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Coccydynia - a medical condition with
multiple causes and different
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A local experience

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ABSTRACT

Background: Coccydynia is a common complaint which is usually self-limited and tolerable. Although most of these patients respond dramatically to conservative measures, some patients need more complex plane of treatment. In these conditions, the cause of coccydynia can be complex and multifactorial.

Patients and methods: A total of 8 cases were included in the study. All cases received medical treatment for 9 months before surgery. Complete coccygectomy was performed for all cases. Post-operative outcomes were measured according to the degree of pain relief.

Results: The mean age of the included cases was 43.87 years (range, 39 – 52). A total of 5 females (62.5%) and 3 males (37.5%) were included. The mean preoperative VAS score was 9 (range, 8 – 10), while post-operatively, it decreased significantly down to 2 (range, 1 – 3). Excellent postoperative outcomes were achieved in 6 cases (75%) whereas good outcomes were obtained in the remaining 2 cases (25%).

Conclusion: Although conservative medical measures are effective for treating coccydynia, but surgical excision is still a valid treatment option in resistant cases.

INTRODUCTION

Although being a small bone the coccyx has many important functions. As we all know it gives insertion for many muscles, ligaments, and tendons which play a main role in the pelvic floor support and actively share in voluntary bowel control. It is also considered one limb of the tripod—in addition to the two ischial tuberosities—that represents weight-bearing support to a person while sitting [14].

Coccydynia is pain in the region of the coccyx. Simpson first announced the definition in 1859, but reports about this pain dated back to the 16th century. Although this condition is well known since a long time, its management may be a dilemma and a real controversial issue in resistant cases as it is multifactorial in nature. Several organic and psychological causes contribute to its occurrence. Most of these

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cases resolve within a short time with or without conservative measures, but for a small percent of these patients, the condition may become chronic and debilitating [19].

The accurate incidence of this condition has not been known exactly; however, high risk factors for coccydynia include obesity and female sex. Female to male ratio is about five times. Children are less likely to develop this condition than adolescents and adults. Marked rapid loss of weight as in bariatric surgery may increase the risk of this condition due to loss of subcutaneous fat and mechanical cushioning [12].

Coccydynia is commonly caused by external or internal trauma. The external trauma is usually caused by a backwards fall, childbirth, especially associated with obstructed or instrumented labor, sitting for long time on hard, or uncomfortable seats. Nontraumatic coccydynia may be caused by degenerative affection of joint or disc disease, infection and variants of coccygeal morphology. Coccydynia may be caused by nonorganic etiologies, such as somatization and other psychological disorders [13].

Although most cases respond to conservative treatment, few patients fail to show a good response and hence, surgery may be an option [17].

Historically, the surgical management of such condition has been discussed with caution as it was associated with poor results and high complication rates. Nevertheless, better outcomes have been reported recently [18].

This study was conducted at Mansoura University Hospitals aiming to evaluate the surgical outcomes of coccygectomy for coccydynea refractory to conservative treatment.

PATIENT AND METHODS

Study design

This is a prospective study that was conducted at Mansoura University Hospitals during the period between December 2016 and December 2018.

Study cases

A total of 8 cases (n = 8) with coccydynia who showed no response to 9-month duration of failed all conservative measures including physical therapy, coccydynia exercise, medications, injections, and even psychotherapy were included in our study. All of our cases had a history of trauma to the coccyx.

Inclusion criteria

Patients older than 18 years, no contraindication for anaesthesia or surgery, having pain at the region of coccyx, tenderness over the same area, or the presence of coccygeal abnormalities.

Exclusion criteria

Patients younger than 18 years, and patients who are not candidates for anaesthesia or operation were excluded from our study.

Patient consent

A pre-operative written informed consent was obtained from all cases after the explanation of advantages and drawbacks of the surgical approach. Moreover, the study was approved by the local ethical committee.

Patient preparation

All cases were subjected to complete history taking, thorough physical examination, and routine laboratory investigations. Digital rectal examination was also performed to exclude the presence of rectal pathology. During rectal examination the coccyx was grasped between the forefinger and thumb then we started to manipulate the coccyx to detect pain, hypermobility or hypomobility of the sacrococcygeal joint. The reported normal range of movement is about 13 degrees [10].

Besides, an X-ray was ordered for all cases to assess the lumbar and sacrococcygeal regions. CT sacrum and coccyx with 3D reconstruction or MRI were done in some cases to exclude inflammatory or infiltrative lesions.

