

KRONİK POSTTRAVMATİK KOKSIDİNİA TEDAVİSİNDE KOKSEKTOMİ SONUÇLARIMIZ

Clinical outcomes of Coccygectomy after Chronic Post-Traumatic Coccygodynia Treatment

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ÖZET

Amaç: Bu çalışmada kronik posttravmatik koksidiinia tedavisinde koksektomi sonuçları değerlendirilmiştir.

Hastalar ve Yöntem: Eylül 2011, Temmuz 2013 yılları arasında kronik posttravmatik koksidiinia tanısıyla koksektomi uygulanmış 19 hasta çalışmaya dahil edilmiştir. (7 [36.8%] erkek, 12 [63.2%] kadın; ortalama yaş, 47.5 ± 9.3 yıl). Bütün hastalar cerrahi tedavi öncesi ve son kontrollerinde klinik olarak visual analog score (VAS) kullanılarak skorlanmıştır.

Bulgu: Çalışmamızda hastalar için ortalama takip süresi 30.5 aydır (aralık; 22–38 ay). Cerrahi tedavi öncesi ortalama VAS skoru 7 (aralık, 6–9) olup, son kontrollerde bu değer 2' ye (aralık, 1–7) gerilemiştir. Sadece 2 hastada gecikmiş yara iyileşmesine neden olan yüzeysel yara enfeksiyonu görülmesine rağmen sonunda bütün yaralar sorunsuz iyileşmiştir.

Sonuç: Konservatif cerrahi dışı tedavilerin başarısız olduğu durumlarda koksektomi nisbeten güvenli ve etkili bir tedavi yöntemidir.

Anahtar kelimeler: *Koksigeal travma; Kronik koksidiinia; Koksektomi*

ABSTRACT

Objectives: We evaluated the clinical outcomes of total coccygectomy for chronic traumatic coccygodynia.

Methods: We performed a retrospective review of 19 consecutive patients (7 [36.8%] male, 12 [63.2%] female; mean age, 47.5 ± 9.3 years) who underwent total coccygectomy between September 2011 and July 2013. All patients were clinically rated prior to surgery and at the final follow-up visit using a visual analog score (VAS).

Results: The mean follow-up duration was 30.5 months (range, 22–38 months). The median preoperative VAS score was 7 (range, 6–9) points, which had decreased to 2 (range, 1–7) points at the final follow-up visit. We observed two superficial wound infections that caused delayed wound healing. However, all wounds eventually healed completely.

Conclusion: Coccygectomy is a relatively safe and effective treatment method for chronic post-traumatic coccygodynia when non-operative treatment methods fail.

Key words: *Coccygeal trauma; Chroniccoccygodynia; Coccygectomy*

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INTRODUCTION

Pain that affects the coccyx is referred to as coccygodynia (1), and may occur due to different causes. It has a female-to-male ratio of 4:1 (2), with women between 30 and 40 years of age mostly affected. The sitting position, defecation, and sexual activities may all exaggerate the pain. Trauma is the most common etiology of coccygodynia (3). A fall onto the buttocks may cause a contusion, fracture, or dislocation of the tailbone. Even relatively minor, repetitive trauma such as sitting for long hours on hard or narrow surfaces (e.g., during cycling) can lead to chronic coccygodynia (4). Key (5) first described a surgical procedure in 1937 that included the removal of the mobile, fractured portion of the coccyx. Nevertheless, many surgeons prefer Gardner's technique (6), and there is no general consensus on treatment options. The extent of the excision is also unresolved, with many authors reporting similar results with total and partial coccygectomy (7,8), whereas others (9,10) claim total coccyx resection to be the best surgical choice. The purpose of this retrospective study was to evaluate the clinical outcomes and wound complications in total coccygectomy.

METHODS

Between September 2011 and July 2013, 19 consecutive patients who had undergone surgical coccygectomy were enrolled. Of these, 7 (36.8%) were male and 12 (63.2%) were female, with a mean age of 47.5 years. All patients reported a traumatic fall onto the tailbone, and there were no cases of idiopathic coccygodynia. All patients were examined with lateral radiographs and/or magnetic resonance imaging (Fig. 1A, Fig. 1B). On initial admission, all patients were managed conservatively with corticosteroid injections and a 'doughnut' cushion to provide pressure relief. Patients who did not respond to conservative treatment after at least 6 months of follow-up were offered coccygectomy.

