

■ Original Article

## Enchondromas of the hand: Retrospective evaluation of 33 cases

### *Elin enkondromları: 33 vakanın retrospektif değerlendirilmesi*

Osman CIVAN\* , Haluk OZCANLI 

Akdeniz University Faculty of Medicine, Department of Orthopedics, Antalya/TURKEY

#### Abstract

**Aim:** To present the demographic evaluation and distribution of the enchondromas of the hand which were treated by curettage with bone grafting or isolated curettage.

**Material and Methods:** We retrospectively evaluated the 798 patients who were operated because of hand tumors and pathological diagnosis was made in the same hospital between 2007 and 2019. Age, gender, affected side and location of the tumor of the patients who were diagnosed with enchondroma of the hand and could be follow-up minimum of one year were evaluated accordingly.

**Results:** A total of 33 patients (mean age 36.4 years; range 6 to 77 years) with 34 enchondromas of the hand were included. Fifteen (45%) out of 33 patients were male and 18 (55%) were female. Twenty (61%) out of 33 had enchondroma on the right hand and 13 (39%) had on the left. One patient (3%) had enchondroma on his two fingers. Seventeen (52%) patients had enchondromas on their proximal phalanges, seven (21%) had on the middle phalanges, seven (21%) had on the distal phalanges (Total eight distal phalanges) and two (6%) had on metacarpals. One patient (3%) had enchondroma on her thumb, six (18.2%) had on the index finger, five (15.1%) had on the third finger, 11 (33.3%) had on the ring finger and nine patients (27.3%) had enchondromas on their little finger.

**Conclusion:** Enchondromas are usually seen on the ulnar side of the right hand and frequently seen on the proximal phalanges and may cause pathological fractures.

**Keywords:** enchondroma; enchondroma of the hand; hand; hand tumors; tumor

Corresponding author\*: Osman CIVAN, Akdeniz University Faculty of Medicine, Department of Orthopedics, Antalya/TURKEY

E-mail: civanosman@gmail.com

ORCID: 0000-0003-0216-1169

Received: 09/10/2020 accepted: 23/11/2020

Doi: 10.18663/tjcl.808552

## Öz

**Amaç:** İzole küretaj ya da küretaj ve greftleme ile tedavi edilmiş elin enkondromlarının demografik değerlendirmesini ve dağılımlarını sunmak.

**Gereç ve Yöntemler:** 2007-2019 yılları arasında el tümörü nedeniyle opere edilen ve patolojik tanısı aynı hastanede konulan 798 hasta retrospektif olarak değerlendirildi. Enkondroma tanısı konulan ve bu sebeple opere edilen, en az bir yıl süre ile takip edilen hastaların yaşı, cinsiyeti, etkilenen tarafları ve tümör yerleşimi değerlendirildi.

**Bulgular:** Toplam 33 hasta ve onların 34 elde yerleşen enkondroması dahil edildi (Ortalama 36,4 yıl; 6-77 aralığında). 33 hastanın 15'i (%45) erkek, 18'i (%55) kadındı. 33 hastanın 20'sinin (%61) enkondroması sağ elde, 13'ünün (%39) sol elde yerleşimliydi. Bir hastanın (%3) iki parmağında enkondroma mevcuttu. 17 hastanın (%52) enkondroması proksimal falanksta, yedi hastanın (%21) orta falanksta, yedi hastanın (%21) distal falanksta (toplam sekiz distal falanks) ve iki hastanın (%6) metakarplarındaydı. Bir hastanın enkondroması (%3) başparmakta, altı hastanın (%18,2) 2.parmakta, beş hastanın (%15,1) 3.parmakta, 11 hastanın (%33,3) 4.parmakta ve dokuz hastanın (%27,3) ise 5.parmakta idi.

**Sonuç:** Enkondromlar genellikle sağ elin ulnar tarafında, sıklıkla proksimal falankslarda görülür ve patolojik kırıklara sebep olabilir.

**Anahtar kelimeler:** enkondrom; elin enkondromu; el; el tümörleri; tümör

## Introduction

Enchondromas are the most common primary bone tumors of the hand [1]. They frequently consist of hyaline cartilage, calcification, usually located in the hands and settles intramedullary [2,3]. Patients often suffer from pain due to the growth of the tumor or pathological fracture. But it may also be determined incidentally in hand radiography which was taken for any other reasons [3].

Enchondromas are usually inclined to appear on the ulnar side and develop in the third and fourth decades of life [1-3]. Diagnosis can be made on plain radiography and they are frequently determined on the proximal phalanx and on the little fingers [4].

The treatment of enchondromas changes according to the size and the presence of a pathological fracture. In a normal way, the treatment modality varies from a follow-up to surgical excision and curettage with bone grafting. It has to be kept in mind that enchondromas may rarely malignant transform to chondrosarcoma. Pain in rest, concomitant soft tissue mass, and cortical destruction are the suspicious factors for a possible malignant transformation to chondrosarcoma [3,5].

In this retrospective study, we aimed to present the demographic evaluation and distribution of the enchondromas of the hand which were treated by curettage with bone grafting or isolated curettage.

