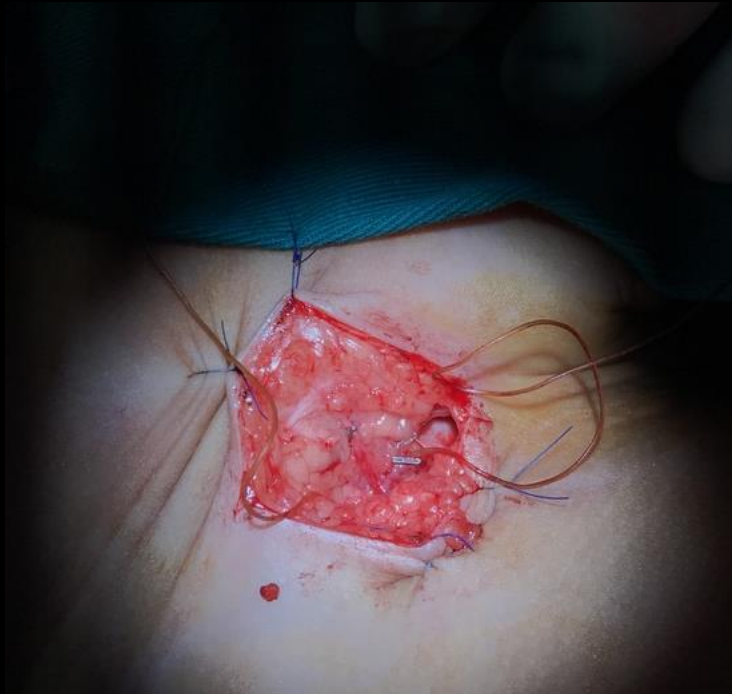


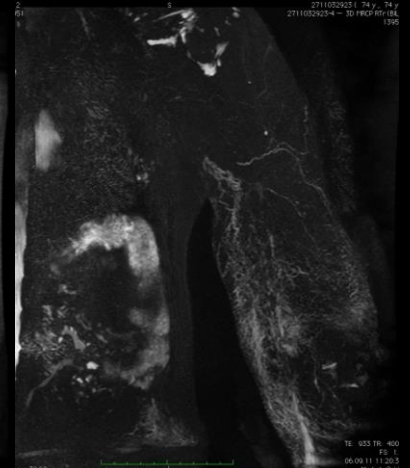
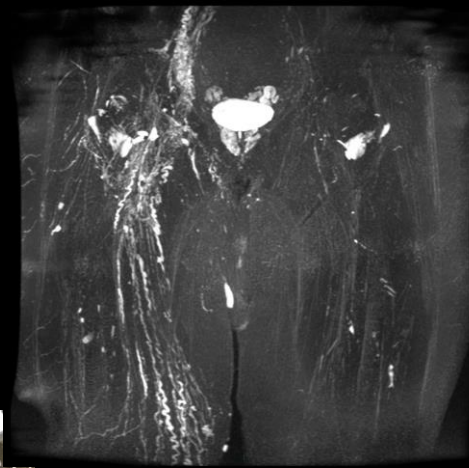
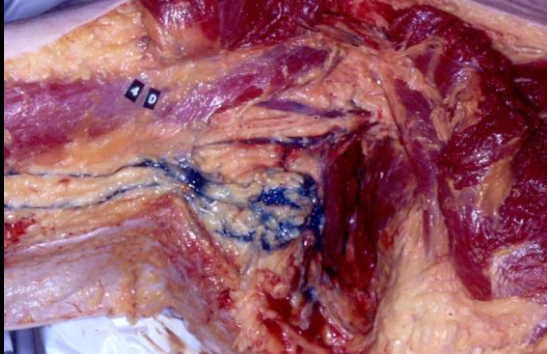
# SURGICAL TREATMENT OF LYMPHOEDEMA



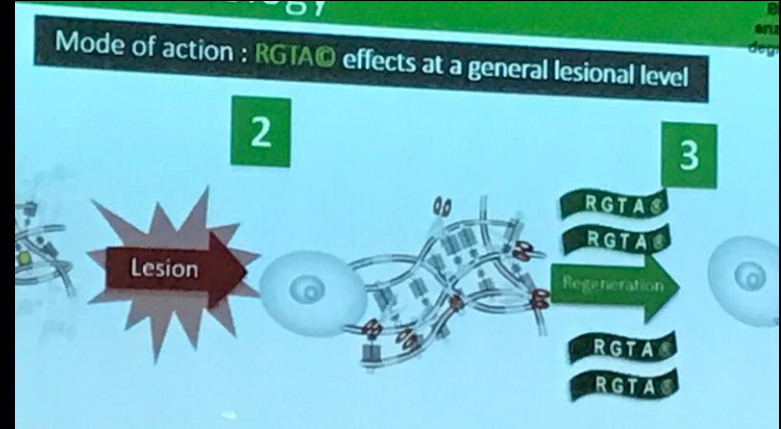
**A MULTIDISCIPLINAIR APPROACH**

# Iatrogenic lymphoedema: replacement of lacking nodes

- Congenital lymphoedema:
- First understand the pathology
- Then adapt the best technique!



MULTI DISCIPLINAIR APPROACH







GOOD CLINICAL EVALUATION  
MULTIDISCIPLINAIR APPROACH

NO LOCAL CANCER  
RECURRENCE

zone of the **fibrosis**  
, rate of **infections**

**PAIN** AND WHERE?

imaging

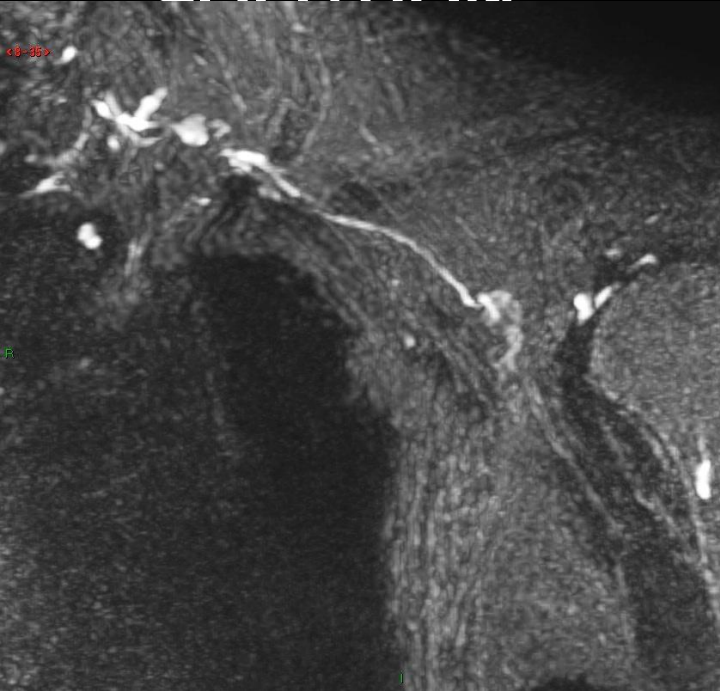


# LYMPHOMRI

(WITHOUT INJECTION OR WITH GADOLINIUM)

