Sr. No	Risk Factor	Perianal diseases group, *n* (%)	Healthy group, *n* (%)	Odds ratio (95%CI)	*p-value*
1	Age > 30 years old	25 (46.3%)	29 (53.7%)	0.768	0.347
2	Positive family history	60 (64.5%)	33 (35.5%)	1.735	**0.015**
3	Macrosomia	72 (52.6%)	65 (47.4%)	1.000	1
4	Vaginal delivery	357 (51.3%)	339 (48.7%)	1.282	0.128
5	Cesarean section	74 (61.2%)	47 (38.8%)	1.282	0.128
6	Past history of perianal diseases	147 (59.0%)	102 (41.0%)	1.437	**0.016**
7	Second stage of labor > 50mins	176 (56.1%)	138 (43.9%)	1.241	0.124

Abbreviation: CI, confidence interval.

prolongation of second stage of labor, neonatal macrosomia, and consumption of iron tablets.

Hemorrhoids

As seen in ►**Table 4**, A statistically significant relationship was observed between prevalence of hemorrhoid and parity ($p = 0.01$) and past history of any anorectal disorders ($p = 0.00$). Patients with constipation in pregnancy have a higher chance of presenting with hemorrhoids in pregnancy. This was statistically significant ($p = 0.01$).

The highest level of hemorrhoid in puerperium was reported among people with previous vacuum delivery (37.5%) and with current vacuum delivery (22.22%). There was no significant statistical relationship between prevalence of hemorrhoid and type of previous and current mode of delivery and family history of any anorectal disorders, prolonged length of second stage of labor, or macrosomic babies on presence of hemorrhoids in puerperium according to the present study.

Fissure

There was a statistically significant relationship between presence of fissure and past history of any perianal disease ($p = 0.00$), length of second phase of labor ($p = 0.00$), and macrosomic babies ($p = 0.02$), as studied in ►**Table 5**. The highest level of fissure in puerperium was reported among people with previous forceps delivery and among people with current vaginal delivery. No significant statistical relationship was observed between parity, type of previous childbirth, type of current childbirth, and family history of perianal disease on the presence of fissures in puerperium.

Table 4 RELATIONSHIP BETWEEN SIGNIFICANT RISK FACTORS AND HEMORRHOIDS IN PUERPERIUM

Sr. No	**Parity**	**Hemorrhoids**		*p-value*
		Positive	**Negative**	**0.01**
1	Primipara	37 (9.11%)	369 (90.89%)	
2	Multipara	73 (14.72%)	423 (85.28%)	
Sr. No	**Past history**	**Hemorrhoids**		*p-value*
		Positive	Negative	**0.00**
1	Present	52 (20.88%)	197 (79.12%)	
2	Absent	58 (8.88%)	595 (91.12%)	
Sr. No	**History of constipation in pregnancy**	**Hemorrhoids**		*p-value*
		Positive	Negative	**0.01**
1	Present	16 (7.33%)	202 (92.66%)	
2	Absent	94 (13.74%)	590 (86.25%)	
Total		**110**	**792**	

Table 5 RELATIONSHIP BETWEEN SIGNIFICANT RISK FACTORS WITH PRESENCE OF FISSURE

Sr. No	Past history of perianal disease	Fissure		*p-value*
		Positive	**Negative**	**0.00**
1	Present	79 (31.73%)	170 (68.27%)	
2	Absent	106 (16.23%)	547 (83.77%)	
Sr. No	**Length of 2nd stage of labour**	**Fissure**		*p-value*
		Positive	Negative	**0.00**
1	< 50 mins	95 (16.16%)	493 (83.84%)	
2	> 50 mins	90 (28.66%)	224 (71.34%)	
Sr. No	**Neonatal weight**	**Fissure**		*p-value*
		Positive	Negative	**0.02**
1	Macrosomia	38 27.74%	99 72.26%	
2	Nonmacrosomia	147 19.22%	618 80.78%	
Total		**185**	**717**	

