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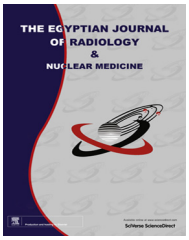

ORIGINAL ARTICLE

Evaluation and management of chronic coccygodynia: Fluoroscopic guided injection, local injection, conservative therapy and surgery in non-oncological pain

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KEYWORDS

Coccygodynia;
Fluoroscopic guided injection;
Local injection;
Coccygectomy

Abstract *Purpose:* To evaluate the fluoroscopic guided injection, local injection, conservative treatment and surgery in managing coccygodynia.
Methods: Fifty chronic coccygodynia patients were evaluated. All patients complained of pain while sitting and had tenderness localized to the coccyx. All patients were offered conservative management initially, then they were assigned into four groups: 5 patients underwent coccygectomy, 22 patients had fluoroscopic guided injection, 11 patients had local injection, and 12 patients were treated only conservatively. Patients' satisfaction with treatment was assessed by a visual analog scale (VAS). The follow-up period ranged from 7 to 32 months (mean 17.3 months).
Results: The initial conservative therapy had the lowest improvement rate (7/50, 14%). All patients subjected to coccygectomy or fluoroscopic guided injections improved and were satisfied. Nine patients of the local injection group (9/11, 82%) improved and 2 patients (18%) were stationary. Fourteen of the 16 patients with hypermobility (88%) required fluoroscopic guided injection, while 60% (12/20) of patients with normal mobility were treated conservatively. All patients with spicule required surgery.

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Conclusions: Fluoroscopic guided injection and surgery have the highest efficacy and satisfaction rates in managing chronic coccygodynia. Hypermobility and spicules are predictors of failure of conservative therapy.

1. Introduction

Coccygodynia (Coccydynia) is a symptom of pain in the region of the coccyx, typically aggravated in the sitting position (1). Simpson first introduced the term in 1859, but accounts of coccygeal pain dated back to the 16th century (2). Common coccygodynia is a painful condition that may be related to trauma or childbirth or that may occur without any identifiable cause (3). It is known that the idiopathic form comprises less than 1% of all non-traumatic disorders of the vertebral column (4,5). The female/male incidence ratio is 5:1.5 due to a more posteriorly situated os sacrum and coccyx, and longer coccyges relative to men, and females have a greater chance of developing coccygodynia (6). Moreover, it is more common in obesity; a body-mass index (BMI) of 27.4 in females and 29.4 in males increases the chance of developing coccygodynia (6,7). The intensity of the pain varies, and coexisting low back pain frequently complicates the clinical picture. Chronic pain in the sacrococcygeal region is much less common than low back pain (1). Despite the identification of chronic coccygeal pain hundreds of years ago, its treatment can be difficult and sometimes controversial because of the multifactorial nature of coccygeal pain (8).

A plethora of non-operative treatments has been prescribed for this condition, including rest, medication, cushion use, massage, and injections. Although a percentage of patients responds to non-operative treatment (4,9), a significant number will continue to experience pain and disability. Fluoroscopic guided injection (10), or radiofrequency thermo-coagulation of ganglion impar (11) gains popularity with success rate from 50% to 90%; however, others thought that surgical coccygectomy as a treatment of coccygodynia is superior to fluoroscopic guided injection or thermo-coagulation of ganglion impar (1,8,9).

In this study, we try to experience our result of coccygodynia management trying to get a management algorithm for such chronic cases and to determine whether the cause of the disease has an effect on patients' outcomes.

2. Methodology

From January 2007 to June 2015, 50 consecutive patients (41 females and 9 males) were diagnosed as having coccygodynia and managed in our University hospital. The study was approved by the local ethical committee. Written informed contents were obtained from all subjects included in the study. As a collaboration of neurosurgery, orthopedic, and radiology departments, patients diagnosed as having coccygodynia were first managed conservatively. During follow-up, some patients exhibited failure of improvement that required further management. A protocol was designed for the patient where further management steps were done. During the study period, 5 patients were treated with total coccygectomy and 22 patients were treated with fluoroscopic guided injection of the ganglion impair, 11 had local injection, and 12 patients were treated conservatively. Patients' satisfaction after treatment was assessed by a VAS. The mean follow-up period was 17.3 months (range, 7–32 months).

Seventeen patients (34%) claimed that a direct fall onto the coccyx had initially caused the coccygodynia. In 11 patients (22%), injury was experienced during childbirth, 3 patients (6%) had motor vehicle accident, 2 patients (4%) had kick of the back, and 17 patients (34%) had no identifiable causes.

Manual examination aimed to identify the presence or absence of pain during mobilization of the coccyx to differentiate between a nociceptive pain of the coccyx with the ligamentous and muscular structures and a referred pain due to pathology in the lower pelvic region. Valsalva maneuver should be positive in the case of coccygodynia based on disorders of the neural structures (12).

Each patient was examined with dynamic lateral plain radiographs. The first radiograph was a standing film taken after 10 min standing. For the second radiograph, the patient was requested to sit in what he or she considered being the most painful position (7). Computed tomography (CT) and Magnetic Resonance Imaging (MRI) of the lumbo-sacral region including coccyx were also obtained.

The sacro-coccygeal angle was measured according to the Postacchini and Massobrio method (13) in the standing and sitting positions (stressful for the coccyx). Coccygeal mobility between 2^0 and 25^0 is considered normal.

Sixteen of 50 patients (32%) showed hypermobility of the coccyx, and 6 patients (12%) had luxation, 4 patients (8%) had fracture subluxation with very difficult examination due to severe local pain, 4 patients had spicule, and 20 patients (40%) had normal study.

The conservative approach includes non-steroidal anti-inflammatory drugs and an adapted sitting posture. Local injection of 80 mg triamcinolone acetate and 2 ml of 1% lidocaine was done in the outpatient clinic. The sacrococcygeal junction was the primary injection site where half of the injectant was administered; the other half was placed periarticularly over the posterior aspect of the coccygeal segments. These groups of patients received massage and varying physical applications with pelvic muscle relaxation maneuvers.

We used to block the ganglion impar under fluoroscopic image where the patient is placed in the prone position instead of lateral decubitus position upon the fluoroscopy table with a pillow under the pelvis, and hips fully flexed. Under fluoroscopic guidance, the needle is inserted through the skin to pierce the dorsal sacrococcygeal ligament. We used a 22-gauge, 8-cm spinal needle. A 1 ml of non-ionic contrast (Omnipaque 300 mg iodine/ml) was injected into the retroperitoneal space. The spread of the dye gives a "reverse comma" appearance in the lateral view. We use the same component as in local