- TRUE MAPPING OF THE LYMPHATIC (DEEP AND SUPERFICIAL SYSTEM)
- *SHOWS THE BEST WAYS FOR THE DRAINAGES AND WHY IT DOESN'T WORK*
- *SHOWS THE MALFORMATIONS IN THE CONGENITAL DISEASES*

# BANDAGING WHEN PATHWAYS IS THE BEST SOLUTION



**poor**

# RESULTS WITH PHYSIO IF NO PATHWAYS

2  
051

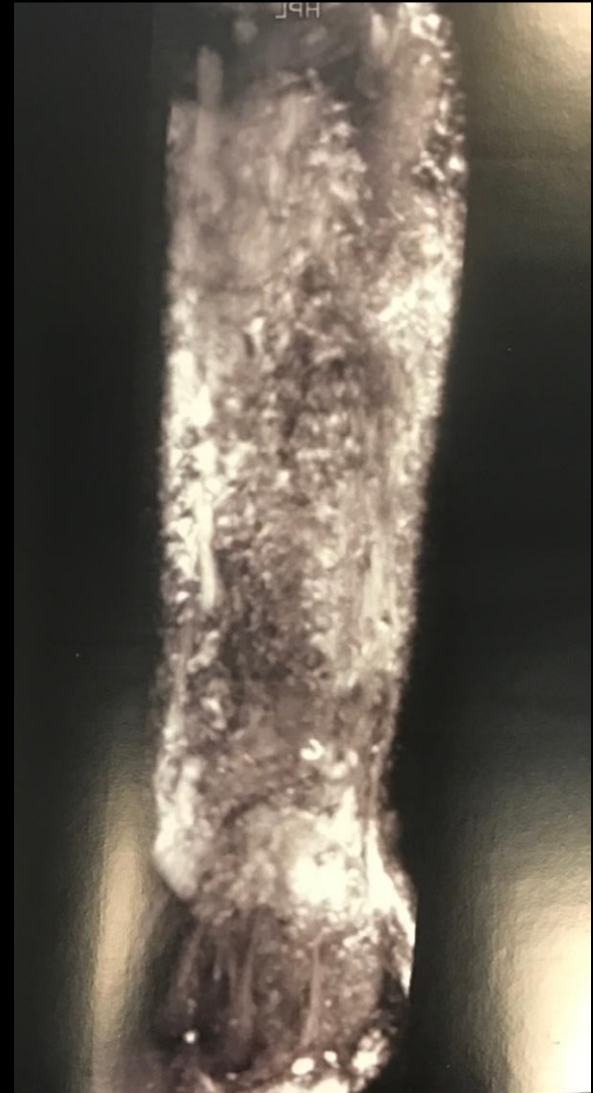
2711032923 ( 74 y, 74 y  
2711032923-4 - 3D MRCP RTr(BIL  
1395

