



Causes and Risk Factors of Coccydynia in Postpartum Women in Dhq Sargodha

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2022/v34i31B36090

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/82703>

Original Research Article

Received 28 January 2022

Accepted 08 April 2022

Published 14 April 2022

ABSTRACT

Objective: This study investigated the causes and risk factors of coccydynia among postpartum women in Maula Bakhsh DHQ Sargodha. The main focus of the study was to identify what are the basic causes and risk factors of coccydynia.

Methods: This was an observational cross-sectional study on 90 postpartum women from Maula Bakhsh DHQ Sargodha. Self-developed questionnaire was filled for data collection.

Results: Highest percentages of coccydynia was found among age 30 and 35 i.e. 12.2%. Our study showed that out of the total population 68.9% women experienced coccydynia with C sections. 73.3% experienced coccydynia with increasing number of pregnancies (more than one pregnancy. 90% women experiencing pain preferred to sit on soft surface.

Conclusion: This study concluded that multiple factors led to the development of coccydynia in postpartum women including number of C sections and increasing number of pregnancies.

Keywords: Coccydynia; C section; postpartum; coccygeal pain.

1. INTRODUCTION

Coccydynia is pain in coccyx and a medical term also known as Tailbone pain. According to location, coccyx pain may be referred as the lowest lower back pain because of its presence at the lowest portion of spine or as it is located at the terminal portion [1].

According to a research conducted in 2010 coccydynia is a coccygeal pain which is enhanced by putting pressure on coccyx [2].

History reveals that the term coccyx was first introduced by Simpson in 1859 but evidence of its use goes way back in 16th century [3].

Coccyx has its origin from a Greek word used for cuckoo bird's beak, resembling it when seen from the side [4,5].

As far as the anatomical structure is concerned it is triangular in shape consisting of 3-5 fused segments, it is divided into two portions; Upper Portion and Lower portion. The upper portion of the fused segments articulates with the lower portion of sacrum. The rudimentary articular processes on first segment are known as coccygeal ligament, the terminal part of filum terminale attaches to this first segment. Its anterior border is formed by the levator ani and sacrococcygeal muscle, sacrospinous ligament, sacrotuberous ligament and fibers of gluteus maximus muscle. Inferiorly it is bounded by iliococcygeus muscle tendon. The pelvic floor is supported by the ligaments and surrounding musculature which also provide voluntary bowel control [6].

As far as morphology is concerned there are certain types of coccygeal morphologies that can also lead to a predisposition to coccydynia [7].

Previous research done in 2000 showed that coccydynia is more prevalent in female gender and obesity which is associated with its increased risk [8].

However, in 2011 another comparative study said that it (coccydynia) varies among different types of populations in which adolescents, adults and female gender are more prone to develop coccydyneal pain than children and male gender. Children and male gender are less affected but women are 5 times more prevalent than men [9].

There are certain types of risk factors that contribute to the development of coccydynia one of which is the rapid weight loss and it is due to loss of mechanical cushioning. Trauma is the major etiological factor in the development of coccydynia. Trauma may be of two types; Internal Trauma and External Trauma. Certain types of mechanisms are associated with external trauma in which coccyx may be broken, bruised and dislocated due to a backward fall [10].

As far as the internal location is concerned during childbirth coccyx is more susceptible to injury during difficult, cesarean or instrumental delivery like the use of forceps and vacuum. Sitting on different surfaces also play an important role like soft and hard surfaces. Repetitive or prolonged sitting on uncomfortable hard or narrow surfaces can result in minor trauma [11].

Previous research stated that the foremost common cause of coccydynia is single coordinate pivotal injury such as a drop specifically onto the coccyx or, as amid the post-partum period, due to a inconspicuous frame of total injury that happens due to sitting awkwardly. Schapiro, in 1950, portrayed the clutter as 'television disease', since destitute postural adjustment was thought to be an imperative inclining figure of coccydynia [10].

