SURGICAL MANAGEMENT OF FRACTURE COCCYX

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ABSTRACT

Introduction: Coccyx bone serves as one leg of the tripod that supports a person's weight when they are seated, together with the ischial tuberosities. In addition, several muscles, ligaments, and tendons attach to it.

Aim of work: complete relief of tailbone pain. Methods: Conservative and surgical.

Results: Excellent outcome was achieved in n = 20 (66.7percent), Good n= 7(23.3%), Fair n=2 (6.7%), and Poor n=1 (3.3%).

Conclusion: Surgical coccygectomy provides excellent outcomes, especially in traumatic fracture coccex, chronic diabetic patients, isolated sacrococcygeal metastasis, dermoid cysts, and tail of cysts.

Keywords: Coccectomy; Coccydynia; Fracture

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INTRODUCTION

Despite its diminutive stature, the coccyx serves a number of critical purposes. When seated, it forms one leg of a tripod with the ischial tuberosities to sustain the body's weight. In addition, several muscles, ligaments, and tendons attach to it. Multiple risk factors, such as obesity and being female, are connected with developing coccydynia (pain in the coccygeal region), although the incidence of coccydynia has not been recorded, [1] we aim in our study to achieve complete relief of tailbone pain.

PATIENTS AND METHOD

Our work was done between 2018 _and 2021 in Alzhraa University hospital. In our study, we included 30 patients, 21 of whom were women & 9 men. We include spontaneous diabetic, pathological fracture with the dermoid cyst, pathological fracture in isolated sacrococcygeal metastasis, pathological fracture with tarlof cyst, and traumatic fracture, and we exclude pathological fracture in all spine metastasis. This traumatic fracture was improved by conservative treatment. Informed written consent was taken from all patients. All patients of this study were submitted for clinical evaluation (Full history was taken) (Plain x-ray & CT scan of the spine for stability assessment, MRI spine done) and laboratory evaluation (full lab investigation). Our patients were operated on by coccygectomy from the start, with a long-term follow-up of our patients reaching 1-2 years postoperative.

Statistical analysis: The allowed error rate was established at 5%. Therefore, we consider a p-value of< 0.05 to be statistically significant. When comparing percentages across qualitative variables, the Chi-square (x^2) test was utilized..

RESULTS

Table (1): Gender distribution of study group

Gender	No. of cases	Percentage
Female	21	70%
Male	9	30%
Total	30	100.0%

Table (1): show females (70.0%) were affected more than males(30.0%).

Table (2): Range of age; Mean age 37.60±7.14

Range of age	16 – 57 year
Mean	37.60±7.14

Table (3): Distribution of age stage

Adult	23	76.7%
Teenagers	7	23.3%
Total	30	100.0%

Table (3): show fracture coccex were more in adolescence (76.7%), while it represent (23.3%) in teenagers.

Table (4): Causes of fracture coccex

Cause	No. cases	Percentage
Post labor (normal vaginal delivery)	11	36.6%.0%
Spontaneous diabetic	5	16.7%
Pathological fracture in isolated sacrococcegial metastasis	2	6.66%
Pathological fracture with dermoid cyst	3	10.0%
Pathological fracture with tarlof cyst	1	3.3%
Traumatic fracture	8	26.7%
Total	30	100.0%

Table (4): show Post labor (normal vaginal delivery) was the commonest cause, Traumatic fracture was the second cause while Pathological fracture with tarlof cyst was the least

Table (5): Clinical presentation of study group

Symptoms	No. Cases	Percentage
Tailbone pain during sexual activity	17	56.6%
Back pain during standing	27	90.0%
Back pain during rolling in bed	10	33.3%
Sever tailbone pain during prolonged setting	23	76.7%
Discovered during survey of back trauma	8	26.7%

Table (5): show back pain during standing was the commonest presentation the second was severs tailbone pain during prolonged setting while the least was discovered during survey of back trauma.

Table (6): Outcome and risk factors affect outcome

Risk Factors	Excellent (n=19)		Good (n=4)		Fair (n=5)		Poor (n=2)		Chi-square test	
	No.	%	No.	%	No.	%	No.	%	x2	p-value
Isolated traumatic fracture coccex	8	42.1%	0	0.0%	0	0.0%	0	0.0%	6.316	0.097
Spontenous non diabetic	11	57.9%	0	0.0%	0	0.0%	0	0.0%	10.055	0.018*
Dermoid, tarlof cyst	0	0.0%	4	100.0%	0	0.0%	0	0.0%	30.000	<0.001**
Chronic diabetis	0	0.0%	0	0.0%	5	100.0%	0	0.0%	30.000	<0.001**
Solitary spinal metastasis	0	0.0%	0	0.0%	0	0.0%	2	100.0%	30.000	<0.001**

Table (6): show highly significance importance between risk factors and the outcome

Figure (1): Ct scan sagittal view lower lumbar and sacrococcegial show partially united fracture of the distal coccyx showing surrounding callus formation seen displaced anteriorly likely old post traumatic sequel.