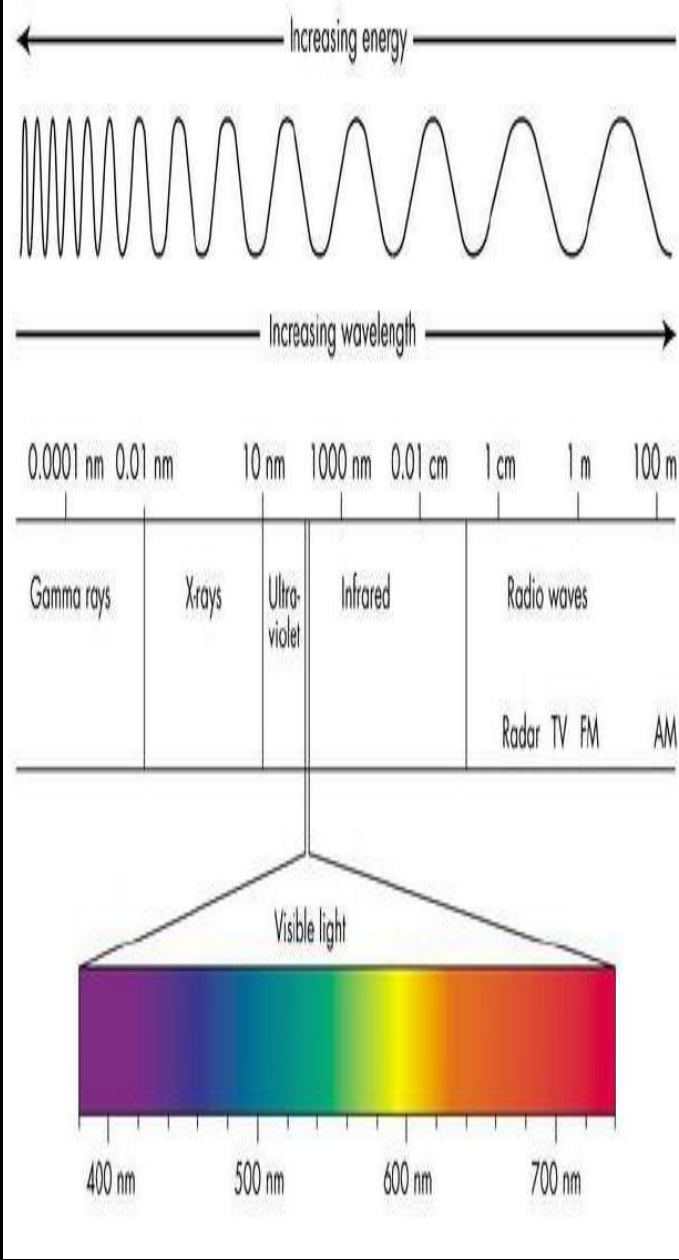


TE: 933 TR: 400  
FS: 1.  
06.09.11 11:20:3  
Made in Osiri



# Poor results if lymphatic vessels destroyed by chronic infections



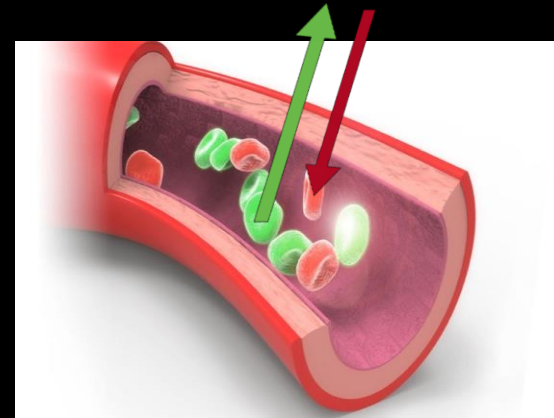


**USE PDE OR SPY  
DETECTS THE  
SUPERFICIAL  
LYMPHATIC NETWORK**

**DYNAMIC EXAMINATION**



**High power Class 3R laser to generate  
fluorescence at optimal excitation wavelength**



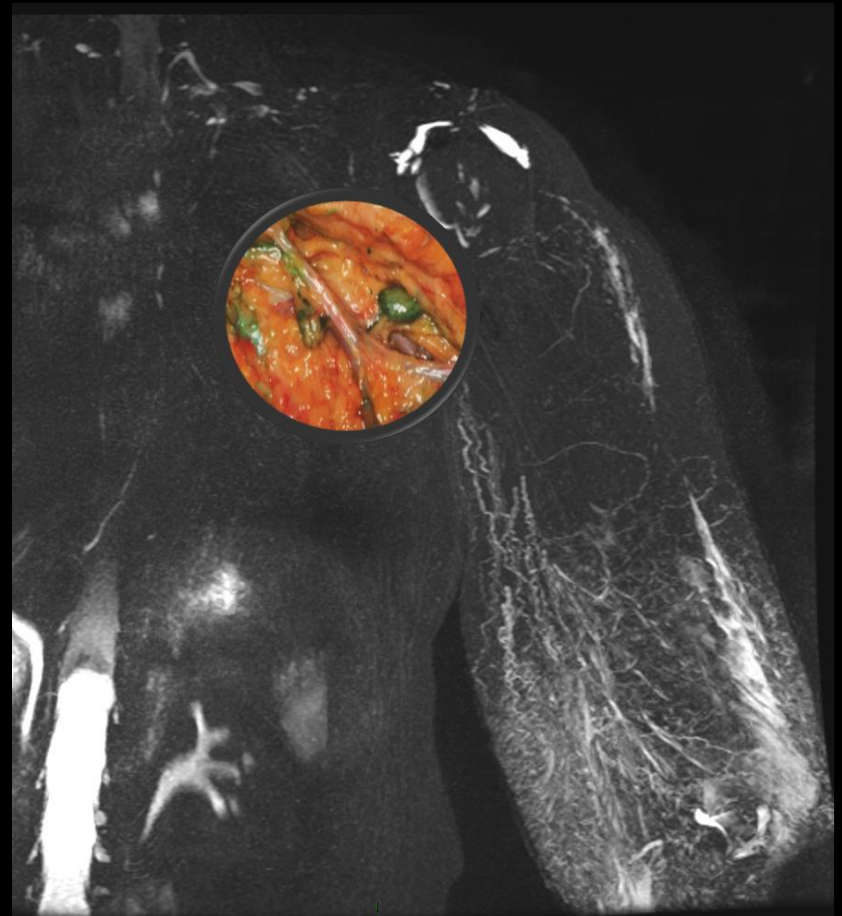
# FLUORESCENCE: SUPERFICIAL NETWORK VISIBLE

HIGH POWER CLASS 3R  
LASER TO GENERATE  
FLUORESCENCE AT  
OPTIMAL EXCITATION  
WAVELENGTH OF 805NM  
FOR ICG IN BLOOD.