There are certain causes of non-traumatic coccydynia which includes degenerative or disc joints disease, infectious etiology, and hyper mobility/hypo mobility of sacrococcygeal joint and variant of coccygeal morphologies. Some causes which are not related to organs also contribute to coccydynia which include somatization and psychological disorders. Coccydyneal pain may be referred or radicular. On physical examination coccygeal tenderness is not associated with this pain. However, neoplasms are considered as less common cause of coccydynia [2].

Certain types of neoplasm also play an important role in it. A recent clinical study suggests that glomus tumors also contribute to coccygeal pain (Kim, Yang, Park, Park, & Cho, 2013). In addition intrathecal spinal tumors also serve as cause of coccydynia (Houlding & Matheson, 1961). Musculoskeletal abnormalities may also be the cause of pain although lumbosacral disc prolapse is not considered as an important factor [12].

In 1950 Schapiro affirmed the discoveries of Thiele on the clinical highlights of coccydynia and called it Thiele Syndrome. Thiele's description of the clinical highlights still holds genuine now a day. This incorporates the most indications of delicacy and pain, or a hurt restricted within the region of the lower sacrum, the coccyx, or within the adjoining muscles and delicate tissues. The understanding more often than not focuses to the coccyx as the location of pain. The seriousness of the pain is subordinate on different inclining variables, such as the term of time went through sitting. Ladies report an exponential increment in pain amid the premenstrual period. Dyspareunia and piriformis disorder have been occasionally related with coccydynia. The character of the pain shows up to be more related to spasm of the levator muscle, as patient complain of pain amid defecation or sexual intercourse [13].

In past Maigne et al depicted a strategy of evaluating coccygeal portability based on a comparison of static and dynamic lateral films with the hips flexed whereas the patient sat on a difficult stool and extended the spine, creating more pain. The films were superimposed to compare and degree the sagittal development of the coccyx in flexion and extension. The points of sagittal pelvic rotation, the angle of mobility and the angle of incidence were calculated. The angle of sagittal rotation was measured based on the rotate point made when the radiographs were superimposed, coordinating the sacrum. The incidence angle measured the point at which the coccyx struck the seat surface. The mobility angle was the distinction between the tips of the coccygeal fragments within the two films. Based on the mobility of the coccyx, it was classified as ordinary, subluxed, stable or hypermobile [6].

Maigne was the primary to portray coccygeal discography, a strategy comparative to lumbar discography. Based on the objective prove of degeneration as a cause of pain, appraisal of the circle space employing a discogram to duplicate the pain shows up to be a more substantial assessment apparatus [6].

2. MATERIALS AND METHODS

This research report used an observational cross-sectional study that was non-experimental in nature. Frequency and percentages were computed. Descriptive statistics was used to analyze differences and similarities between each of the variables.

Duration of study was from August 2018-to January 2019. Convenient Sampling Technique was used. A sample size of 90 individuals was selected, comprising of postpartum women suffering from coccydynia. Study was conducted in Maula Bakhsh DHQ Sargodha. Self-developed questionnaire was used.

The inclusion criteria were postpartum women from DHQ Sargodha. The exclusion criteria was Pregnant women, History of previous back pain, History of spinal Injury, History of rheumatoid arthritis and History of ankylosing spondylitis.

Once we determined the participants, self-developed questionnaire was used. Informed consent was obtained from the participants in this study and the questionnaire was filled by the researcher as majority of the patients were illiterate. Participants were made aware of the ethical concerns and they were assured of confidentiality at all times. The questionnaires were filled at the spot. Participants were also assured that all their answers would remain strictly anonymous and also that they had the right to withdraw from participation at any time.

3. RESULTS

Data was analyzed and compiled through SPSS (Statistical Package for Social Sciences).

The highest frequency of age found among the participants was 30 and 35 years i.e. 12.2%. The Mean age was 31.21 and the standard deviation was 6.597. In this study no significant correlation was found between coccydynia and the body mass index (BMI). 73.3% of the patients with coccydynia have normal BMI.

