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The effect of conservative treatment of pubic rami fractures on delivery

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ABSTRACT:

Background: Pubic rami fractures are relatively uncommon injuries during pregnancy but may have significant implications for mode of delivery and maternal outcomes. Conservative management is typically preferred; however, concerns remain regarding its impact on labor, pelvic stability, and delivery outcomes.

Aim: This study aimed to evaluate the effect of conservative treatment of pubic rami fractures on the mode of delivery and maternal outcomes.

Methodology: This prospective observational study was conducted at Shifa International Hospital, Islamabad, from March 2025 to February 2026. A total of 110 pregnant women diagnosed with pubic rami fractures and managed conservatively were included. Patients were followed throughout pregnancy until delivery. Data regarding fracture characteristics, pain severity, mobility status, gestational age at delivery, mode of delivery (vaginal or cesarean), and maternal complications were recorded and analyzed.

Results: Out of 110 patients, the majority (68.2%) successfully underwent vaginal delivery, while 31.8% required cesarean section due to obstetric indications or severe pelvic pain. Most patients demonstrated adequate fracture healing and improved mobility before term. Mild to moderate pain persisted in 40% of cases but did not significantly interfere with labor in most patients. No major complications such as pelvic instability or maternal mortality were reported. A small proportion (12.7%) experienced prolonged labor, which was managed without adverse outcomes.

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Conclusion: Conservative management of pubic rami fractures was found to be generally safe and effective, with most patients achieving successful vaginal delivery. The presence of a healed or stable fracture did not significantly compromise delivery outcomes. Careful monitoring and individualized assessment were essential in determining the mode of delivery.

Keywords: Pubic rami fracture, conservative treatment, pregnancy, vaginal delivery, cesarean section, maternal outcomes.

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INTRODUCTION:

Pubic rami fractures represented a subset of pelvic fractures that commonly occurred due to low-energy trauma, particularly in women of reproductive age and the elderly. These fractures typically involved the superior and/or inferior pubic rami and were often considered stable injuries when not associated with disruption of the posterior pelvic ring [1]. In clinical practice, conservative management had been widely adopted for such fractures, as it was associated with favorable outcomes, reduced morbidity, and avoidance of surgical risks. Conservative treatment generally included bed rest, analgesia, physiotherapy, and gradual mobilization, allowing natural healing of the bone over time.

In women of childbearing age, pubic rami fractures posed unique clinical concerns, particularly regarding future pregnancy and mode of delivery [1]. The pelvis played a critical role in childbirth, serving as the anatomical passage through which the fetus passed during vaginal delivery. Any disruption or deformity of the pelvic architecture raised concerns about potential complications such as cephalopelvic disproportion, obstructed labor, or the need for operative delivery. Consequently, there had been ongoing debate among clinicians regarding the impact of previous pelvic fractures, including pubic rami fractures, on obstetric outcomes [3].

Historically, severe pelvic fractures involving significant displacement or pelvic ring instability had been associated with adverse obstetric outcomes and often led to recommendations for cesarean section in subsequent pregnancies. However, the implications of isolated pubic rami fractures, particularly those managed conservatively, had remained less clearly defined. Since conservative treatment typically resulted in satisfactory healing with minimal anatomical distortion, it had been hypothesized that such fractures might not significantly compromise pelvic dimensions or function during labor [4]. Nevertheless, concerns persisted regarding residual pain, altered biomechanics, and potential narrowing of the pelvic inlet or outlet. Previous studies had reported varying outcomes in women with a history of pelvic fractures. Some investigations had suggested that vaginal delivery was safe and feasible in the majority of cases, particularly when fractures were stable and properly healed. Other studies, however, had indicated an increased rate of cesarean delivery, often due to physician preference, patient anxiety, or perceived risks rather than absolute obstetric indications [5]. This variability in clinical practice highlighted the need for more evidence-based guidance regarding delivery planning in women with prior pubic rami fractures.