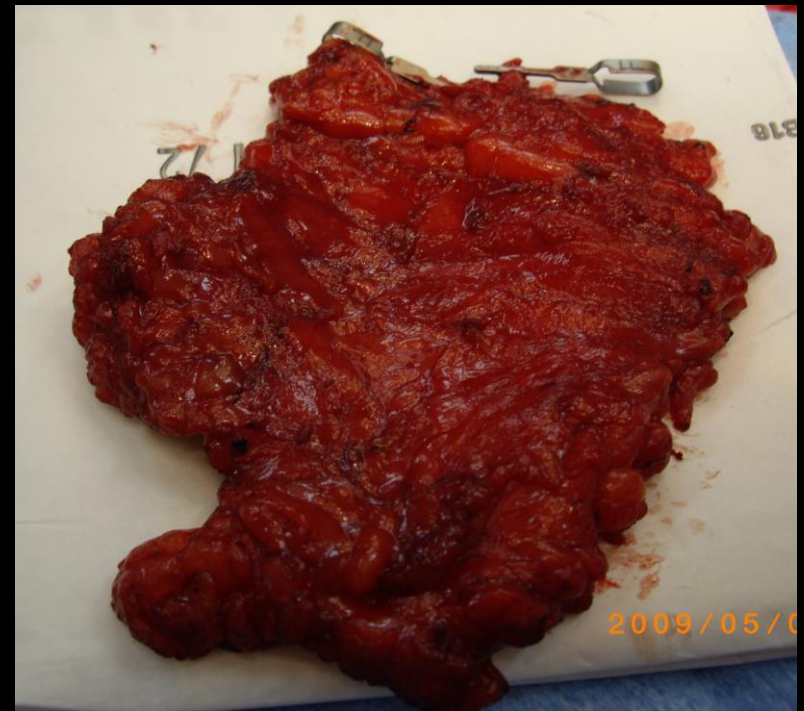


# RECONSTRUCTION OF THE AXILLAR REGION SEEMS MORE LOGIC BY LYMPHNODE FLAP(LIVING NODES)

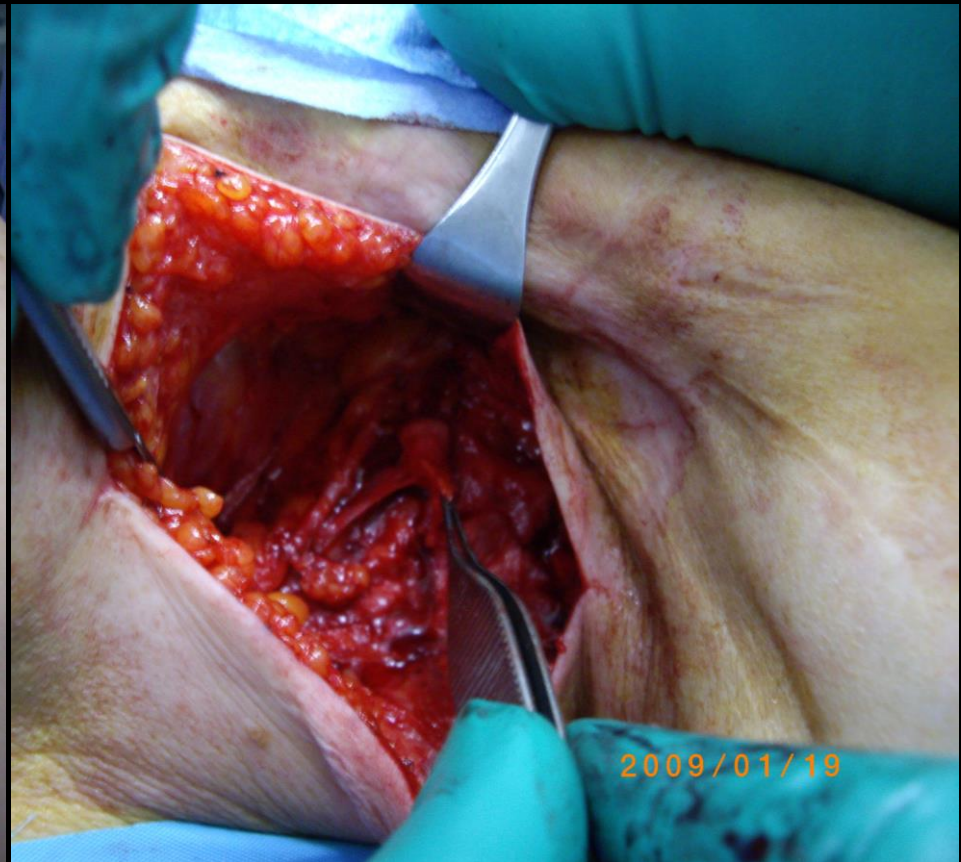


# DISSECTION OF THE FIBROTIC TISSUE AND THEN PUT A GOOD TISSUE TO BRIDGE THE DAMMAGED AREA

*there impossible to open this fibrosis (like cement ), with the hands!!!*



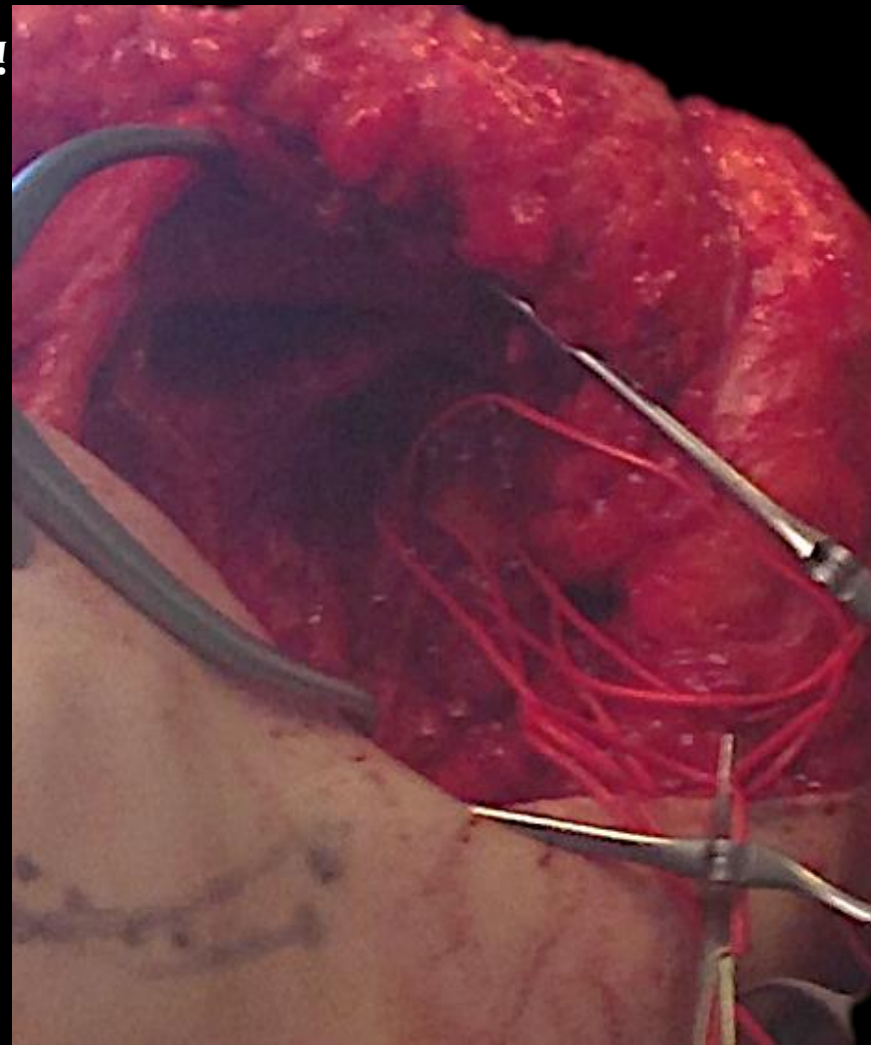
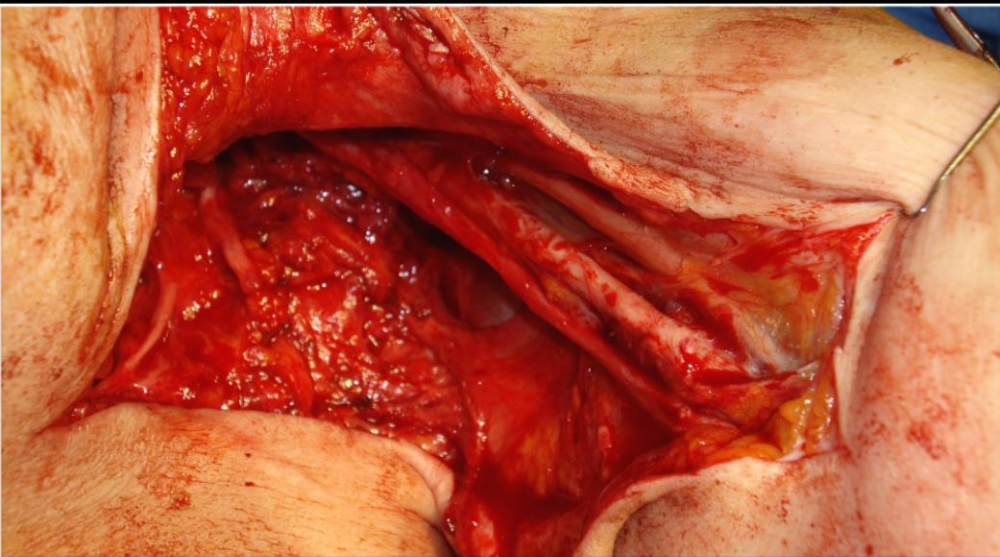
# Operative technique: removing the fibrosis around the axillar vein





THE « WHOLE IS BIGGER AS YOU THINK!

*Different situations*



# CONCEPT

- TRANSPLANTATION OF AUTOLOGEOUS LYMPHNODES TO TREAT LYPHEDEMA WITH ANASTOMOSIS OF THE ARTERIA AND VEIN TO KEEP THE TRANSPLANT VASCULARISED