Operative procedure

Patients were instructed to take a low residue diet for four days prior to surgery and an enema was done the night before surgery. Unsayn 1.5 gm i.v. was administered on call for surgery and repeated every 8 hours for 48 hours after surgery. All surgeries were done in prone position. The surgical strategy was similar to that technique described by Key [9]. The buttocks were separated and strapped laterally with adhesive plaster to open the cheeks of the buttocks for wide exposure. about 1 cm superior to the gluteal cleft, a 5cm skin incision was created at the midline. After skin incision we dissected through the layers down to the posterior surface of the coccyx. Then we bluntly dissected to expose the coccygeal tip. Then

we exposed and cut the anococcygeal ligament and then we elevated the coccygeal tip. Then we dissected and cut the attachment of the coccygeus and iliococcygeus muscle from the coccyx while taking great care not to injure the rectum. Then the coccyx was totally removed.

After meticulous hemostasis, we removed the straps retracting the buttock cheeks. The wound was closed in layers taking care to minimize the dead space as much as possible. Suction drains were left for at least forty-eight hours postoperatively.

Post-operative care

Early ambulation was encouraged, and post-operative pain was managed by paracetamol or NSAIDs. All cases were discharged on the 1st or 2nd post-operative day. CT and X rays were done postoperatively to ensure total excision of the coccyx.

Follow up

Regular follow up visits were arranged for our cases for one year after surgery (1 week after surgery, then after 1 month, 3 months, 6 months, and finally 12 months). Their current level of pain was assessed via VAS score. Moreover, cases were asked to evaluate their general pan symptoms as; complete relief, significant improvement, moderate relief, unchanged, or worsened. Surgical outcome was also measured according to table (1).

Outcome	Criteria
Excellent	Complete absence or significant pain improvement and VAS ≤ 2/10.
Good	Significant pain improvement and VAS ≤ 3 /10.
Satisfactory	Moderate pain improvement with VAS ≤ 6/10.
Poor	Unchanged symptoms or VAS > 6/10.

Table 1. Outcome categories [1].

Statistical analysis

The collected data were coded, processed and analysed using the SPSS (Statistical Package for Social Sciences) version 22 for Windows® (IBM, SPSS Inc, Chicago, IL, USA).

Normally distributed quantitative data (VAS score) were expressed as mean (range) and

comparison between preoperative and post-operative values was compared using paired samples t-test. P value (< 0.05) was considered significant.

RESULTS

The mean age of the included cases was 43.87 years (range, 39 – 52). We included 5 females (62.5%) and 3 males (37.5%). The mean pre-operative VAS score was 9 (range, 8 – 10), while post-operatively, it decreased significantly down to 2 (range, 1 – 3) (p < 0.001). Excellent post-operative outcomes were achieved in 6 cases (75%) whereas good outcomes were obtained in the remaining 2 cases (25%). In this study, there were two cases of wound infection. One of them had superficial infection which improved on antibiotics and frequent dressing. The other case had deep wound infection and sinus discharging pus and she underwent surgical debridement and repair by plastic surgeon. These data are illustrated at table (2).

Case No.	Age	Gender	Preoperative VAS	Post-operative VAS	Outcome
1	43	Female	8	2	Excellent
2	48	Female	9	1	Excellent
3	52	Female	9	2	Excellent
4	40	Female	10	3	Good
5	44	Female	8	2	Excellent
6	39	Male	10	2	Excellent
7	42	Male	9	3	Good
8	43	Male	9	1	Excellent

Table 2. Overview of the included cases.



Figure 1. Sagittal CT Sacrum and Coccyx in patient with post traumatic anterior angulation of the coccyx and Coccydynia.



Figure 2.
Intraoperative exposure of the coccyx during Coccygectomy.



Figure 3.
Sagittal CT Sacrum and Coccyx after coccygectomy.

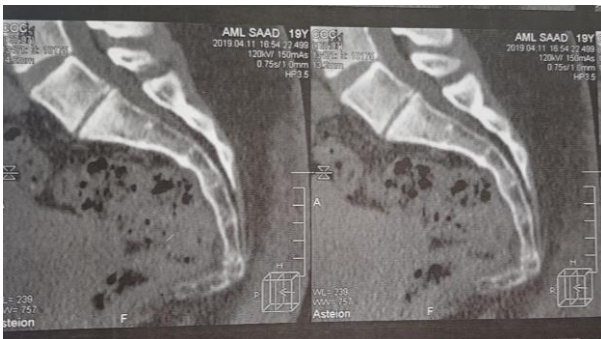


Figure 4. Preoperative Sagittal CT Sacrum and Coccyx in patient with showing anterior angulation of the coccyx.

