TREATMENT OF HALLUX LIMITUS USING THE PERCUTANEOUS TECHNIQUE

Hands-On
Cadaver Seminar
February 21-23 2024
Celebration, Florida

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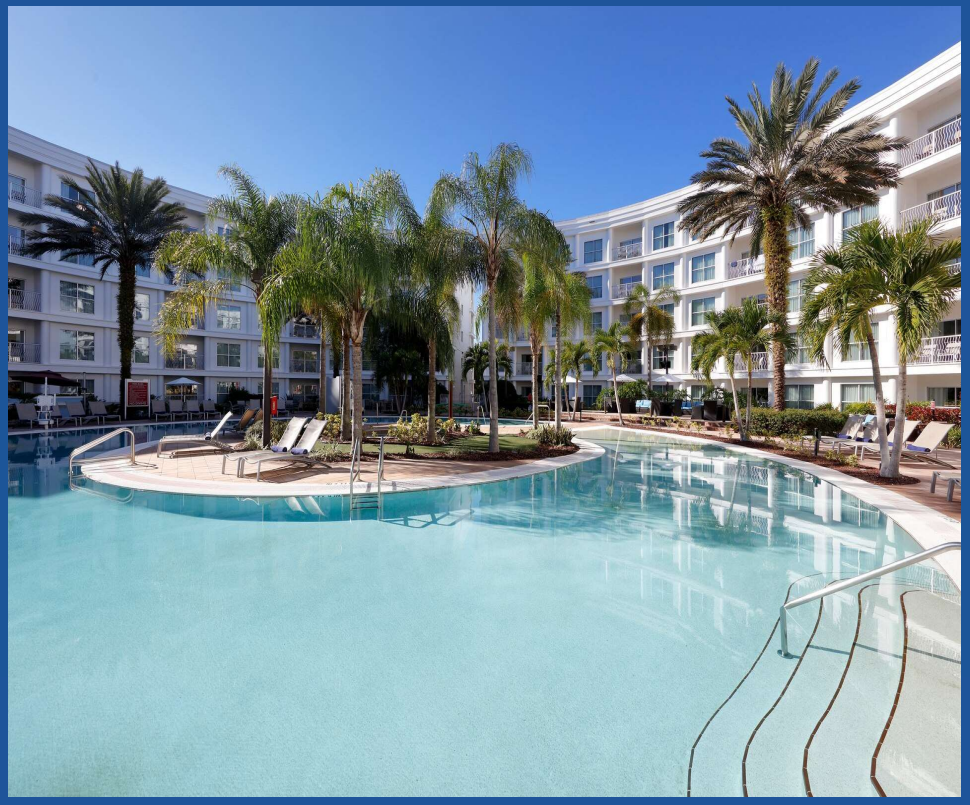
Academy of
Minimally Invasive
Foot & Ankle
Surgery

Conflict of Interest Disclosure

Dr Ali EL KOHEN, MD has no financial relationship with companies and/or products which could affect the objectivity of this lecture.



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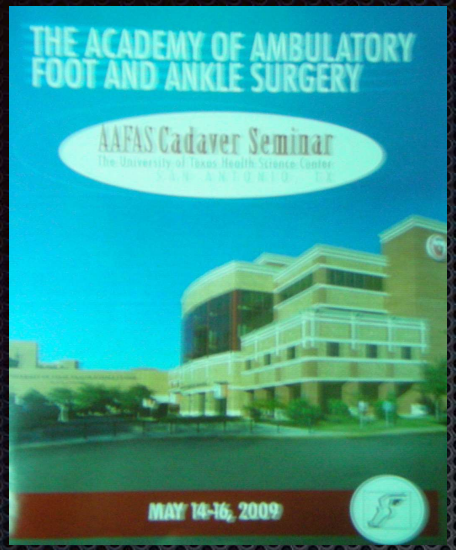

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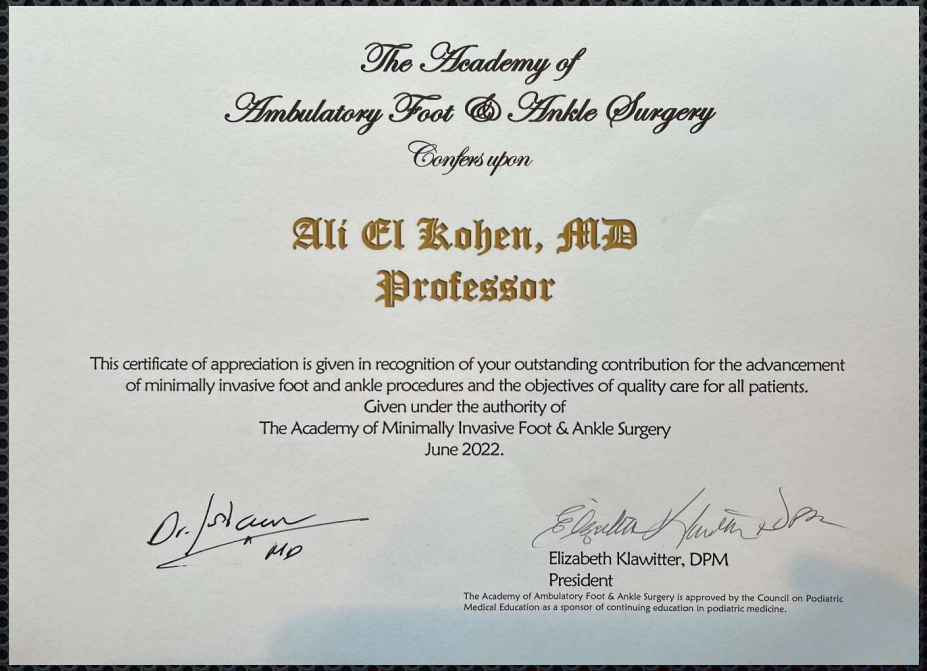

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DEFINITION

It was first described in 1887 by Davies-Colley, who called it Hallux flexus and later by Cotterill who named it Hallux rigidus.

It's the primary arthritis of the metatarsophalangeal-sesamoid joint complex of the first ray.

Characterized by: painful, limited joint mobility (particularly in extension), dorsal osteophytes

Incidence: 2% in population between

30 and 60 y

Clear male predominance.

PATHOGENESIS

There are numerous intrinsic factors, such as alterations in the morphology or biomechanics of the first ray of the foot that can lead to the onset of hallux rigidus

These can be exacerbated by extrinsic factors

INTRINSIC FACTORS

- Presence of relatively long great toe, which may be a consequence of a long first metatarsal (index plus) or a megaphalanx in the great toe in an index plus minus or index minus, produces an Egyptian foot type that causes stress to the first MTPJ.