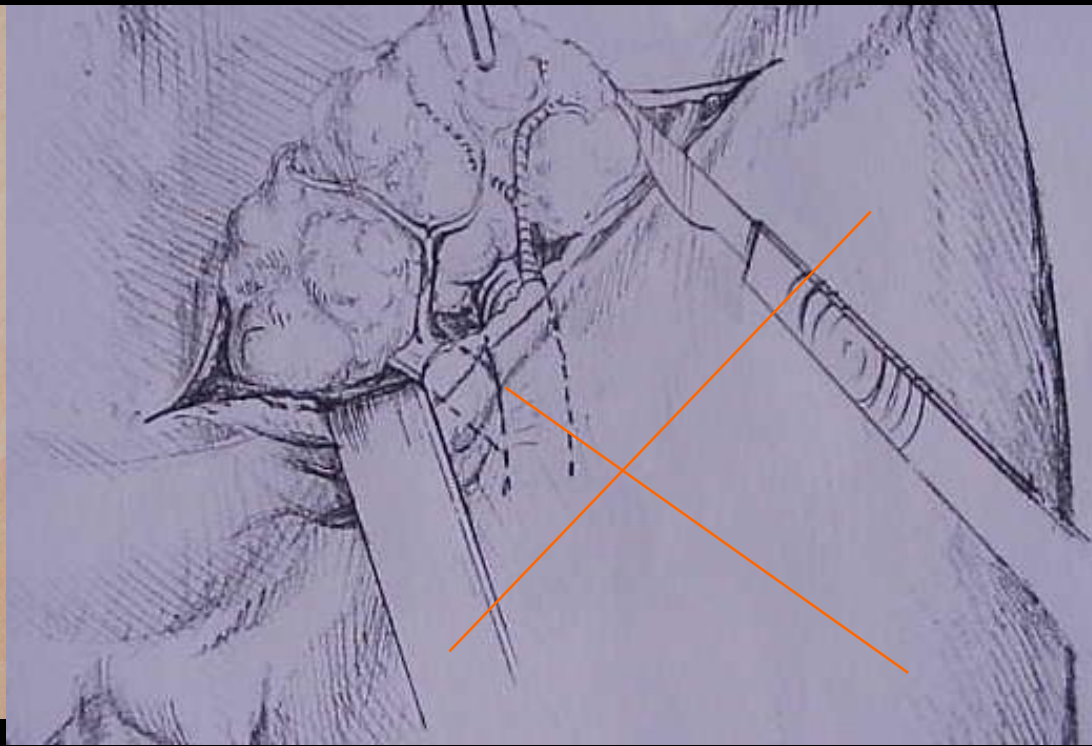




## **2. ANATOMY STUDIES**

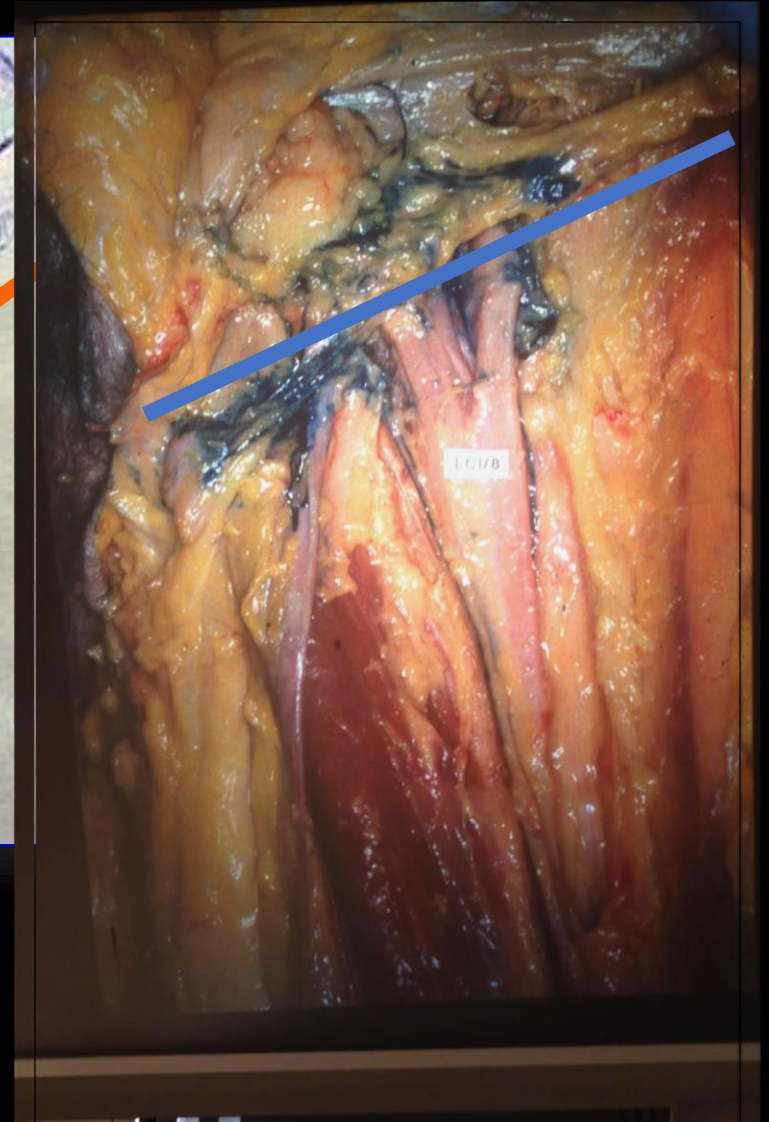
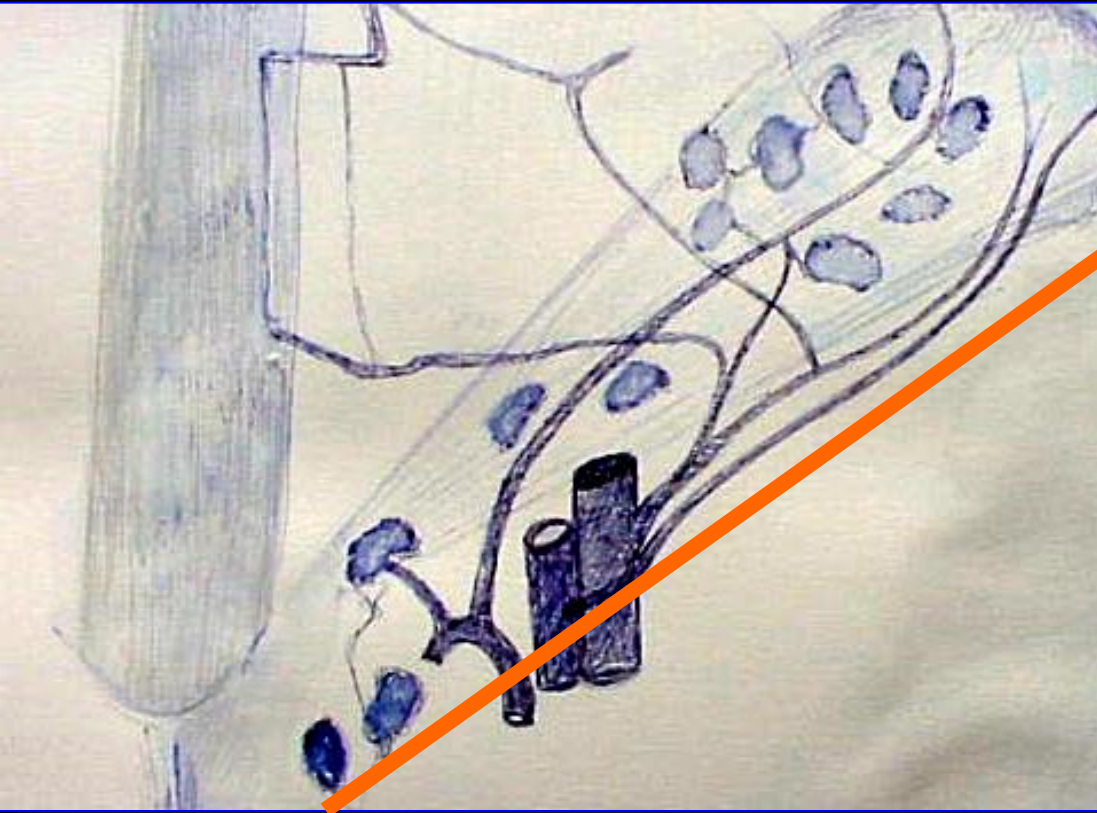
**TO FIND SOME NODES WITH THEIR OWN VESSELS THAT WE CAN REMOVE WITHOUT CREATING LYMPHOEDEMA OF THE DONOR SITE**