The study showed that out of 90 pregnant women, majority of women i.e. 73.3% experienced coccydynia with increased number of pregnancies (more than one pregnancy).

Risk of coccydynia is related to number of C Sections i.e. out of 90 pregnant women, 68.9% women experienced coccydynia with C sections while 31.1% women experienced coccydynia without C sections.

Results showed that normal delivery has no particular correlation with coccydynia.80% of women were married from more than one year and most of the women presented with no abortion history More than 55% of women

reported with coccydynia after first pregnancy. The findings represented that 62.2% women experienced pain after first pregnancy while 37.8% women experienced pain after second or more. Hence, a correlation between the occurrence of coccydynia and first pregnancy was found.

The findings represented that majority of the pregnant women i.e. 84.4% women had no

history of fall while only 15.6% of women experiencing coccydynia had a history of fall.

Majority of the patients prefer to sit on soft surface. The study showed that 90% women experiencing pain preferred to sit on soft surface while only 10% of women with pain preferred hard surface. The study represented that 90% of women experienced pain while moving from sitting to standing position.

Table 1.

Age s		
Mean	Range	
31.21	20-50	
BMI	Normal	Overweight
Underweight	73.3 %	11.1 %
15.6 %		

Table 2.

Onset of Pain		
< 1 month	1 month	>1 month
18.9%	13.3%	67.8%
Pregnancy and Pain Occurrence		
After first pregnancy	After second or more	
62.2 %	37.8 %	
Severity of Pain		
Mild	Moderate	Severe
15.6 %	61.1%	23.3
Pain during Bowel Movements		
Positive	Negative	
42.2 %	57.8 %	
Pain from Sitting to Standing		
Positive	Negative	
90 %	10 %	

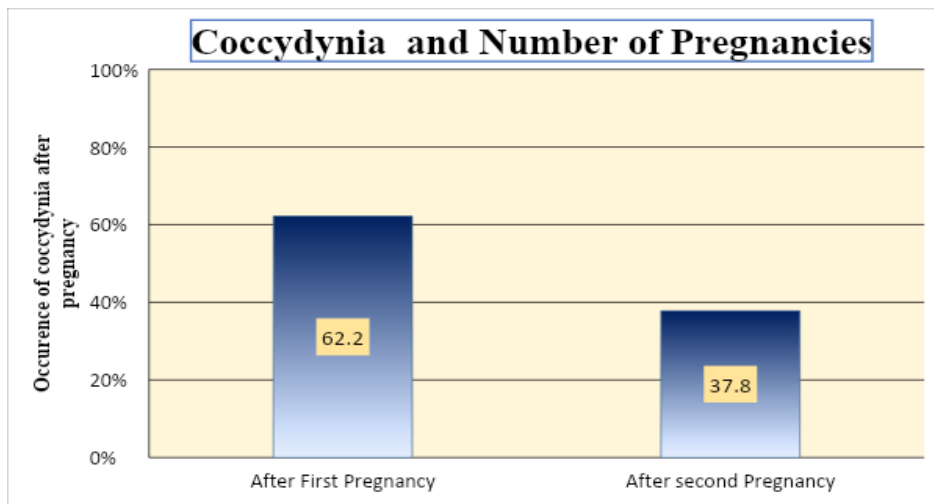


Fig. 1.

Table 3

No. Of Pregnancies among participants				
	None	1	More than 1	Total
Frequency	1	23	66	90
Percentage	1.1	25.6	73.3	100
No. of C Sections				
	None	1	More than 1	Total
Frequency	28	30	32	90
Percentage	31.1	33.3	35.6	100
No. of Normal Deliveries				
	None	1	More than 1	Total
Frequency	47	15	28	90
Percentage	52.2	16.7	31.1	100
How Long have you been Married				
	< 1 year	1 year	> 1 year	Total
Frequency	1	10	79	90
Percentage	1.1	11.1	87.8	100
Abortion History				
	None	1	> 1	Total
Frequency	66	21	3	90
Percentage	73.4	23.3	3.3	100
Family History	Positive		Negative	
	21.1%		78.9%	
History of Fall	Positive		Negative	
	15.6%		84.4%	
Sitting Preference	Soft surface		Hard surface	
	90 %		10 %	
Birth Trauma	Positive		Negative	
	28.9 %		71.1 %	

4. DISCUSSION

This study explained the Causes and Risk factors of coccydynia among postpartum women. For this purpose, We made a questionnaire and filled it from postpartum women in Maula Bakhsh, DHQ Sargodha.