On preoperative clinical examination, all patients showed a marked tenderness on palpation over the coccyx. A digital rectal examination was performed to

rule out a rectal-based pathology. Dietary restrictions were enforced 3–5 days before surgery and patients who were to undergo surgery had a preoperative enema. Surgery was performed under anesthesia and 2 gcephazoline was also administered. Patients were placed in the prone position with flexed hips and buttocks slightly spread open by means of a plaster aid, with the aim of stretching the skin on the intergluteal line. A 5 cm midline skin incision was made approximately 1 cm above the gluteal cleft. After dissection through the subcutaneous tissue, the fascia was opened and the coccyx was carefully removed using electrocautery. Hemostasis was achieved using hemostatic agents (e.g., bone wax). The entire coccyx was resected in all patients. All patients were examined with lateral radiographs postoperatively (Fig. 2). Postoperatively, patients were allowed to move freely and were fully weight-bearing as tolerated by their level of pain. Patients were discharged 1 day after surgery, with clean wound dressings and after administration of a second dose of 2 gcephazoline. Further antibiotic administration with levofloxacin was continued for 5 days and a low-fiber, high-starch diet was started, with the aim of preventing defecation for the first 5 postoperative days. Wound cleaning was carried out every 3 days and a sitting aid was used, if needed.

Patients were assessed at least 1 year after surgery. A visual analogue scale (VAS) was used to assess pain both postoperatively and also at the final follow-up. The success of the operation was determined on the basis of collected data. An "excellent" result was achieved with the complete absence of pain or a significant improvement of the pain; this was operationalized as a VAS score of less than 2 out of 10 and an increase in the quality of life. A significant improvement in pain and a VAS score of less than 3 out of 10 was classified as a "good" result, while a moderate improvement in pain and a VAS score of less than 6 out of 10 was classified as a "satisfactory" outcome. Unchanged pain symptoms, an increase in complaints, or a VAS score of more than 6 out of 10 at the time of the investigation was classified as a "poor" result.

Statistical Analysis

Data analysis was performed with the IBM Statistical Package for the Social Sciences (SPSS) version 17.0 software (IBM Corporation, Armonk, NY, USA). Metric discrete variables are shown as means \pm standard deviation or median (min-max), where appropriate. The number of cases and percentages are used for categorical data. A Wilcoxon signed-rank test was used to evaluate whether or not the differences between pre- and postoperative VAS scores were statistically significant. A p-value less than 0.05 was considered to indicate statistical significance.

RESULTS

The study group consisted of 19 (7 males, 12 females) patients who underwent at least 1 year of follow-up. The mean age of the patients was 47.5 years (range, 31–62 years) at the time of surgery. The mean follow-up period was 30.5 ± 5.0 months (range, 22–38 months). The demographic and clinical characteristics of the patient population are listed in Tables 1 and 2. We observed two superficial wound infections that caused delayed wound healing. Cultures from the superficial infections were negative and they were treated with dressing changes for a duration of 3 weeks. All wounds eventually healed completely.

Table 1: Overview of the examined cases

Case no	Age (years)	Gender	VAS		Complication	Outcomes	Follow-up (months)
			Pre-op	Post-op			
1	38	Male	8	1	No	Excellent	26
2	41	Male	7	2	No	Good	24
3	62	Female	7	1	No	Excellent	29
4	56	Male	8	2	No	Good	33
5	51	Male	7	1	Infection	Excellent	31
6	45	Female	6	4	No	Moderate	36
7	36	Female	6	1	No	Excellent	29
8	60	Female	7	2	No	Good	37
9	59	Female	6	3	Infection	Moderate	37
10	51	Female	9	5	No	Moderate	32
11	34	Male	8	4	No	Moderate	29
12	31	Female	7	7	No	Poor	22
13	39	Female	7	5	No	Moderate	33
14	53	Female	9	4	No	Moderate	36
15	50	Female	8	2	No	Good	38
16	54	Female	8	2	No	Good	31
17	49	Male	7	3	No	Moderate	22
18	40	Female	6	3	No	Moderate	26
19	53	Male	8	1	No	Excellent	28

Preoperative and postoperative measurements are listed in Tables 3 and 4. The median preoperative VAS score was 7 (range, 6–9) points, which had decreased to 2 (range, 1–7) points at the final follow-up visit ($p < 0.001$). In all, 18 patients benefited from surgery (as reflected in the data) and reported an overall improvement in their pain symptoms: 5 of the 18 patients had a complete absence of pain with an increase in their quality of life; i.e. an excellent result. Five patients reported

a good result, with a significant improvement in their pain symptoms with a VAS score of less than 3 out of 10 and an increase in their quality of life. Eight patients reported a satisfactory result, with a significant improvement in their pain symptoms with a VAS score of less than 6 out of 10 and an increase in their quality of life. Persistence or worsening of pain symptoms occurred in only one patient.