### **1. UPPER INGUINAL REGION**

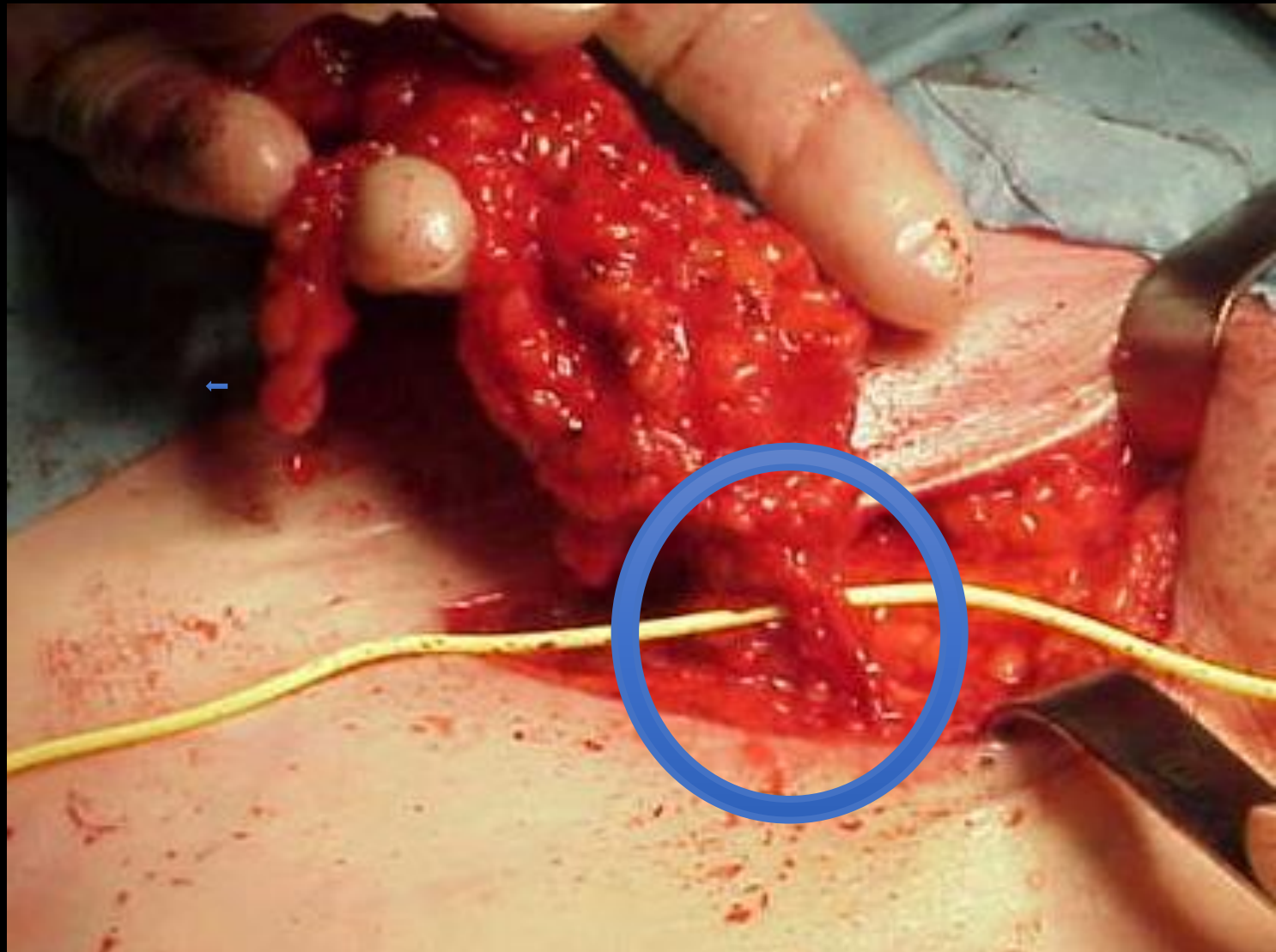




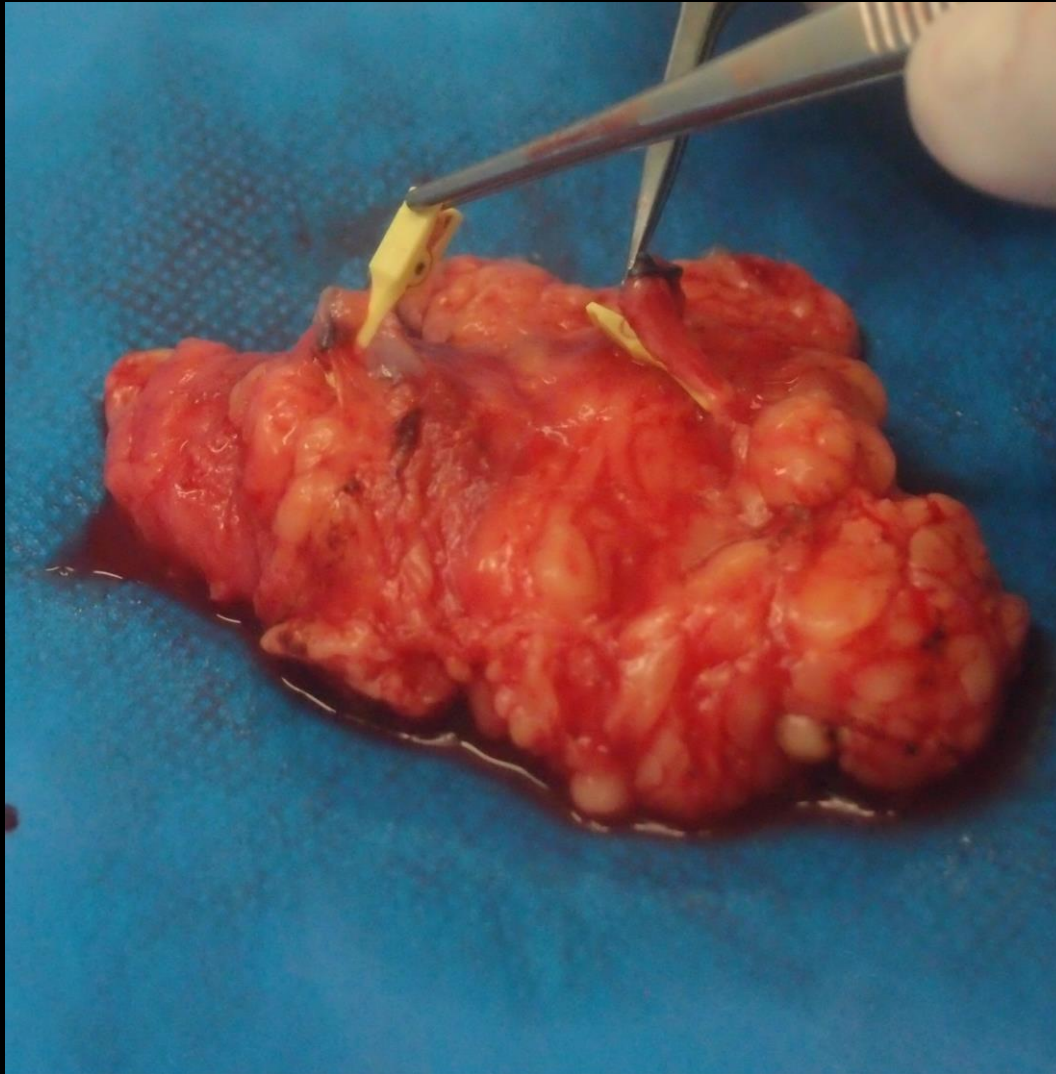
**INF LIMIT=EMERGENCE OF THE CIRCONFLEX  
SUP.ILIAC VESSELS.DO NOT GO LOWER!!!**