-Square head of the first metatarsal altering the normal movement of this joint

-When the first metatarsal is more horizontal than normal, causing a alteration of the angle at which the metatarsal strikes the floor.

-Osteochondritis of the head of the first metatarsal due to the presence of residuals lesions in the cartilage.

-Any situation that causes pronation of the foot.

-Systemic diseases that produce localized arthritis of MTPJ (gout, rheumatic disorders).

EXTRINSIC FACTORS

-Recurrent microtrauma of the first ray resulting from sport or occupational activities can damage the articular cartilage

-Osteochondral fractures of the metatarsal head or base of the phalanx

-In this situation of stress, the overload on the joint cartilage lead to process of degeneration of the cartilage that makes the toe-off phase of walking painfull by the growth of osteophytes.

SYMPTOMS

-Pain at the MTPJ particularly in the toe-off phase walking.

-Progressive increase of volume of the joint with limitation of the movement. It leads the patient to walk with the forefoot in external rotation and supination.

-Swollen in MTPJ with hyperextension of IPPJ.

2 clinical stages:

-stage1: pain in MTPJ with limitation of extension

-stage 2: no movement in MTPJ, global increase in the volume of the joint and hyperkeratosis over the head of the fifth metatarsal and base of proximal phalanx.

DIAGNOSIS

Radiographic study performed in weightbearing, in dorsoplantar, lateral and oblique views of both feet.

3 stages:

- Stage 1: slight narrowing of the joint with the beginning of osteophyte formation.
- Stage 2: evident narrowing of the joint space with increase of size osteophytes. Flattened appearance of the metatarsal head with subchondral sclerosis.
- Stage 3: obliteration of the joint space, larges osteophytes, subchondral cysts and intense sclerosis.

MEDICAL TREATMENT

The aim is to reduce the local intra articular inflammatory process and movements that produces forced extension of the MTP joint and cause pain.

👉-Targeted physiotherapy

👉-Systemic nonsteroidal antinflammatory drugs.

Local intra articular corticosteroid injections absoluted contraindicated ⛔

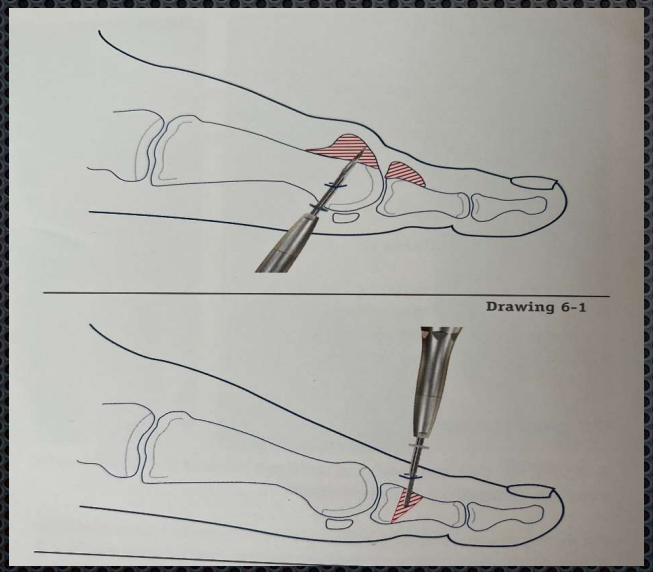
👉-use of appropriate footwear with a low heel, rigid sole and rocker bottom and insoles designed to reduce the load on the first metatarsal.

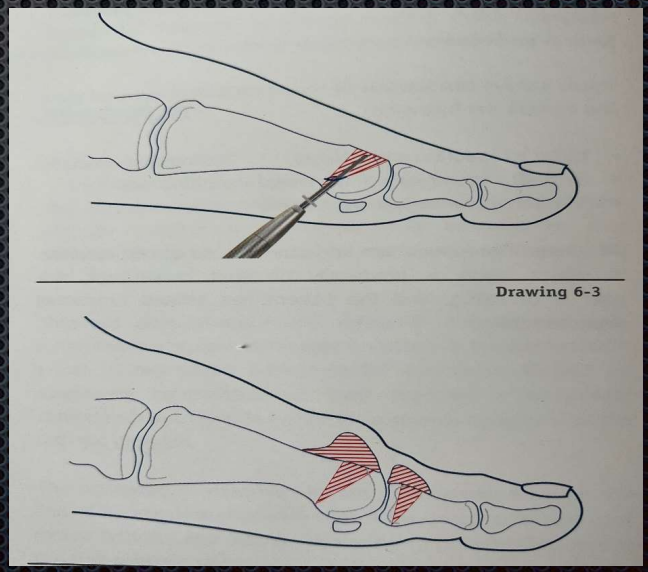
SURGICAL TREATMENT

Surgical techniques include:

-Radical procedures (Keller's resection arthroplasty, prosthesis of MTPJ, MTP arthrodesis)

-Conservative techniques (cheiolectomy, phalangeal osteotomy and first metatarsal osteotomy)

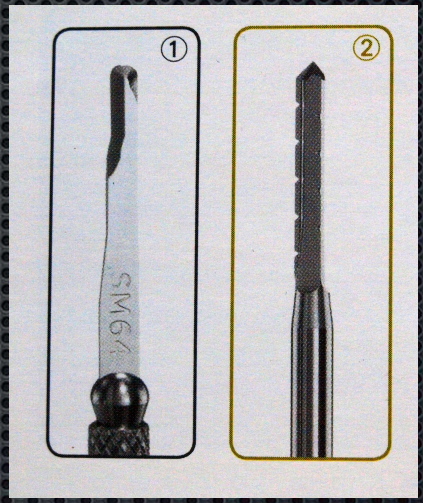


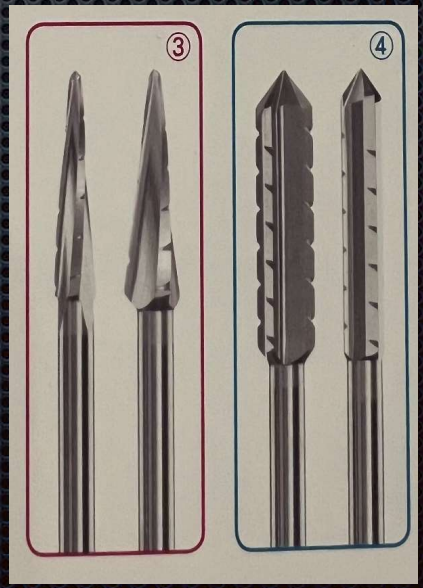


MIS INSTRUMENTS

PERCUTANEOUS SURGICAL PROCEDURES:

- INSTRUMENTS:
- Complete general instrument set
- Beaver 64 MIS scalpel blade
- Straight burr 2-15, conical burrs 3.1/1-12 and 4.1/1-12 and cylindrincal burrs.