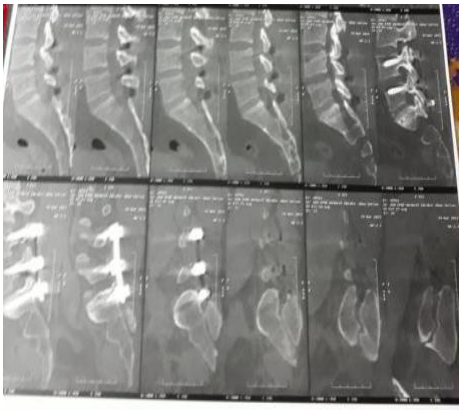

Figure (2): postoperative coccectomy follow up CT scan show site of coccectomy

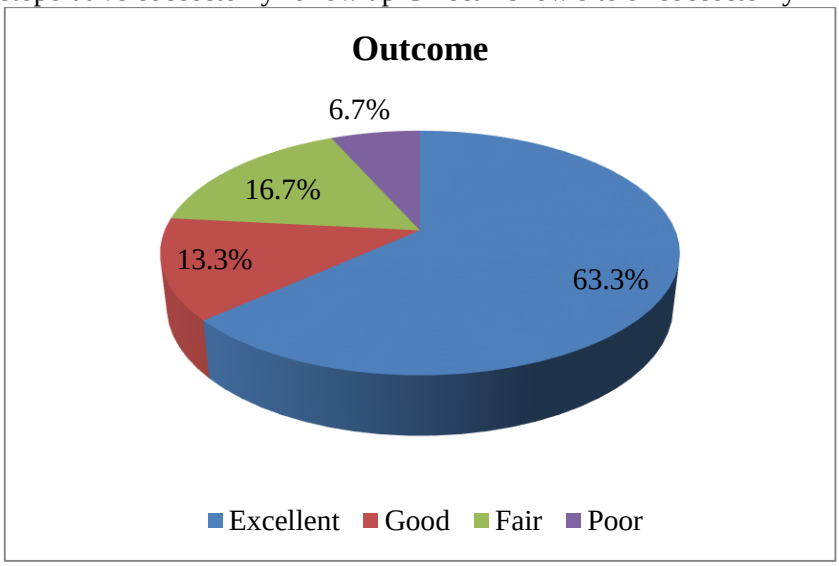

Figure 3: excellent outcomes represent 63.3% of our cases, while poor outcomes represent only 6.7%

DISCUSSION

Fracture coccex was diagnosed in 60 patients with ages ranging from 16-57 years, with a mean age (of 37.60±7.14). In our study, females (70.0%) were affected more than males (30.0%), with a high prevalence in adolescence (76.7%), while represented (23.3%) in teenagers. This was supported by a study done by **Maigne et al.,** [2] and **Fogel et al.,** [3] they found in their study, the incidence of coccydynia is high in adults, with a higher affection of women than in men.

Patrick et al., [4] found that some dislocations occur via gradual ligamentous instability without any history of blunt trauma. In our study Post labor (normal vaginal delivery) 11(36.6%), Spontaneous diabetic 5(16.7%), Pathological

fracture in isolated sacrococcegial metastasis 2(6.7%), Pathological fracture with dermoid cyst 3(10.0%), Pathological fracture with tarlof cyst 1(3.3%), Traumatic fracture 8 (26.7%).

This was explained by **Wray et al., [5] and Tilscher et al., [6]** in their study, they found that the anatomical structure of the female coccyx is more prominent than male coccyx, which makes it more susceptible to traumatic fracture than male. Most of our cases presented with back pain during standing (90.0%). Tailbone pain during setting (76.7%) represents the second common presentation, the third common presentation was during sexual activity (56.6%), fracture cocex was discovered during a survey of back trauma in (26.7%) of cases, while back pain during rolling in bed (33.3%) was the least.