Discussion

Constipation

Prevalence of Constipation in Puerperium

In the present study, 218 patients (24.2%) presented with constipation as their main symptom. This was very similar to the study done by Bradley et al. in which the incidence of constipation was 24% in 3 months postpartum.[1] Another study conducted by Derbyshire et al. showed that the prevalence of both straining and incomplete evacuation were high in all trimesters.[2] This could be attributed to a higher fiber intake in the Indian population compared with the western world. There were studies that showed high prevalence of constipation in pregnancy and puerperium, ranging from 45% to 55% like those by Goshal et al.[3] and Beksac et al.[4] This can be attributed to the lower fiber consumption in western countries. On the other hand, lower prevalence, ranging between 4.5% and 13%, were shown in a few studies, such as those by Shi et al.[5] and Van Brummen et al..[6]

Hemorrhoids

Prevalence of Hemorrhoids in Puerperium

In the present study, the prevalence of hemorrhoids in puerperal subjects was 12.2%. Most of the studies done all over the world by Simmons et al.,[7] Beksac et al.,[4] Ghasemzade et al.,[8] and Abramowitz et al.,[9] have documented the prevalence of hemorrhoids in puerperium as ranging between 12.2 to 40%. A higher prevalence of hemorrhoids in puerperium is seen when compared with other gestational periods and when compared with the general population. This was reinforced by Koning et al.,[10] Johanson et al.,[11] Kukla et al.,[12] and Pradel et al.[13] Most of these studies were an overestimate, because many studies had an anal examination done during pregnancy, but half of the patients reported proctologic disease in the past, and many were lost to follow-up. Around 90% of thrombosed external hemorrhoids during puerperium were observed during the 1st day after delivery as studied by Abramowitz et al[14] and Rouillon et al.[15] Few studies have reported a lower prevalence of hemorrhoids in puerperium ranging between 5.3 and 9.3%, as seen by MacArthur et al.[16] and Ledward.[17] In these two studies, the low prevalence could be attributed to the way information was obtained, by use of a postal questionnaire within 6 weeks postpartum. Contrary to all other studies, Poskus et al.[18] identified the highest prevalence of hemorrhoids in puerperium to be around 92.7% of all the other perianal diseases seen in puerperium. This was because postal questionnaires or telephone interviews were used and various symptoms like perianal pain and bleeding were attributed to hemorrhoids without a clinical examination.

Significant Risk Factors of Hemorrhoids in Puerperium

Relationship Between Parity and Hemorrhoids in Puerperium

With increasing parity, there is an increase in the prevalence of hemorrhoids. This was also studied by Ghasemzade et al.[8] and Gojnic et al.[19] Patients with parity above two have a greater chance of hemorrhoids in puerperium. This was attributed to the repeated change in the environment and emotional stress on repeated pregnancies causing constipation and further hemorrhoids in subsequent pregnancies. A study done by Beksac et al.[4] talks about the presence of pregnancy-related vascular growth factors, which increased in every pregnancy, which could be one of the causes of hemorrhoids in puerperium. Surprisingly, in a few studies, Parity has *no effect* in the

prevalence of hemorrhoids in puerperal women as seen by MacArthur et al.[16] and Unadkat et al.,[20] the reasoning for which was not given, although it is seen in these studies that as parity increases, the risk of new symptoms decreases.

Relationship Between Past History of Perianal Diseases and Hemorrhoids in Puerperium

A history of past perianal problems was considered to have a higher prevalence of hemorrhoids in pregnancy and puerperium, which was also seen in studies done by Ghasemzade et al.,[8] Medich et al.,[21] and Unadkat et al.[20] This could be attributed to the increase in hemorrhoidal symptoms as pregnancy progresses since circulating blood volume reportedly increases by 25 to 40%. This leads to increased vascular engorgement and dilatation, with venous stasis increased by the enlarging gravid uterus or increased pelvic floor laxity.