INSTRUMENTATION

ANESTHESIA

- Local anesthesia for total ankle block
- Without the need for sural nerve anesthesia

FLUOROSCOPY

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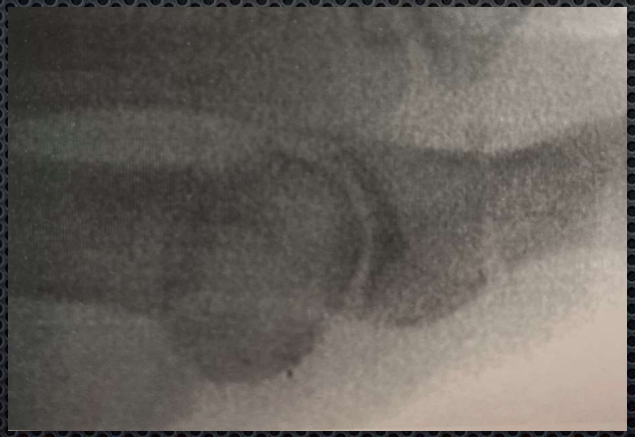
CHEILECTOMY

Incision with the Beaver 64 scalpel of 0.5cm on the dorsomedial aspect of the forefoot
The capsule is separated from the exostosis
A DPR rasp is used to eliminate fibrous residues from the exostosis
Abrasion bone with burrs
Thorough cleaning of the bone must be performed

DISTAL FIRST METATARSAL OSTEOTOMY

Straight burr 2-15 is positioned on the medial aspect of the metatarsal neck, at 45° DD-PP.
Dorsal limit: border of the articular surface
Plantar limit: immediately distal to the sesamoid bone
Before completing the osteotomy of the plantar surface of the metatarsal by osteoclasis, a wedge with a dorsal base of the desired size should be cut.



BASE OF THE PROXIMAL PHALANX OSTEOTOMY

Straight burr 2-15 is positioned on the medial aspect of the base of the proximal phalanx. Then, the osteotomy of the lateral an dorsal cortical parts of the bone is completed.

Before completing the osteotomy of the plantar surface of the phalanx by osteoclasis, a wedge with a dorsal base of the desired size should be cut.

The 3 incisions used are closed with 4/0 monofilament suture
Bandage applied like for HV but closing the osteotomies performed.

POST OPERATIVE CARE

Walking is permitted with a postoperative shoe.
The sutures are removed at 7 days.

X-ray control after 3 weeks and mobilization exercices started.

Postoperative shoe and bandage are maintained for 6 weeks
Normal walking after 2 months and sports after 3 months.

SURGICAL INDICATIONS

Cheilectomy:

-elderly patients with mild pain and functional impairment. The exostosis is the main problem.

Cheilectomy plus metatarsal and phalangeal osteotomy:

-patients younger than 65 with significant pain and functional disability for their daily activities and not responded to medical and orthopedic measures.

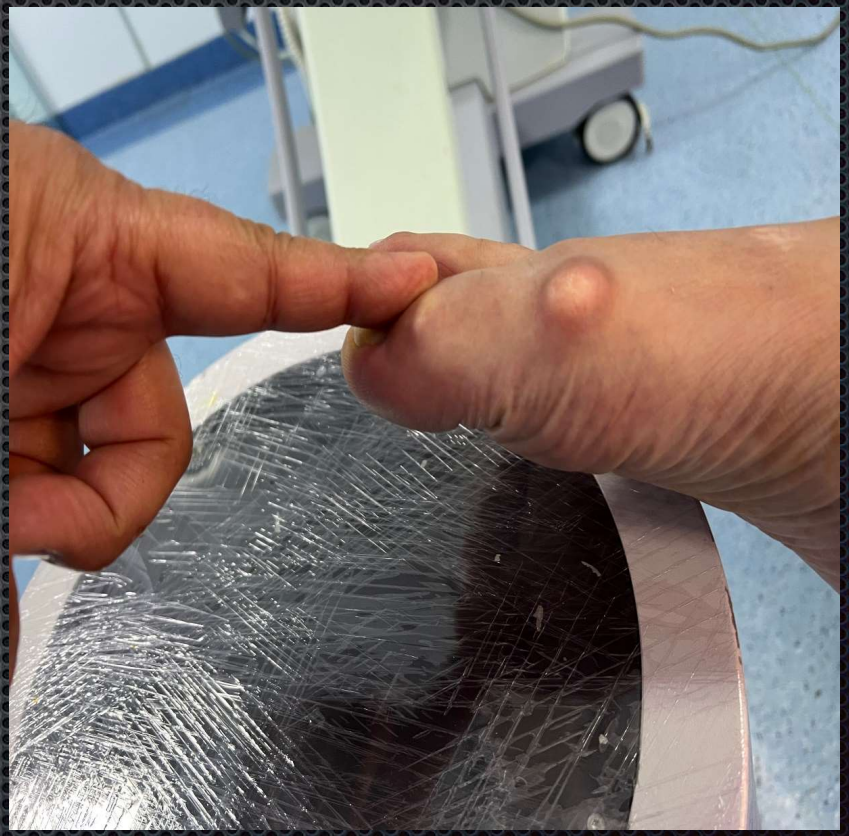
MTP arthrodesis:

-when surgical treatment or any type of reoperation fails.