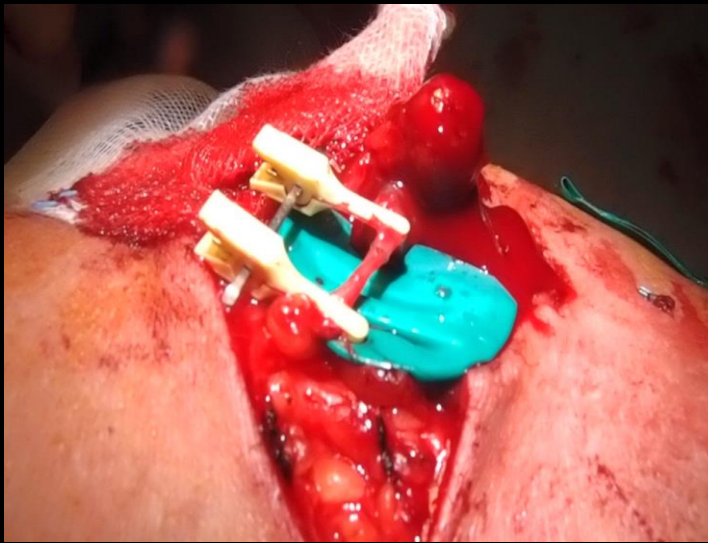
**THEN , GO TO THE APONEVROSIS AND LIFT THE FLAP FROM UPPER AND EXTERNAL PART TO THE EMERGEANCE OF THE CIRCONFLEX ILIAC VESSELS**





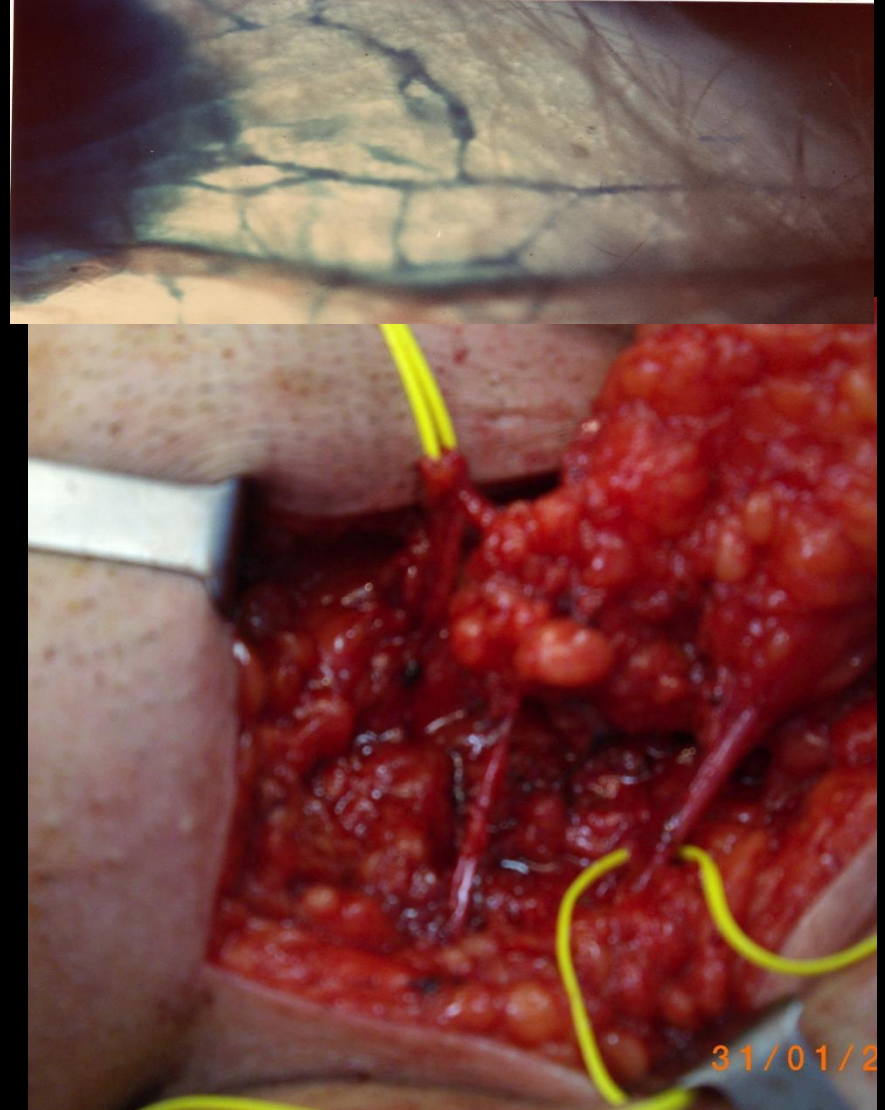
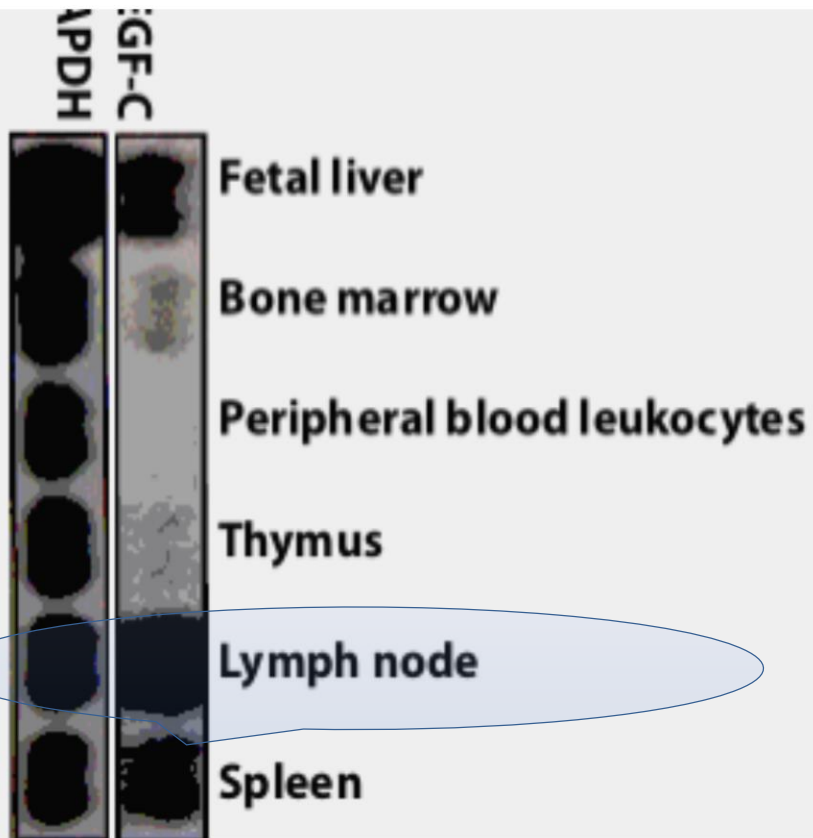