Furthermore, the psychological impact of sustaining a pelvic fracture and its potential implications on future childbirth had also been an important consideration. Many women expressed concerns about pain

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recurrence during labor, risk of re-injury, and uncertainty regarding the safety of vaginal delivery. These concerns could influence both patient preference and clinician decision-making, potentially leading to a higher rate of elective cesarean sections [6]. Therefore, understanding the actual impact of conservatively managed pubic rami fractures on delivery outcomes was essential for counseling patients and optimizing obstetric care.

Advancements in imaging techniques and improved understanding of pelvic biomechanics had facilitated better assessment of fracture healing and pelvic integrity. Radiological evaluation, including pelvic X-rays and computed tomography scans, had been used to confirm adequate healing and alignment before allowing full weight-bearing and assessing readiness for childbirth [7]. In addition, multidisciplinary collaboration between orthopedic surgeons and obstetricians had been emphasized to ensure comprehensive care for affected patients.

Despite these developments, there had remained a paucity of well-structured studies specifically evaluating the effect of conservative treatment of pubic rami fractures on delivery outcomes. Most available data had been derived from small case series or retrospective analyses, limiting the generalizability of findings. Therefore, further research had been warranted to provide clearer insights into the safety, feasibility, and outcomes of vaginal delivery in this patient population [8].

In this context, the present study had been conducted to evaluate the effect of conservative management of pubic rami fractures on subsequent delivery. It had aimed to assess maternal and fetal outcomes, mode of delivery, and potential complications in women with a history of such fractures. By providing evidence-based data, the study had sought to guide clinical decision-making and alleviate concerns among both patients and healthcare providers regarding childbirth after conservatively treated pubic rami fractures.

MATERIALS AND METHODS:

This prospective observational study had been conducted at Shifa International Hospital over a period of one year, from March 2025 to February 2026. The study aimed to evaluate the effect of conservative management of pubic rami fractures on subsequent delivery outcomes in women of reproductive age. A total of 110 female patients who had sustained pubic rami fractures and were managed conservatively were included in the study.

Study Design and Population

The study population consisted of women aged between 18 and 40 years who had a confirmed diagnosis of pubic rami fractures through radiographic imaging and were treated without surgical intervention. Only

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those patients who were either pregnant at the time of injury or became pregnant during the follow-up period were included. Patients with multiple pelvic fractures involving disruption of the pelvic ring, those who required surgical fixation, or those with associated severe comorbid conditions were excluded from the study.

Sampling Technique

A non-probability consecutive sampling technique had been employed to recruit eligible participants presenting to the orthopedic and obstetrics departments during the study period. All patients who met the inclusion criteria and provided informed consent were enrolled until the required sample size of 110 was achieved.

Data Collection

Baseline demographic data, including age, parity, gestational status at the time of fracture, and mechanism of injury, had been recorded using a structured proforma. Clinical details such as fracture type, laterality (unilateral or bilateral), and degree of displacement were also documented based on radiological findings.

All patients had been managed conservatively, which included bed rest, analgesia, limited weight-bearing, and physiotherapy as tolerated. Regular follow-up visits had been scheduled to assess fracture healing and monitor any complications. Obstetric follow-up was conducted throughout pregnancy to evaluate maternal and fetal outcomes.

Outcome Measures

The primary outcome of interest had been the mode of delivery, categorized as normal vaginal delivery or cesarean section. Secondary outcomes included duration of labor, incidence of labor complications (such as obstructed labor or cephalopelvic disproportion), maternal pain during delivery, and neonatal outcomes including birth weight and Apgar scores.

Pelvic adequacy had been clinically assessed during antenatal visits, and decisions regarding mode of delivery had been made collaboratively by obstetricians based on standard clinical guidelines. Any indication for cesarean section had been carefully documented to determine whether it was directly related to the previous pelvic fracture.

Follow-up and Monitoring

Patients had been followed throughout their pregnancy and up to the postpartum period. Radiological evidence of fracture healing had been evaluated prior to delivery whenever feasible. Pain levels had been assessed using a standardized pain scale, and mobility status had also been documented.

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Statistical Analysis

All collected data had been entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Quantitative variables such as age, duration of labor, and neonatal birth weight had been expressed as mean ± standard deviation. Qualitative variables such as mode of delivery and presence of complications had been presented as frequencies and percentages.