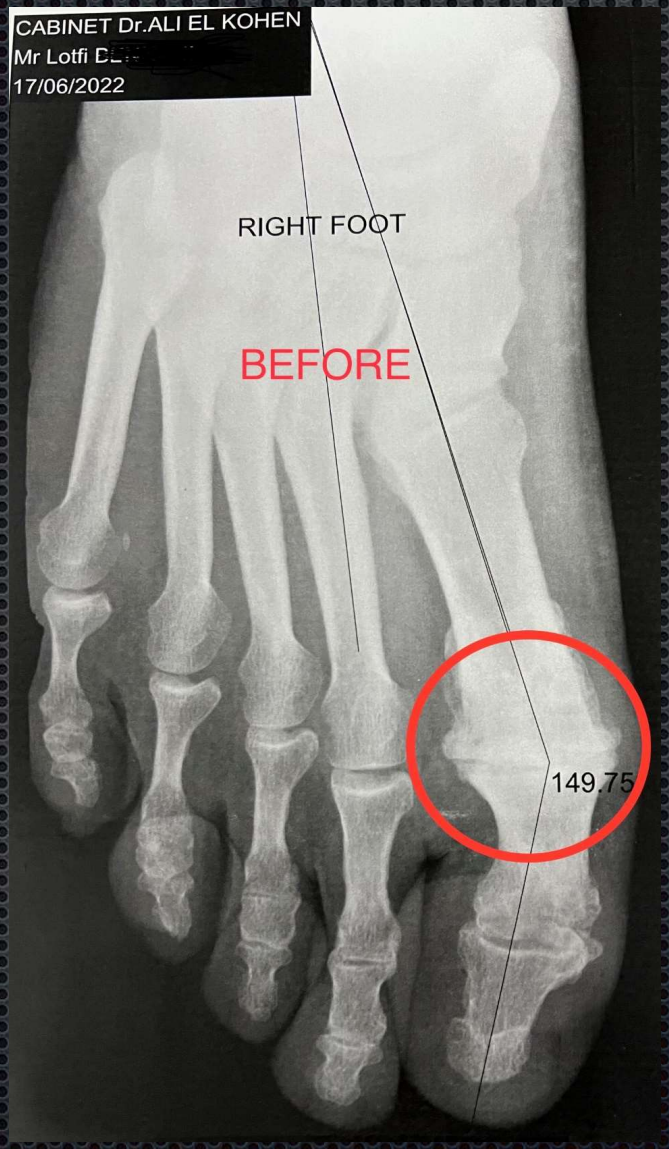
CASE 1

BEFORE

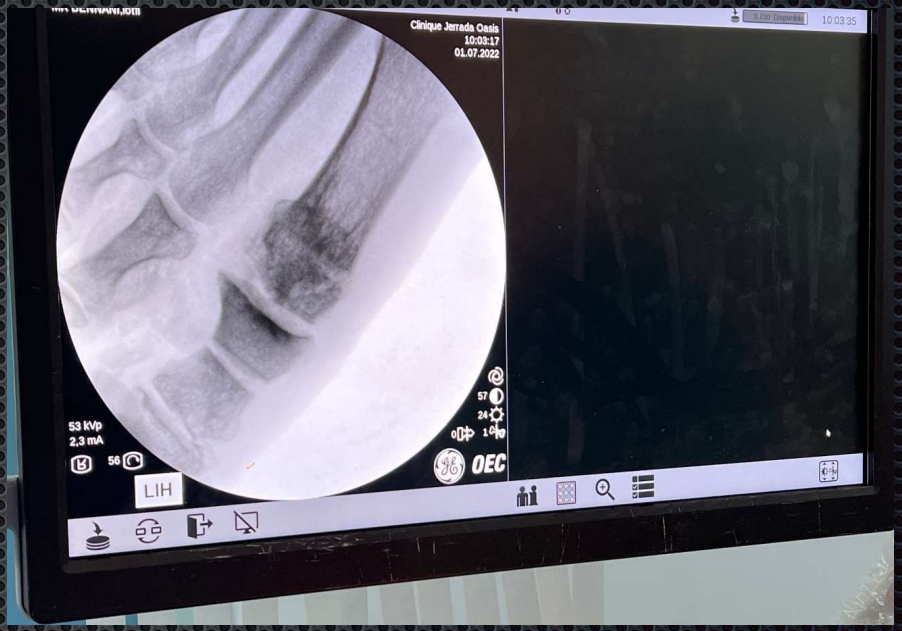
Man 57y



CASE 1


CABINET Dr.ALI EL KOHEN
Mr Lotfi
17/06/2022
RIGHT FOOT
BEFORE
149.75

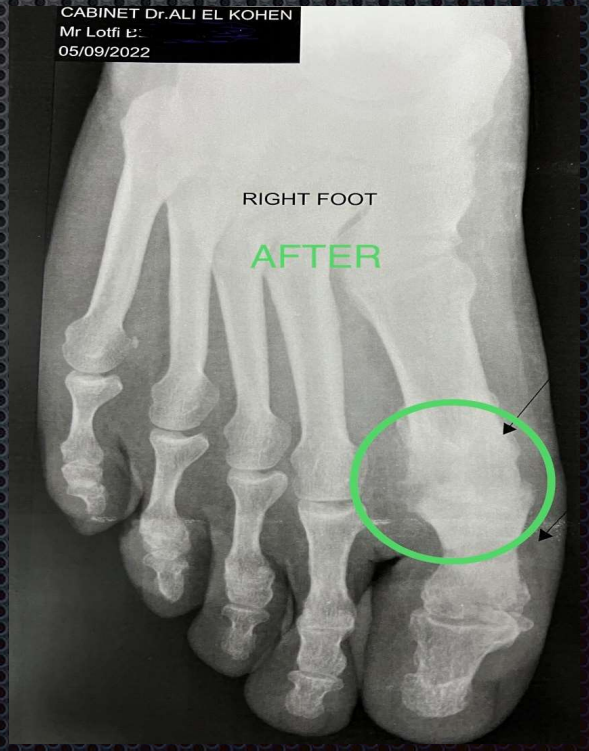
CASE 1



POST-OP