In June 2011 Maigne JY, Pigeau I, Aguer N, Chatellier G conducted a cohort study to investigate causes, clinical and imaging highlights and reaction to treatment of chronic coccydynia in adolescents. 53 patients with chronic coccydynia were considered for 1-4 years. Trauma was the cause of coccydynia in 20 cases. Obesity was not included in this research as risk factor [9]. In current study, BMI of the individuals was calculated but no significant correlation was found between obesity and occurrence of coccydynia. Total of 11.1% women were overweight and 73.3% have normal BMI.

Pennekamp PH, Kraft CN, Stütz A, Wallny T, Schmitt O, Diedrich O in 2005 conducted a research; As far as the internal location is

concerned during childbirth coccyx is more susceptible to injury during difficult, cesarean or instrumental delivery like the use of forceps and vacuum. Sitting on different surfaces also play an important role like soft and hard surfaces. Repetitive or prolonged sitting on uncomfortable hard or narrow surfaces can result in minor trauma [11]. In our study 28.9% women experienced birth trauma which is a leading cause of coccydynia.

Obesity and a history of trauma have been distinguished as chance variables for luxation [8].

Kaushal R , Bhanot A , Luthra S , Gupta PN , Sharma RB conducted a research in January 2005 in which they claimed that coccydynia can result from a variety of causes, parturition being one of them. In spite of the fact that strains and sprains of the tendons joined to the coccyx have been thought to be the regular cause for coccydynia happening after childbirth [14].

Maigne JY , Rusakiewicz F , Diouf M in July 2012 conducted a study in 57 female and concluded that 7.3% of the cases of coccydynia

in female patients seen in their clinic were related to childbirth when patient after delivery attempted to sit the pain appear [15]. In the current study, 90% of the women experience pain while they stand up from sitting.

Horst Mlitz, W. Jost in March 2007 explained in their article that because of high mobility of coccyx fracture due to blunt trauma are uncommon [16].

Sarah K. Hwang in 2015 explained one of the risk factor of coccydynia and stated that coccydynia can moreover happen from wounds amid labor and delivery [17] Gabriele Masselli, Email author, Maria Chiara Colaiacomo, Giuseppe Rossi, Gianfranco Gualdi in 2016 conducted a research and explained that pregnancy, childbirth, and breastfeeding may result in different musculoskeletal disorders [18].

Arif Hussain Sarmast, Altaf Rehman Kirmani, and Abdul Rashid Bhat in 2018 concluded percentage of people effected with coccydynia with different causes and explained; Normal age of patient was 37.93 years (run: 25–53 a long time), The common cause of coccygodynia was direct or indirect injury, recorded in 11 patients. Idiopathic coccygodynia was five cases [19].

This study explained different causes and risk factors of coccydynia in postpartum women, including number of C sections, increasing number of pregnancies, duration of pain, severity of pain, family history, history of fall, preferable sitting position and pain while moving from sitting to standing. According to this study there is strong relation between C section and coccydynia, 68.9% women had history of C section. 62.2 % women experienced pain after 1st pregnancy. 15.6% women had history of fall.

5. CONCLUSION

This study concluded that multiple factors led to the development of coccydynia in postpartum women. Number of C sections, increasing number of pregnancies, duration of pain, severity of pain, family history, history of fall, preferable sitting position and pain while moving from sitting to standing were the primary factors.

ETHICAL APPROVAL

An ethical approval was obtained from the DHQ, Sargodha authority before the study started.