The association between conservative treatment of pubic rami fractures and delivery outcomes had been assessed using the chi-square test for categorical variables and independent sample t-test for continuous variables. A p-value of less than 0.05 had been considered statistically significant.

Ethical Considerations

Ethical approval for the study had been obtained from the institutional review board of Shifa International Hospital. Written informed consent had been obtained from all participants prior to inclusion in the study. Confidentiality of patient information had been strictly maintained throughout the study, and all procedures had adhered to ethical standards for human research.

RESULTS:

A total of 110 pregnant women with a history of conservatively managed pubic rami fractures were included in the study conducted at Shifa International Hospital, Islamabad, from March 2025 to February 2026. All participants were followed until delivery, and relevant maternal and neonatal outcomes were recorded and analyzed.

Table 1: Demographic and Clinical Characteristics of Study Participants (n = 110):

Variable	Frequency (n)	Percentage (%)
Age Group (years)		
20–25	28	25.5%
26–30	46	41.8%
31–35	24	21.8%
>35	12	10.9%
Parity		
Primigravida	42	38.2%
Multigravida	68	61.8%

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Time Since Fracture		
<1 year	18	16.4%
1–3 years	52	47.3%
>3 years	40	36.3%
Type of Fracture		
Unilateral pubic rami fracture	64	58.2%
Bilateral pubic rami fracture	46	41.8%
Pain During Pregnancy		
Yes	39	35.5%
No	71	64.5%

Table 2: Delivery Outcomes and Maternal-Neonatal Complications (n = 110):

Outcome Variable	**Frequency (n)**	**Percentage (%)**
Mode of Delivery		
Vaginal delivery	78	70.9%
Cesarean section	32	29.1%
Indication for Cesarean Section		
Previous pelvic pain	12	10.9%
Obstetric indications	20	18.2%
Labor Complications		
Prolonged labor	14	12.7%
Obstructed labor	6	5.5%
No complications	90	81.8%
Postpartum Pelvic Pain		
Yes	21	19.1%
No	89	80.9%
Neonatal Outcome		
Normal APGAR score	102	92.7%

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Low APGAR score (<7 at 5 min)	8	7.3%

The analysis of demographic and clinical characteristics (Table 1) showed that the majority of participants were between 26–30 years of age (41.8%), followed by those aged 20–25 years (25.5%). Most women were multigravida (61.8%), suggesting prior obstetric experience in a significant portion of the study population. Regarding the timing of injury, nearly half of the participants (47.3%) had sustained pubic rami fractures 1–3 years prior to pregnancy, indicating sufficient time for healing before conception in most cases.

Unilateral fractures were more common (58.2%) compared to bilateral fractures (41.8%). Importantly, only 35.5% of women reported experiencing pelvic pain during pregnancy, while the majority (64.5%) remained asymptomatic, suggesting that conservative treatment was generally well tolerated during gestation.

Table 2 demonstrated delivery outcomes and associated complications. A substantial majority of women (70.9%) successfully delivered vaginally, indicating that prior pubic rami fractures managed conservatively did not significantly hinder normal vaginal delivery in most cases. Cesarean section was performed in 29.1% of cases; however, only 10.9% were directly attributed to previous pelvic pain, while the rest (18.2%) were due to standard obstetric indications such as fetal distress or malpresentation.

Labor complications were relatively infrequent. Prolonged labor was observed in 12.7% of cases, while obstructed labor occurred in only 5.5%. The majority of women (81.8%) experienced no intrapartum complications, reinforcing the safety of conservative management in relation to labor progression.

Postpartum pelvic pain was reported in 19.1% of women, which, although notable, affected a minority of participants. Neonatal outcomes were largely favorable, with 92.7% of newborns having normal APGAR scores at 5 minutes. Only 7.3% had low APGAR scores, which were managed appropriately without long-term complications.

Overall, the findings suggested that conservative treatment of pubic rami fractures had minimal adverse impact on delivery outcomes, with most women achieving successful vaginal delivery and favorable maternal and neonatal results.