CASE 1

AFTER 3 months



CASE 2

BEFORE

Woman 51y

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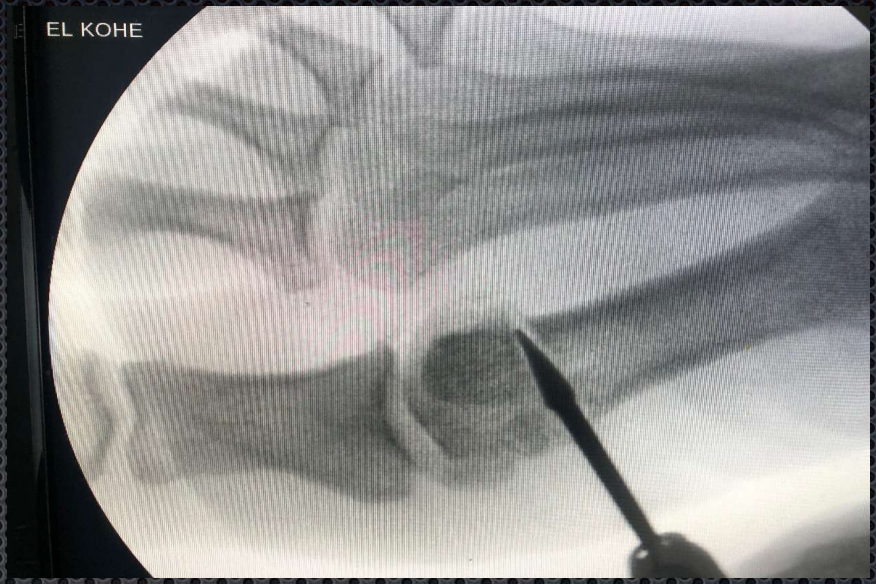
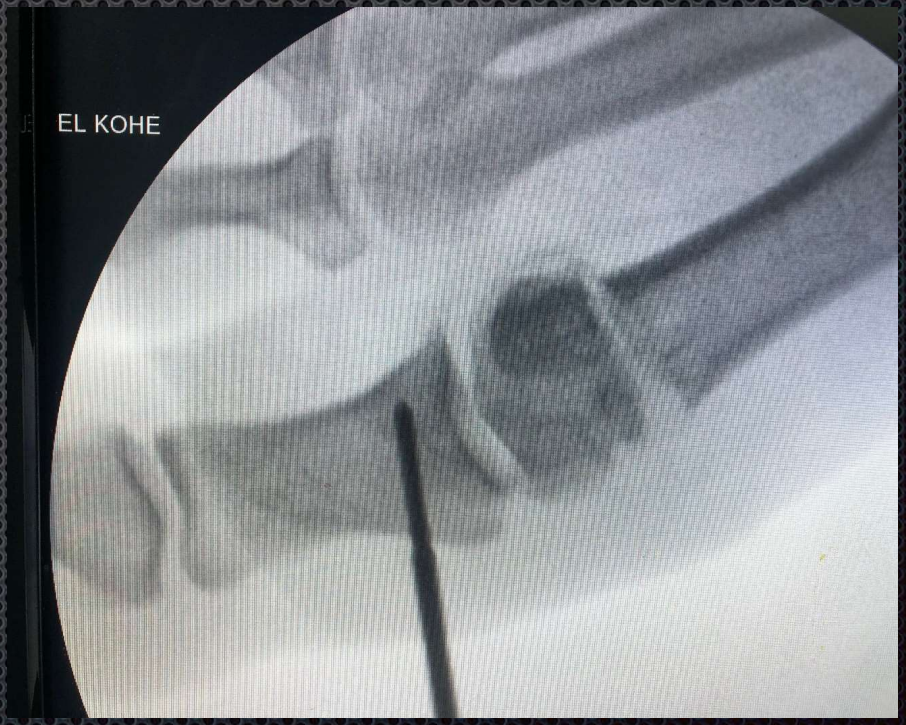
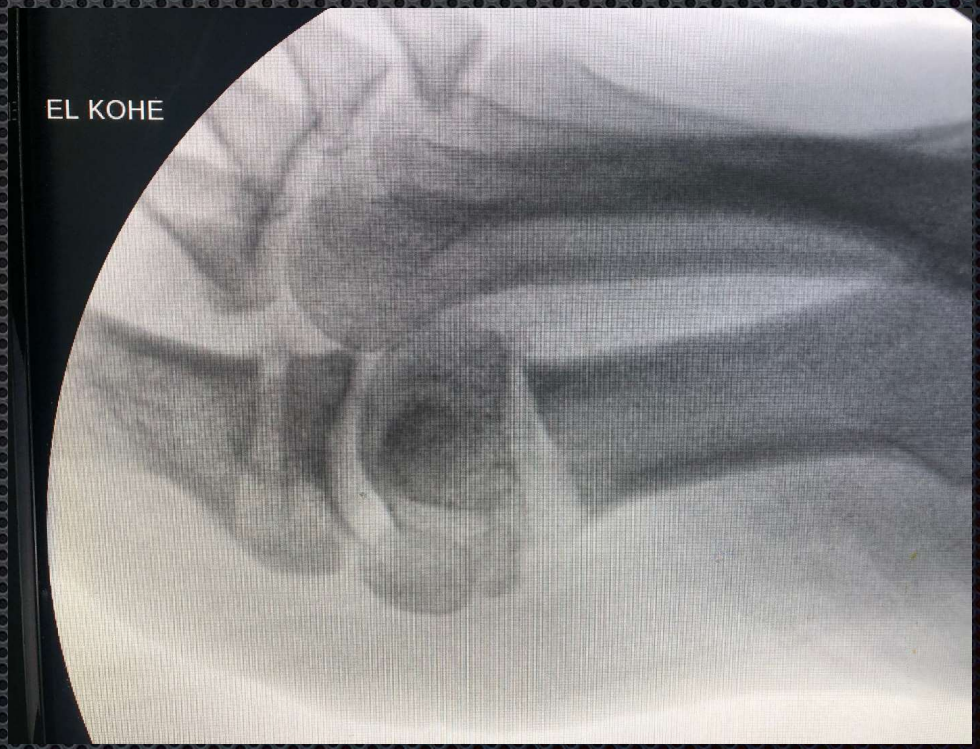
CASE 2