While **Derek T. Cawley [7]** , presents A man in his thirties who suffered a coccygeal impact injury. He had pain in his right buttock and perirenal area. There was also a headache and nausea, but those symptoms disappeared within a week. After 8 weeks, his examination showed abnormalities in the perineal region and weak right gluteal muscles. The right buttock is swollen and there is significant core bruising. Anterior coccygeal displacement and a low attenuation homogenous lesion extending to the right buttock are also visible on the CT scan. On day one post-injury, an axial image from magnetic resonance imaging (MRI) shows a collection of fluid, most likely cerebrospinal fluid, in the right perigluteum. **Alexander et al., [8]** reported In their study options of treatment for acute & chronic forms of coccygeal pain include conservative therapies with physiotherapy, which can sometimes relieve symptoms. Also, injections of local corticosteroids and or local anesthesia can be used. Coccyx surgery is performed only if non-invasive methods of treatment have been unsuccessful in relieving the patient's symptoms. While in our study, Conservative treatment was done for non-chronic diabetic patients and non-traumatic fracture coccex while patients who were operated on by coccectomy from the start, with long-term follow-up of our patients reaching to 1-2 years postoperative. In addition, surgical management is done in cases of failure of conservative treatment, traumatic fracture coccex, chronic diabetic patients, isolated sacrococcygeal metastasis, dermoid cyst, and tarlof cyst.

In his study, Alexander et al., 8 concluded that coccectomy improves pain in cases with refractory chronic traumatic coccygodynia, providing a reasonable option for treatment after failure of conservative treatment.

Other options for treatment were studied by **Dean et al., [9]** he studied a case of fracture coccyx using polymethyl methacrylate cement injection, which leads to immediate relief of symptoms. He concluded that Percutaneous vertebroplasty and scrotoplasty are promising modalities for the treatment of sacral insufficiency fractures.

Successful surgical Coccyectomy outcome depends on carefully selected cases. This was reported by **Patel et al., [10]** in their study and also supported by a study done by **Nathan et al., [11]**. they reported in their studies that successful Coccyectomy was achieved well in Patients whose pain is due to morphological change (such as the presence of a spicule in coccyx), hypermobility of coccyx, joint effusion between the sacrum and coccyx or in case of good response to injection treatments.

In our study, Excellent outcome was achieved Excellent (n=19), Good (n=4), Fair (n=5)

Poor (n=2), we study Risk Factors affecting outcome it was not significant in Isolated traumatic fracture coccex (x2: 6.316)(p-value:0.097), significant in Spontaneous non-diabetic (x2:10.055) (p-value:0.018*), While it was highly significant in Dermoid and tarlof cyst(x2:30.000) (p-value:<0.001**), Chronic diabetes (x2:30.000) (p-value:<0.001**) and Solitary spinal metastasis(x2: 30.000)(p-value:<0.001**) while Improvements in pain (as measured by Visual Analog Score) were reported by **Alexander et al. [(8)]** in their study, indicating either satisfactory or exceptional outcomes. More than 90% of patients reported favorable or excellent results following surgical coccyectomy, therefore these findings are consistent with those of other studies**. [12, 13, 14, 15]** Surgery for idiopathic coccydynia has been shown to be less effective than for coccyx fractures in other studies. **[14, 15]** There was no difference in outcomes between traumatic and idiopathic coccydynia in certain trials, but this could be due to confounding factors.

Alessandro et al., 16 reported 28 cases of coccygectomies with a mean follow-up of 33 months (range 24–70) on 25 patients (3 patients lost). 19 patients (75%) had no or mild discomfort (VAS 0–1; mean 0.3 ± 1.0 SD; p = 0.013) and no pain during defecation. Two patients experienced mild discomfort and four had severe pain from residual coccygodynia (VAS 4–8; mean 6.1 ± 0.8 SD; p = 0.021). All severe coccydynia patients (67%) had partial

coccygectomy but declined total resection. Twenty-one patients (85%) were satisfied with their results, whereas four (25%) were completely unsatisfied.

CONCLUSION

In cases of acute trauma, the imaging workup includes dynamic radiography in addition to CT. Prior to surgery, it is essential to do a thorough search for any potential comorbidities or psychological issues, as well as to make an informed decision regarding the indications for surgery. The patient needs to be given ample information regarding the high likelihood of developing a wound infection; hence, this area needs to be treated with antibiotics as perioperative prophylaxis, and adherents to good hygiene practices will significantly lower the likelihood of developing an infection after surgery. The surgical procedure known as coccygectomy has outstanding results, particularly in cases involving severe fracture of the coccyx, patients suffering from chronic diabetes, isolated sacrococcygeal metastases, dermoid cysts, and tarlof cysts.

Surgical coccygectomy in traumatic patients is associated with good outcomes, and it can be done as a therapeutic choice after all conservative treatment has been tried and found to be unsuccessful, as shown by our results and a study of the relevant literature.

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