Table 2: Demographical and clinical characteristics

	n (%)	mean±SD	min-max
Age (years)		47.5±9.3	31-62
Gender			
Male	7 (36.8)		
Female	12 (63.2)		
Complication			
No	17 (89.5)		
Yes	2 (10.5)		
Follow-up (months)		30.5±5.0	22-38

Table 3: Pre- and post-op VAS scores

	median (min-max)
Pre-op	7 (6-9)
Post-op	2 (1-7)
p-value †	<0.001

† Wilcoxon Sign Rank test.

Table 4: Frequency distribution of cases regarding for outcome

	Number of cases	Percentage
Excellent	5	26.3
Good	5	26.3
Moderate	8	42.1
Poor	1	5.3

DISCUSSION

Although fractures of the coccyx are common in traumatology, the precise recommendations concerning their treatment remain difficult to determine and continue to be controversial. Patients with coccygodynia, particularly if it is an idiopathic form, should be examined thoroughly to rule out any concomitant pathologies. Degenerative lumbar disease has been associated with coccygodynia (8,11). Furthermore, colorectal disorders such as proctalgia fugax, rectal tumor, or descending perineum syndrome can mimic the symptoms of coccygodynia (12,13). In our series, all patients suffered from traumatic coccygodynia with a clear traumatic event in their history. A number of conservative options and algorithms have been suggested to address coccygodynia (14). No universally accepted guidelines for conservative interventional management exist, but various non-operative treatment options are available according to the experience and expertise of the physician. Non-operative treatment includes ergonomic adjustments such as a specialized cushion for sitting, application of local heat, and oral analgesics (14). Acute, post-traumatic coccygodynia, however, may last more than 2 months and may then turn into chronic coccygodynia (15). When chronic pain occurs, which happens in approximately 20–30% of cases (16), surgical resection should be indicated (17). The success rate in coccygectomy ranges from 54% to 100% (2,18). Our success rate averaged 94%, consistent with the literature (2,17,18).

Coccygectomy may appear to be a technically facile procedure. However, myriad complications have been documented in the extant literature. In a review of 24 studies involving 671 patients, an overall 11% complication rate was reported, while complication rates in individual studies varied from 0% (18) to 50% (19). The most common complications cited were wound infections (8.34%) and wound heal- ing problems with dehiscence. These are generally produced by *S. aureus* (20). Surgical site infections are facilitated by poor antibiotic prophylaxis or surgical technique. Antibiotic protocols may vary widely (19, 20) and either single-shot therapy (20) or prolonged administration within

3–5 post-operative days have been suggested (17). The patients themselves may encourage infection by poor self care (19, 21). In this study, we used 2 g intravenous cephazoline at time 0 and again after 24 h. After patient discharge, we administered 1 g/day oral levofloxacin for 5 postoperative days. Wound care was strictly maintained by wound cleaning in hospital every 3 days until the removal of sutures. With this protocol, only two superficial wound infections were observed. The results of this study suggest that coccygectomy is a relatively safe and effective treatment method for coccygodynia when non-operative treatment methods fail.

This study was limited by its observational and retrospective design and relatively small number of patients. In addition, we also did not include a control group for comparison. The ideal scenario would be to perform a prospective, multicenter, randomized trial. Comparative studies of the long-term outcomes of different surgical techniques, incorporating larger case series with similar qualifications, are required in the future.

CONCLUSIONS

Coccygectomy is effective for most cases of post-traumatic coccygodynia, particularly when associated with fracture-dislocation and radiographic instability. Surgical coccygectomy in patients with trauma-induced coccygodynia is associated with good outcomes and can be justified as a therapeutic option after all conservative treatment options have been exhausted.

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