CASE 2

POST-OP



Florida

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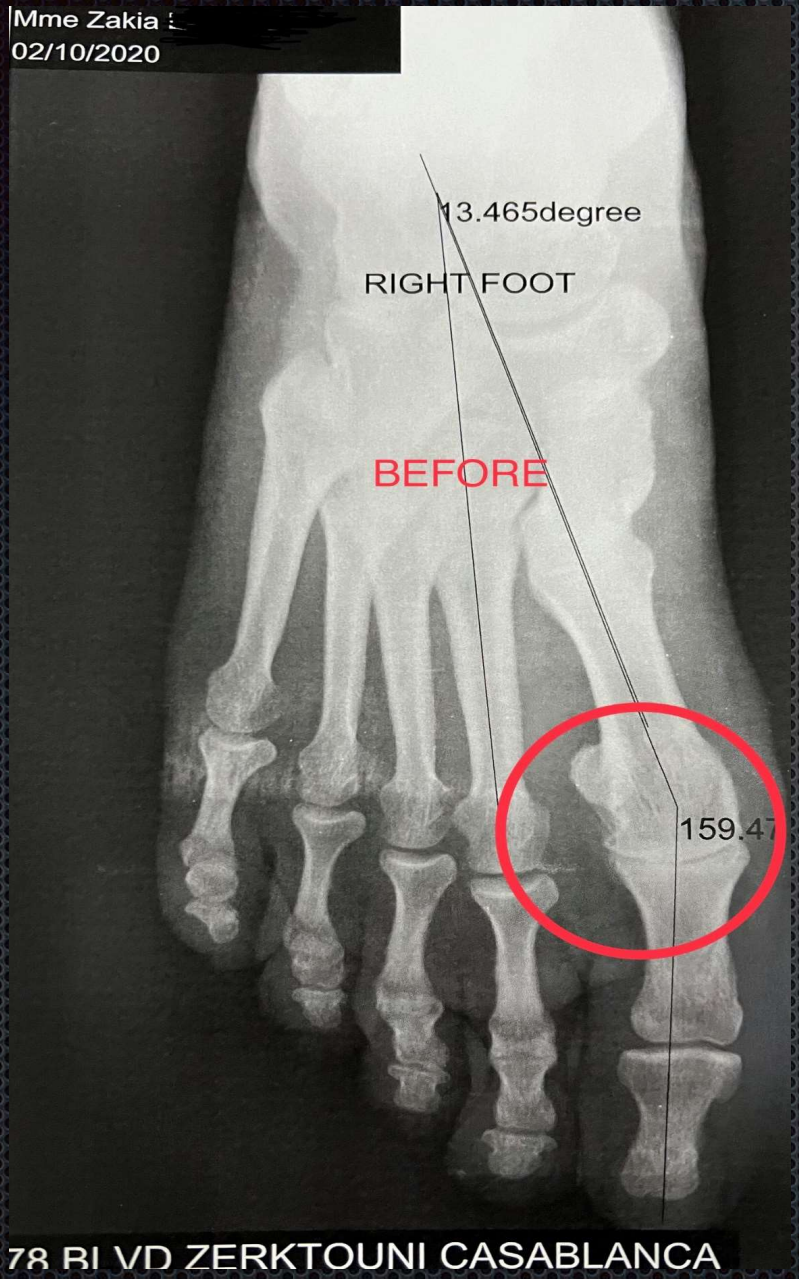
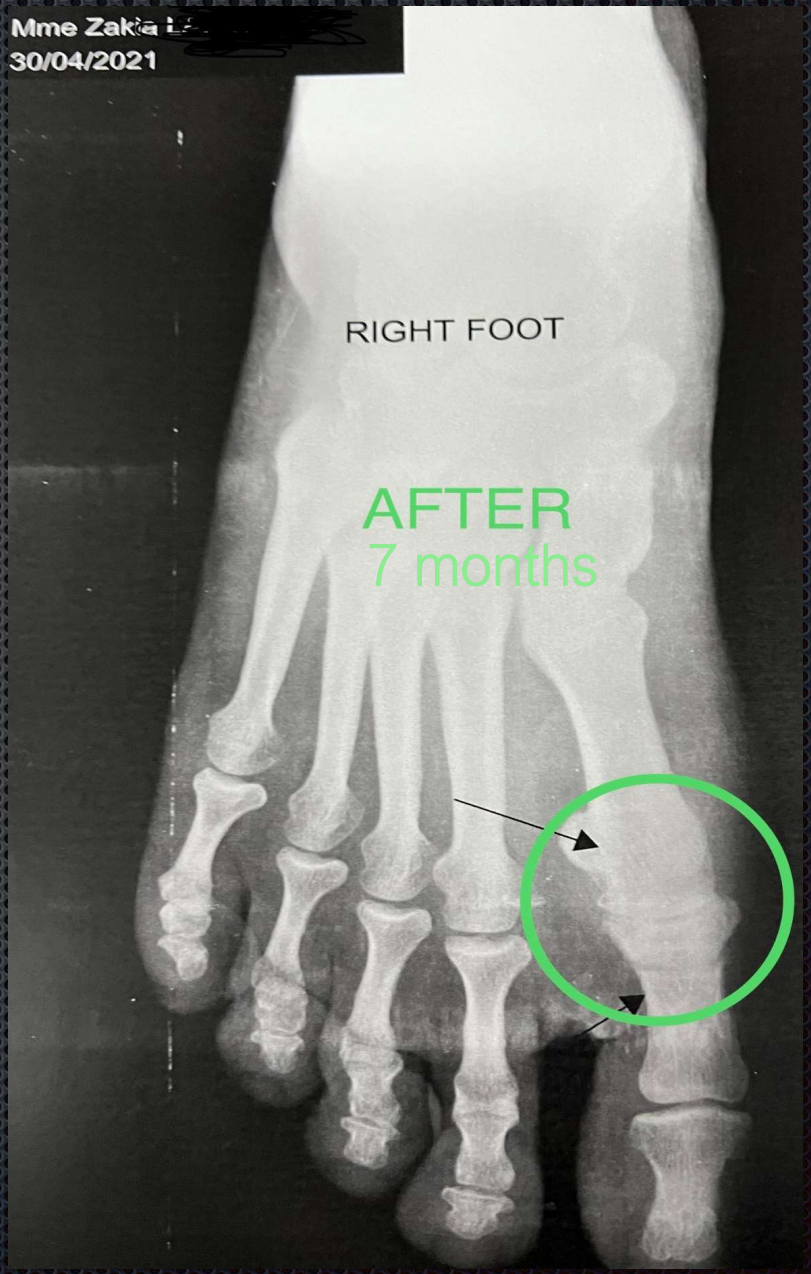
CASE 2

CASE 2


Mme Zakia
02/10/2020
13.465degree
RIGHT FOOT
BEFORE
159.47
78 BI VD ZERKTOUNI CASABLANCA