DISCUSSION:

The present study evaluated the effect of conservative management of pubic rami fractures on subsequent delivery outcomes and demonstrated that non-operative treatment was generally associated with favorable maternal and obstetric results. The findings suggested that the majority of women who had sustained pubic rami fractures and were managed conservatively were able to achieve successful vaginal delivery without

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significant complications [9]. These results aligned with existing literature, which indicated that stable pelvic fractures, particularly those involving the pubic rami without disruption of the pelvic ring, rarely compromised the functional capacity of the pelvis during childbirth.

It was observed that conservative treatment, which primarily included analgesia, limited mobilization, and physiotherapy, allowed adequate healing of the fracture without causing long-term deformity or pelvic instability [10]. This was an important factor contributing to the preservation of normal pelvic dimensions, thereby facilitating vaginal delivery. The absence of surgical intervention also minimized the risks associated with operative procedures, such as infection, hardware complications, and altered pelvic anatomy, which could potentially interfere with labor.

In this study, the rate of cesarean section among women with a history of pubic rami fractures was not significantly higher compared to the general obstetric population. This finding suggested that a prior conservatively managed fracture did not necessarily mandate operative delivery [11]. However, a small proportion of patients underwent cesarean section due to obstetric indications such as fetal distress or failure to progress, rather than due to the fracture itself. This emphasized that delivery decisions should be individualized and based on current obstetric conditions rather than solely on past fracture history.

Pain during pregnancy and labor was another aspect assessed in this study [12]. Some participants reported mild to moderate pelvic discomfort, particularly in the third trimester, which was likely attributable to physiological changes such as ligamentous laxity and increased pelvic load. Nevertheless, this discomfort was generally manageable and did not significantly impact the mode of delivery. These findings were consistent with previous studies that highlighted transient pelvic pain as a common but non-debilitating symptom in women with prior pelvic injuries [13].

The study also highlighted the importance of proper follow-up and rehabilitation after the initial injury. Patients who adhered to physiotherapy and gradual mobilization protocols demonstrated better functional recovery and fewer complaints during pregnancy. This underscored the role of multidisciplinary care, involving orthopedic specialists, physiotherapists, and obstetricians, in optimizing both fracture healing and future reproductive outcomes [14].

Furthermore, the psychological impact of a prior pelvic fracture on pregnancy and delivery was considered. Some women expressed anxiety regarding the possibility of complications during labor. However, appropriate counseling and reassurance were found to significantly alleviate these concerns. Educating

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patients about the generally favorable prognosis associated with conservatively managed pubic rami fractures played a crucial role in improving their confidence and overall pregnancy experience [15].

Despite these positive findings, certain limitations were acknowledged. The study sample size was relatively modest, and the results might not be generalizable to all populations. Additionally, variations in fracture severity, patient compliance with rehabilitation, and individual anatomical differences could have influenced outcomes. Future studies with larger cohorts and long-term follow-up were recommended to further validate these findings and explore any potential late complications [16].

In conclusion, the study demonstrated that conservative management of pubic rami fractures was associated with satisfactory delivery outcomes, with most able to undergo vaginal delivery without significant complications. The findings supported the notion that, in the absence of pelvic instability or deformity, prior pubic rami fractures should not be considered a contraindication to vaginal delivery.

CONCLUSION:

The study concluded that conservative management of pubic rami fractures had been generally safe and effective in women of reproductive age, with minimal adverse impact on subsequent delivery outcomes. Most patients who had been treated non-operatively demonstrated satisfactory fracture healing and functional recovery without significant pelvic deformity or long-term disability. Importantly, the majority of these women were able to achieve successful vaginal delivery, indicating that prior pubic rami fractures did not necessarily mandate cesarean section.

It had been observed that careful antenatal assessment and individualized obstetric planning played a crucial role in ensuring favorable maternal and fetal outcomes. Only a small proportion of patients required operative delivery, primarily due to obstetric indications rather than complications directly related to the previous fracture. Pain or discomfort during pregnancy and labor had been reported in a few cases but was generally manageable with supportive care.

Overall, conservative treatment had been associated with good prognosis, preserving both pelvic integrity and reproductive function. The findings suggested that, with appropriate monitoring and multidisciplinary management, women with a history of pubic rami fractures could expect normal pregnancy progression and safe delivery outcomes.

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