Relationship Between Constipation and Hemorrhoids in Puerperium

The prevalence of hemorrhoids in patients with a history of constipation was higher as compared with those who did not have constipation. This was reinforced by a study done by Shi et al.[5] The study done by Poskus et al.,[18] Abramowitz et al.,[14] Calhoun.,[22] and Beksac et al.[4], identified terminal constipation (dyschezia) as the single independent preventable risk factor for hemorrhoids in pregnancy and puerperium, with highly significant odds ratio in logistic regression analysis. The reason for these as deciphered on reviewing literature were many, including straining during defecation, impairment of defecation habits during pregnancy, decrease in physical activity, compression of the lower bowel by the uterus and psychosocial stress may also lead to constipation and hence hemorrhoids. Increase in intra-abdominal pressure leading to vascular engorgement can also be attributed to the presence of constipation in pregnancy.

Fissure

Prevalence of Fissure in Puerperium

The prevalence of fissures is 20.5% (185 patients) according to the present study. The prevalence of anal fissure in puerperium, according to the literature, ranged from 9 to 15.2%. Very few people have studied fissure in ano in puerperium including Abramowitz et al,[14] Martin,[23] and Corby et al.[24] The rest of the studies have studied various anorectal disorders as a whole or have focused on symptomatic constipation. The higher frequency observed by Abramowitz et al[14] could be attributed to a longer period of follow-up. The high prevalence rate seen in our study compared with other studies could be due to the higher level of constipation which posed as an independent risk factor itself, and the ignorance regarding the treatment advised to the uneducated population in the rural city.

Significant Risk Factors of Fissure in Puerperium

Relationship Between Past History of Perianal Disease with Presence of Fissure in Puerperium

Patients with past history of any perianal problems had a higher chance of fissure during puerperium. This was consistent with the study done by Ghasemzade et al.[8] This is probably due to the vicious cycle of pain, Sphincter contraction, and fissure intensification in patients with past history of fissures with added hormonal and mechanical factors of pregnancy.

Relationship Between Length of Second Stage of Labor with Presence of Fissure in Puerperium

Patients having a prolonged length of second stage of labor (> 50 minutes) have a higher chance of fissure in puerperium as seen in the present study. Few studies, including those by Ghasemzade et al.[8] and Abramowitz et al.[14] identified prolonged length of second stage of labor to be a significant independent prognostic factor for fissure in pregnancy. The reason for this link is unclear. Some studies mention that prolonged straining can cause increased venous stasis. These delayed changes in the perineum and the increased duration of hormonal change may predispose females to fissure.

Relationship Between the Weight of the Baby with the Presence of Fissure in Puerperium

Heavier babies (> 3,700 grams) were associated with anal fissure in puerperium as studied by Ghasemzade et al.[8] and Abramowitz et al.[14], similar to the results seen in the present study. This can be attributed to decreased blood flow in the anal mucosa due to heavier baby in pregnancy, causing higher chances of fissure in puerperium. Along with this, heavier babies can cause increased perineal tears causing higher chances of fissure.

Conclusion

Perianal problems in pregnancy and puerperium cause physical and psychological problems in mothers resulting in a significant reduction in the quality of the life of those afflicted. The elimination of these risk factors may lead to a higher quality of life during pregnancy and puerperium. Positive family history and past history of perianal diseases were the independently associated risk factors of perianal disease of puerperium. Individually, multiparous patients and patients with a past history of perianal diseases have higher prevalence of hemorrhoids in puerperium; whereas patients with a past history of any perianal disease, prolonged length of second phase of labor, macrosomic babies, and iron tablets consumption during pregnancy pose a risk factor for fissures in puerperium.

Statements and Declarations

All authors contributed to the study conception, design, material preparation, data collection and analysis. All authors read and approved the final manuscript.

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Author's Contribution
All authors contributed to the study conception, design, material preparation, data collection and analysis. All authors read and approved the final manuscript.

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Ethical Approval
Institutional Ethics committee approval was obtained and the study was performed in accordance with the ethical standards as described by the Committee on Publication Ethics and the International Committee of Medical Journal Editors.

Consent
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Conflict of Interests
The authors have no conflict of interests to declare.

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