Mme Zakia
30/04/2021
RIGHT FOOT
AFTER
7 months

CASE 3

aEK1

BEFORE Woman 66y

Florida

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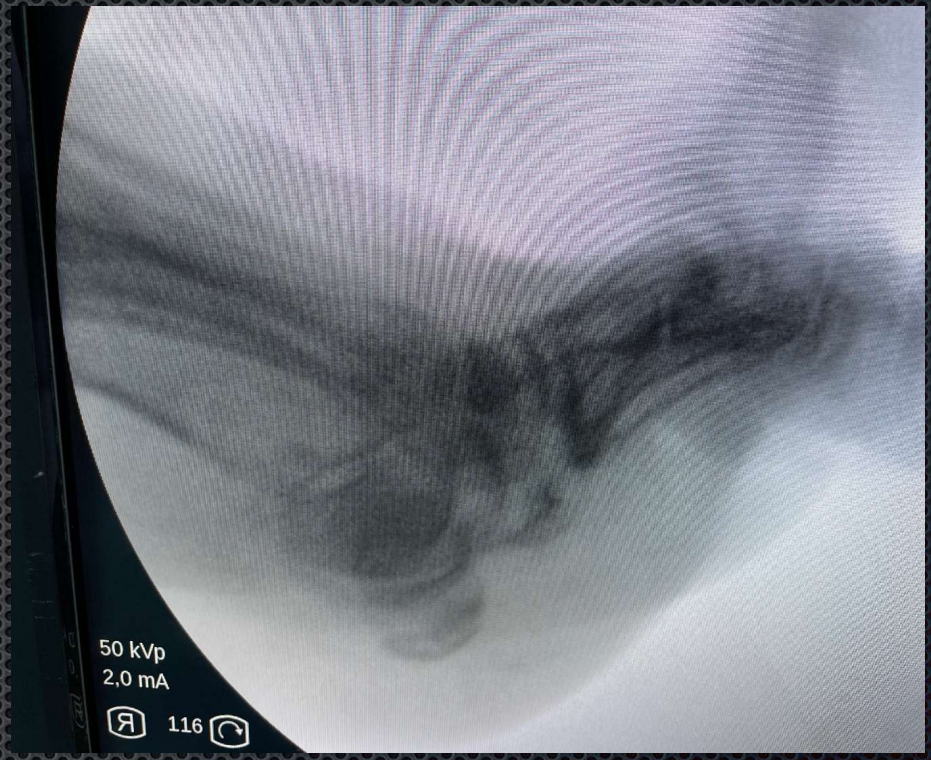
aEK1 ali EL KO, 2/18/2023