## Material and Methods

In this study, we retrospectively evaluated the 798 patients who were operated because of hand tumors and pathological diagnosis was made in the same hospital between 2007 and 2019. Age, gender, affected side and location of the tumor of the patients who were diagnosed with enchondroma of the hand and could be follow-up minimum of one year were evaluated accordingly. The folder archives, pathological records and the computer archiving system of the XXX Akdeniz University hospital (Mia-Med version 1.0.1.2808, Mia Technology A.Ş, Ankara, Turkey) and Picture Archiving and Communication System (PACS) of the same XXX Hospital were used for the retrospective evaluation. A descriptive statistical analysis was performed for the comparison of the distribution of the enchondromas. The study was conducted in accordance with the principles of the Declaration of Helsinki.

## Results

Thirty-six patients with 37 tumors were diagnosed as "enchondroma" of the upper extremity. Two out of 36 didn't have a detailed description of the location and one of the enchondromas was on the distal ulna. At last, a total of 33 patients (mean age 36.4 years; range 6 to 77 years) with 34 enchondromas of the hand were included in the study. Mean follow-up period was 22,2 months (range 12 to 48 months).

Fifteen (45%) out of 33 patients were male and 18 (55%) were female. Twenty (61%) out of 33 had enchondroma on the

right hand and 13 (39%) had on the left. One patient (3%) had enchondroma on his two fingers. Seventeen (52%) patients had enchondromas on their proximal phalanges, seven (21%) had on the middle phalanges, seven (21%) had on the distal phalanges (Total eight distal phalanges) and two (6%) had on metacarpals. One patient (3%) had enchondroma on her thumb, six (18.2%) had on the index finger (Figure 1), five (15.1%) had on the third finger, 11 (33.3%) had on the ring finger and nine patients (27.3%) had enchondromas on their little finger. One patient (3%) had enchondromas on the distal phalanges of both his index and ring fingers (Table 1).

**Table 1:** Demographic datas and distribution of the enchondromas

Parameter	Description
Age	Mean age 36.4 years; range 6 to 77 years
Gender	15 Male, 18 female
Side	20 right, 13 left
Location	
1st finger	1 patient
2nd finger	6 patients
3rd finger	5 patients
4th finger	11 patients
5th finger	9 patients
Two fingers	1 patient
Proximal phalanx	17 patients
Middle phalanx	7 patients
Distal phalanx	7 patients
Metacarpals	2 patients



**Figure 1:** Middle phalanx of the index finger with an enchondroma; a, Preoperative anteroposterior X-Ray view, b, Six months after operation, calcified matrix is visible.

Eleven patients were treated with curettage alone (33.3%) and other 22 were treated by curettage and grafting (66.6%). Autograft was harvested from ipsilateral metaphysis of the radius in three cases, ipsilateral olecranon in three cases and ipsilateral iliac wing in 16 cases.

One of our patients applied to the emergency department after falling from a height and a pathological fracture was diagnosed on his proximal phalanx of the ring finger of the right hand. He was operated for his proximal phalanx fracture and open reduction-internal fixation with screws was performed (Figure 2). We had no malignant transformation in any patient in the postoperative first year. Just two of patients complained from graft donor site pain and both of them healed at the end of first year. The graft donor site was iliac wing in both of the cases. We had no wound complication.



**Figure 2:** Pathological fracture of the proximal phalanx of the fourth finger; a, Preoperative anteroposterior X-Ray view of the fracture line, b, Three months after operation, callus is visible on fracture lines.

**Discussion**

Enchondromas of the hand should be evaluated with a wide range of morbidity intervals. They may be asymptomatic, may be a reason for a pathological fracture and also may cause a malignant transformation. It's impossible to report an exact incidence of the enchondromas due to the absence of symptoms [6]. The results of the distribution according to finger and phalanges of the present study supported the literature: they usually occurs on the third and fourth decade of life, they are inclined to present on the ulnar side, and on the proximal phalanges [1,3,4,7].

Tumorous conditions of the hand are frequently treated by both orthopedic surgeons and hand surgeons throughout their working period. Enchondromas comprise a wide area in the daily practice of a hand tumor surgeon due to its frequency [8,9,10]. A patient with an enchondroma even it was detected incidentally should always be followed-up in a period of time. The treatment modality changes according to its' size, cortical destruction. Curettage alone and curettage with bone grafting can also be used for the cases with enchondromas [11,12]. Even if enchondromas are the most common primary bone tumors of the hand, any standard operative treatment algorithm for a symptomatic enchondroma has not been established yet [13]. In our case series, we performed both curettage and curettage with bone grafting. The 0% recurrence rate for the follow-up of the first postoperative year made it not feasible to evaluate the demographic factors and also the distribution of the enchondromas affecting and related to the recurrence rate.

The donor sites were olecranon, distal radius and iliac wing in our study. Even iliac wing was the most used one as a donor site the donor site morbidity rate was also lower than the literature [14].

Our study has some limitations. The one year follow up period would be much more to have an ideal idea about the recurrence rate. Prospective randomized trials with a tumor and patient-specific approach would be more evidence based instead of a retrospective study.

## Conclusion

Enchondromas are usually seen on the ulnar side of the right hand and frequently seen on the proximal phalanges and may cause pathological fractures. Both isolated curettage and curettage with bone grafting are used in the treatment.

## Declaration of conflict of interest

The authors received no financial support for the research and/or authorship of this article.

There is no conflict of interest.

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