DISCUSSION

Coccydynia seems to be emerging as a major medical condition in the current millennium due to the increasing number of populations that spend a long time setting in front of computers. Many patients complain of severe pain during sexual

intercourse or defecation. Pain and tenderness over the coccyx is usually diagnostic for this condition [7].



Figure 5. The excised coccyx.

First line of conservative measures includes NSAIDs, sitting aids, hot fomentations, and physiotherapy. These conservative measures are effective in about 60% to 66% of patients. When these measures fail, fluoroscopic or US guided local steroid administration and coccygeal manipulation showed success rates ranging between 75% and 85%. So surgical excision of the Coccyx is still needed to treat the resistant cases not responding to previous measures [16].

This study was conducted at Mansoura University Hospitals aiming to evaluate the role of coccygectomy in the management of coccydynia. We included a total of 8 cases with a mean age of 43.87 years (range, 39 – 52).

Another study handling the same perspective included 31 cases with coccydynia with a mean age of 41.5 years (range, 20 – 65) [4].

In the current study, we included 5 females (62.5%) and 3 males (37.5%). other studies reported that this disease has a higher prevalence in women [6].

On the other hand, another study conducted by Antoniadis and his colleagues included 6 males (60%) and 4 females (40%) [1]. This contradicts with our study results.

Regarding outcomes in the current study, the mean pre-operative VAS score was 9 (range, 8 – 10),

while post-operatively, it decreased significantly down to 2 (range, 1 – 3). Excellent post-operative outcomes were achieved in 6 cases (75%) whereas good outcomes were obtained in the remaining 2 cases (25%).

Another study also confirmed our findings as it reported a marked decrease in VAS score, and all cases included have achieved good or excellent outcomes (100%) [1].

This correlates with also with other studies that stated that more than 90% of cases were having a good or very good surgical outcomes after coccygectomy [11, 21, 22].

Cheng and his associates reported that excellent outcomes were achieved in 20 cases (64.5%) while good outcomes were present in 7 cases (22.6%). Additionally, 3 cases had moderate outcome (9.7%) whereas only one case reported poor outcome (3.2%) [4].

Another recent study reported that there was a significant decrease in VAS score following operation (2.25 vs. 9.62 preoperatively – $p < 0.001$). Moreover, excellent or good outcomes were achieved in 87.5% of the included cases [18].

Of note, some authors have reported that better surgical outcomes could be achieved in patients with traumatic coccydynia compared with idiopathic cases [2, 14]. However, others have found no difference between the surgical outcomes of the two types [15].

Another larger study also reported that the Short Form 36 (SF-36), the Oswestry Disability Index (ODI) and the visual analogue scale (VAS) showed a significant improvement after surgery ($p < 0.0001$). Successful outcome was obtained in 70.4% of cases while failure occurred in 25.5% of cases. The rest of cases were lost during follow up [7].

Cebesoy et al. reported no infection in 21 patients all of whom received prophylactic antibiotics for 5 days [3]. Doursounian et al. had no infection in his series of 80 patients all of whom received two prophylactic antibiotics over 48 hours and preoperative rectal enema [5].

Although coccygectomy appears to be a technically easy procedure, multiple complications have been documented in the literature. Its rate ranges between 0 and 50% [3, 20].

The most common encountered complication is wound infection, followed by healing problems

(dehiscence) [1]. Other rare complications may include rectal injury [8].

In the study conducted by Cheng and his colleagues, post-operative wound infection was encountered in 2 cases (6.45%) [4].

Other reports assume that the infection rates associated with coccygectomy have ranged from 14% to 30%, including superficial and deep wound infections and dehiscence [21]. This is comparable to our results as we had two cases of wound infection 25%.

The main drawback of this study is the small number of cases and short duration of follow up. Therefore, additional studies including more cases with longer follow up periods should be conducted.

CONCLUSION

Although conservative medical measures are effective for treating coccydynia but surgical excision is still a valid treatment option in resistant cases.

AUTHORS CONTRIBUTIONS

This work was carried out in collaboration between all authors. They designed the study and researched literature. They approved the protocol. All the surgeries were done by the same surgical team. They all shared in data collection and manuscript finalization. All authors read and approved the final manuscript.

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