CASE 3

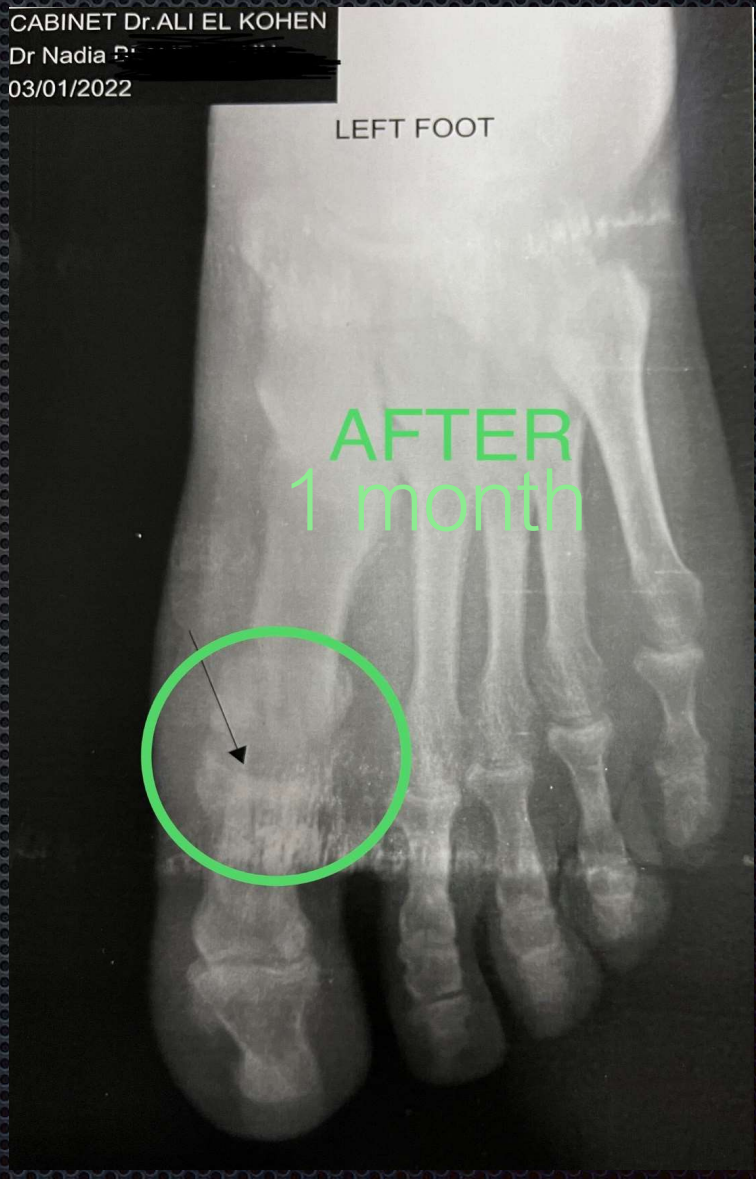
CASE 3



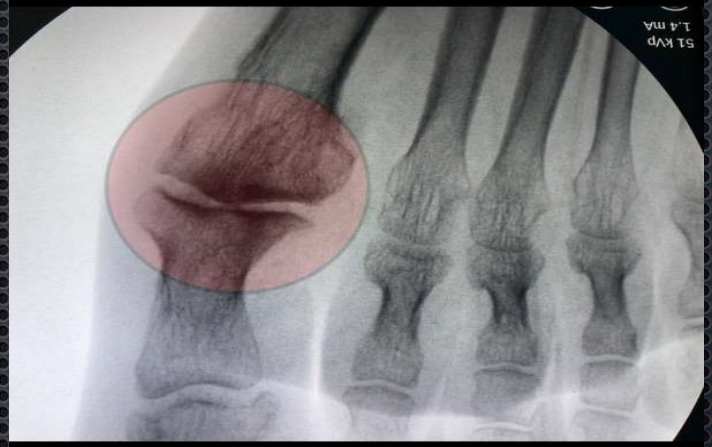
POST- OP

CASE 3


Dr Nadia B
04/11/2021
LEFT FOOT
BEFORE
154.243degree


CABINET Dr.ALI EL KOHEN
Dr Nadia B
03/01/2022
LEFT FOOT
AFTER
1 month

CASE 4



Woman 61y

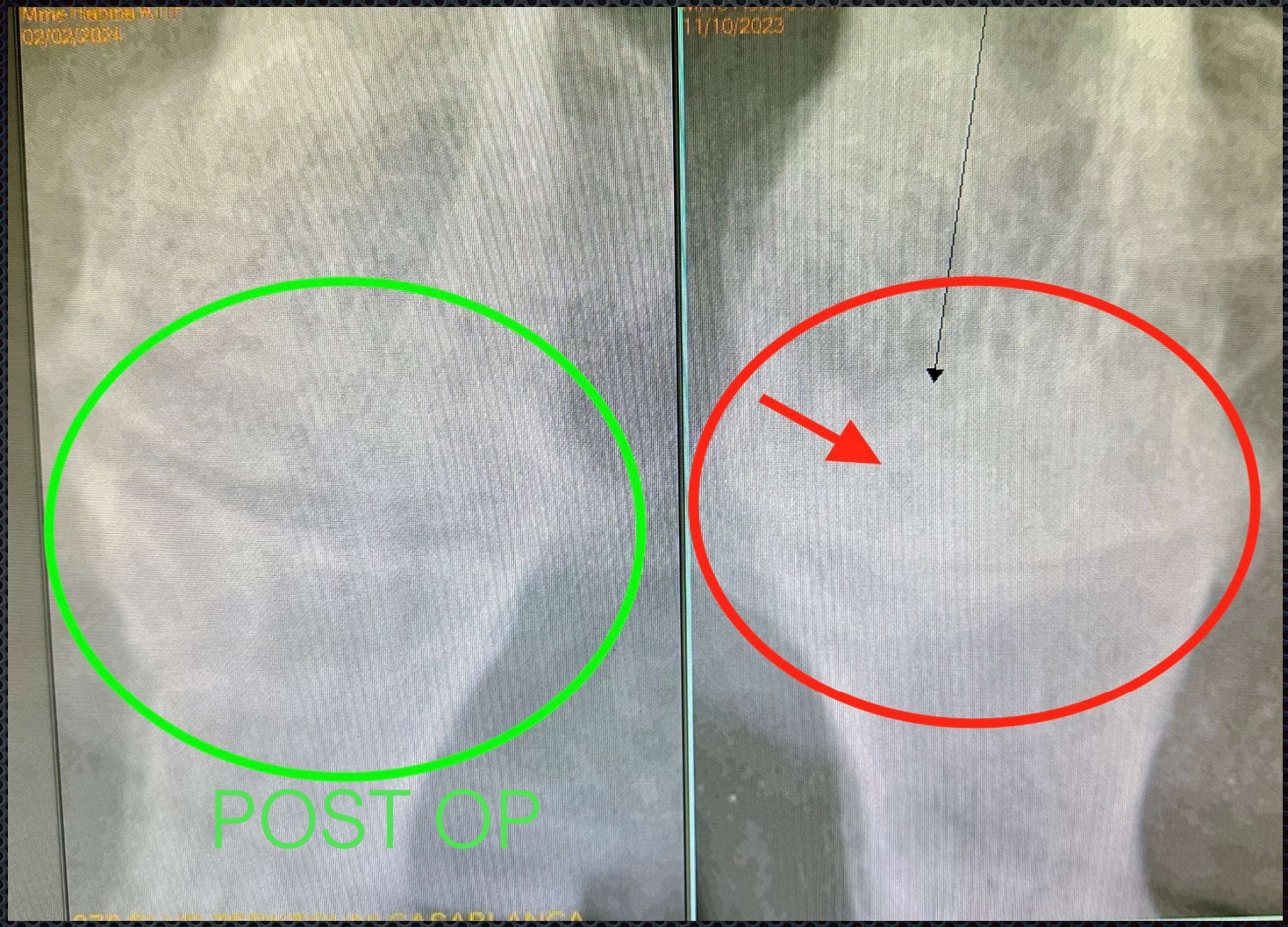
CASE 4

POST OP

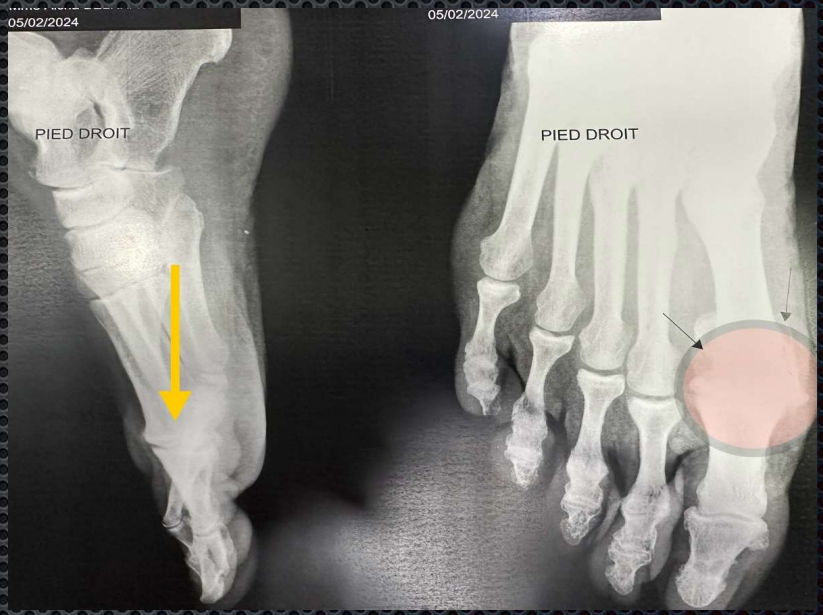
CASE 5

Woman 62y

CASE 5



CASE 6



Woman 70y

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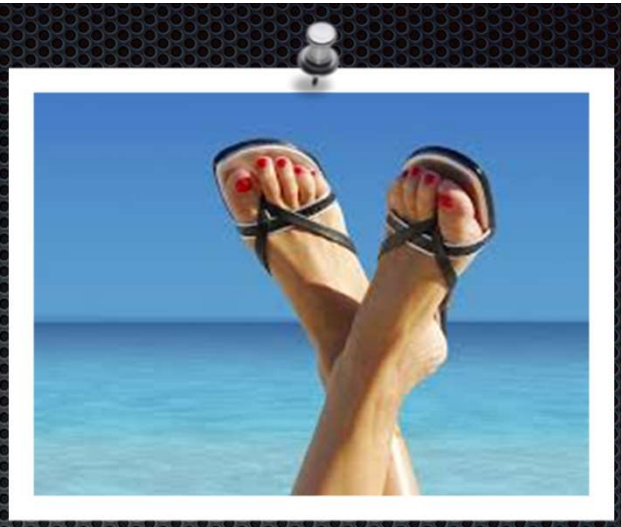
CONCLUSION



- This percutaneous technique is a good choice for the treatment of Hallux limitus.
- Outcomes, clinical and radiological improvements are favorable long time after surgery with this conservative technique and with advantages of the percutaneous surgery.
- It has to remain in our surgical arsenal and to practice it when it's well indicated.

THANK YOU and WELKOME TO MOROCCO

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Academy of Minimally Invasive Foot & Ankle Surgery

Dr. Ali El Kohen
Orthopaedic surgeon

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PRÉSENTE