ABSTRACT

**Background** There is not much literature available on coccygeal fractures, only a few case reports. We present a first series of 15 cases of coccygeal fractures in adults as a result of similar mode of trauma due to fall on frozen snow during the winter months in the valley of Kashmir.

**Material and Methods:** The study included patients with coccygeal fractures that occurred as a result of direct fall due to slip on ice during the winter months, December to February in the valley of Kashmir. Study was done over a period of 5 years (2007 to 2012) and included a total of 15 patients.

**Results:** 15 cases of coccygeal fractures with an age group of 48 to 72 (average 65 years), 12 females and 3 males is presented. All patients were managed conservatively with uneventful recovery.

**Conclusion:** Our study revealed coccygeal fractures mostly occur in elderly age group with underlying osteoporosis. Although most cases can be managed conservatively with uneventful recovery, measures should be taken to avoid fall related trauma in winters especially in older age group.

**Keywords:** Coccyx, Conservative management, snow fall, Kashmir.

INTRODUCTION

The coccyx is usually formed of four rudimentary vertebrae; the number may vary from three to five, with its contour normally the continuation of the lower sacrum. Fractures of the coccyx are uncommon injuries, but trauma accounts for about one third of all cases of coccygodynia. Dislocations and displacements are of equal importance as compared to the fractures. Lewin has stressed dislocation as important cause of the clinical disturbances. We over a period of 5 years (2007 to 2012) collected data. Our study added a total of 15 cases to the sparse literature available regarding coccygeal fractures.

MATERIAL AND METHODS

The present study was carried out over a period of 5 years from 2007 to 2012 at the Postgraduate department of orthopaedics, Government Medical College Srinagar. After obtaining the institutional review board approval and informed consent from the patients, all cases with coccygeal fractures were included in the study. Patients with previous pathology in the area, chronic history of coccygeal pain and those with doubtful diagnosis of a fracture were excluded from the study. To our surprise all cases occurred during the months of winter in our valley as a result of snowfall. Initial radiographs of pelvis with both hips were taken to rule out other associated fractures. Lateral views of the coccyx with hips flexed were taken to reveal the fracture.

RESULTS

In our series 15 patients with coccygeal fractures, the average age of the patients was 58.67 years (range of 44-72 years). 12 (80%) patients were females and 3 (20%) males (Table 1).

There were other associated fractures in two cases, a right sided colle’s fracture in one female aged 67...
years (managed with close reduction and cast) and an undisplaced scaphoid fracture in a male aged 49 years (managed in a scaphoid cast for 8 weeks). Both had an uneventful recovery (Table 1).

The cause of trauma was similar in all our cases due to fall on ice during the months of December to February, the peak months of winter in the valley with temperature touching -20°C centigrade. Patients with more than 2 weeks of trauma, previous history of coccygeal pain and in cases where fracture was not identified on X-rays were excluded from the study. Of the falls causing the fracture 11 occurred in the early morning hours due to frozen condition outside and 4 cases occurred in the evening.

All patients were managed conservatively with activity restriction for a few days and continuous use of an inflatable rubber ring for all sitting purposes. Analgesics (NSAIDS) were prescribed for the first couple of days of trauma. The use of the rubber ring was continued until patient was symptom free which was two to three months in most of the cases. None of the patients developed any complications during the treatment. One case of a female, aged 70 years continued with pain after the trauma for 11 months. A wait and watch policy with continuous use of inflatable ring during sitting finally led to her complete recovery. All patients were managed on outpatient basis and none required admission.

**DISCUSSION**

Coccyx fractures commonly occur as isolated injuries due to direct fall on the buttocks and rarely have associated injuries. Our series revealed two cases with associated fractures a colle’s fracture in one patient and an undisplaced scaphoid fracture in other case.

To injury from locally directed external forces little protection is offered by the overlying soft parts. From internal forces injury is inevitable under certain conditions of malposition or fixed deformity, either to coccyx or to the adjacent structures entering into the production of such forces. Clinically, patients describe immediate, severe pain in the area of coccyx. Pain on defecation may be present as well as pain on rectal examination. Radiographic identification may be difficult at times, although lateral x-rays of the coccyx with the hips flexed maximally may reveal the fracture (Fig.1).

The coccyx may appear to be acutely angulated which is a normal anatomical variant and should not be confused with a fracture. CT and MRI scanning may be helpful in differentiating between physeal plates and fracture lines. When in doubt a rectal examination may reveal tenderness and abnormal mobility of the coccygeal fragment. Injury by external forces usually occur as a result of considerable violence such as sitting forcibly on hard objects; kicks or blows received upon the tip of the spine; falls upon the buttocks, in the latter instance due to fall upon the buttocks, males are probably less susceptible to such trauma because of closer approximation of tuberosities of the ischia. This is in concordance with our study with 90% of our cases being females and all of our cases occurred due to direct fall on the buttocks.

Among other causes in various reports injury by internal forces, pressure against the coccyx from within may be the cause of damage and even case of descending head during labour may result in fracture or dislocation.

Treatment is conservative in majority of the cases consisting of activity restriction and use of an inflated doughnut cushion with return to full activities in 4 to 6 weeks. In our cases we used an inflated rubber ring, for all sitting activities. Patients were advised to inflate the ring sufficiently so that the weight was borne entirely by the structures resting on the perimeter of the ring. The use of the ring was continued till disappearance of symptoms in our study. All patients had uneventful recovery in our study except one case that developed chronic coccygeal...
pain but with a wait and watch policy patient was pain free at 11 months after trauma. Following a coccyx fracture, surgery is not usually required and often yields disappointing results; however, if the pain continues even after the fracture has healed, and is severe enough to cause disability, a coccygectomy may be required. All our cases were managed conservatively and none required any form of surgical intervention.

CONCLUSION
Although rare injuries coccygeal fractures are more frequently seen in elderly patients with other risk factors. Conservative management yields excellent results and should be tried in all cases. As all our patients were a result of fall related trauma during winters, measures should be taken to avoid such fractures as well as other fall related injuries.

ACKNOWLEDGEMENTS
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REFERENCES
Fig. 1. X-ray Lateral view of pelvis with hips flexed revealing a coccygeal fracture (arrow) in a 55 year old patient.

Table 1: Showing the various parameters of all the patients.

<table>
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<th>Serial no.</th>
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<th>Duration of symptoms (MONTHS)</th>
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