CONSENT

Informed consent was obtained from the participants in this study and the questionnaire was filled by the researcher as majority of the patients were illiterate.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

- 1 Foye PM, Sanapati JS, John A, Jow SL. Avascular Necrosis (AVN) of the Coccyx as a Cause of Coccydynia (Tailbone Pain); 2018.
- 2 Nathan S, Fisher B, Roberts C. Coccydynia: a review of pathoanatomy, aetiology, treatment and outcome. The Journal of bone and joint surgery British volume. 2010;92(12):1622-7.
- 3 Simpson JY. Clinical Lectures on the Diseases of Women: Appleton; 1877.
- 4 Howorth B. The painful coccyx. Clinical Orthopaedics and Related Research®. 1959;14:145-61.
- 5 Sugar O. Historical Perspective Coccyx: The Bone Named for a Bird. Spine. 1995;20(3):379-83.
- 6 Maigne J-Y, Guedj S, Straus C. Idiopathic coccygodynia. Lateral roentgenograms in the sitting position and coccygeal discography. Spine. 1994;19(8):930-4.
- 7 Postacchini F, Massobrio M. Idiopathic coccygodynia. Analysis of fifty-one operative cases and a radiographic study of the normal coccyx. The Journal of bone and joint surgery American volume. 1983;65(8):1116-24.
- 8 Maigne JY, Doursounian L, Chatellier G. Causes and mechanisms of common coccydynia: role of body mass index and coccygeal trauma. Spine. 2000;25(23):3072-9.
- 9 Maigne J, Pigeau I, Aguer N, Doursounian L, Chatellier G. Chronic coccydynia in adolescents. A series of 53 patients. European journal of physical and rehabilitation medicine. 2011;47(2):245-51.
- 10 Schapiro S. Low back and rectal pain from an orthopedic and proctologic viewpoint with a review of 180 cases. The American Journal of Surgery. 1950;79(1):117-28.
- 11 Pennekamp PH, Kraft CN, Stütz A, Wallny T, Schmitt O, Diedrich O. Coccygectomy

- for coccygodynia: does pathogenesis matter? *Journal of Trauma and Acute Care Surgery*. 2005;59(6):1414-9.
- 12 Wray CC, Easom S, Hoskinson J. Coccydynia. Aetiology and treatment. *The Journal of bone and joint surgery British volume*. 1991;73(2):335-8.
- 13 Thiele GH. Coccygodynia: cause and treatment. *Diseases of the Colon & Rectum*. 1963;6(6):422-36.
- 14 Kaushal R, Bhanot A, Luthra S, Gupta P, Sharma R. Intrapartum coccygeal fracture, a cause for postpartum coccydynia: a case report. *Journal of surgical orthopaedic advances*. 2005;14(3):136-7.
- 15 Maigne J, Rusakiewicz F, Diouf M. Postpartum coccydynia: a case series study of 57 women. *European journal of physical and rehabilitation medicine*. 2012;48(3):387-92.
- 16 Mlitz H, Jost W. Coccygodynia. *JDDG: Journal der Deutschen Dermatologischen Gesellschaft*. 2007;5(3):252-4.
- 17 Hwang SK. Labor and Delivery Considerations: Pubic Symphysis Separation, Fractures Associated with Transient Osteoporosis of Pregnancy, Sacral Stress Fractures, and Coccydynia/Coccyx Fracture. *Musculoskeletal Health in Pregnancy and Postpartum: Springer*; 2015;171-9.
- 18 Masselli G, Colaiacomo MC, Rossi G, Gualdi G. Magnetic Resonance Imaging of Musculoskeletal Disorders in Pregnancy. *MRI of Fetal and Maternal Diseases in Pregnancy: Springer*. 2016;477-90.
- 19 Sarmast AH, Kirmani AR, Bhat AR. Coccygectomy for coccygodynia: A single center experience over 5 years. *Asian Journal of Neurosurgery*. 2018;13(2):277.

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Peer-review history:

The peer review history for this paper can be accessed here:
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