# TRANSPLANTED NODES ARE DIRECTLY VASCULARISED



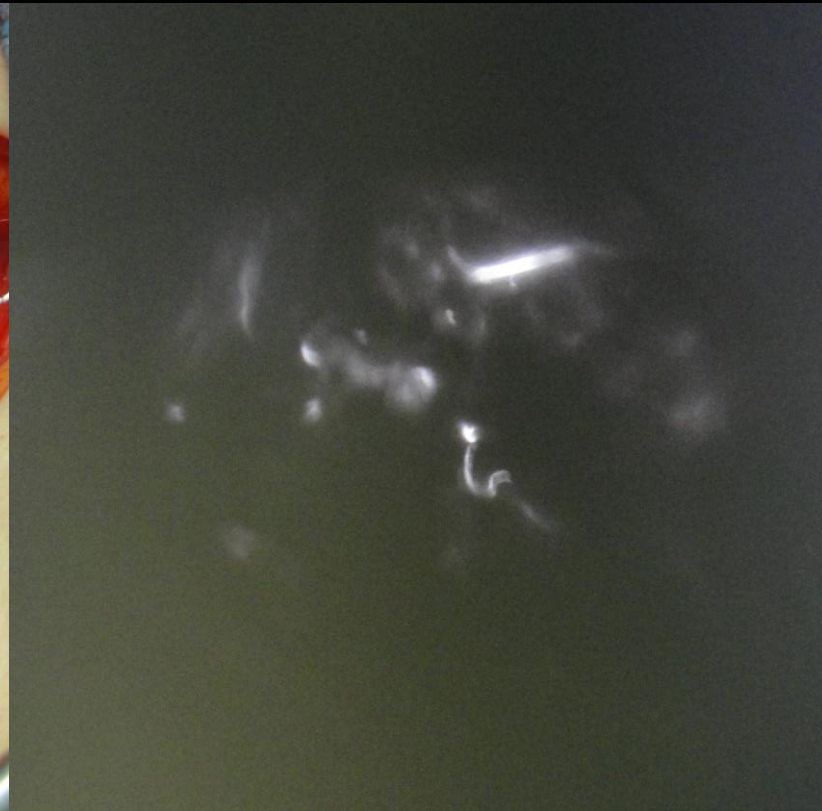


# REGENERATION OF LYMPHATIC VESSELS



VEGF IN NODES  
CYTOKINES IN THE FAT

**ANASTOMOSIS ARE SEEN AND THE NODES  
ARE WELL VASCULARISED**

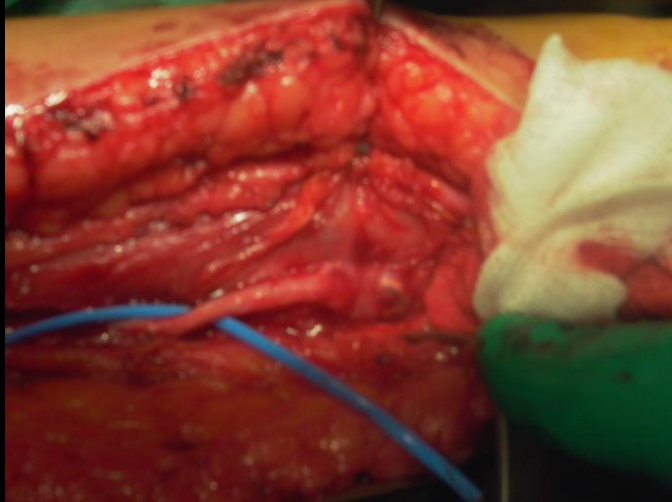
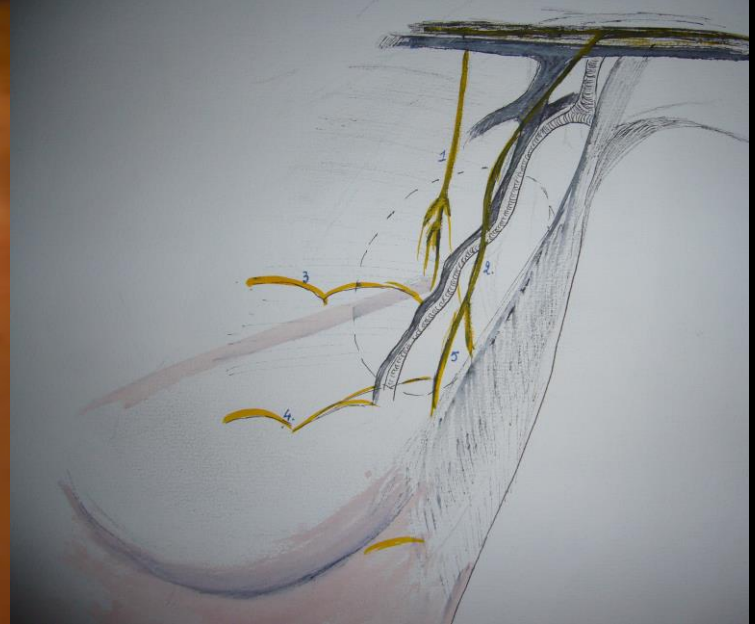
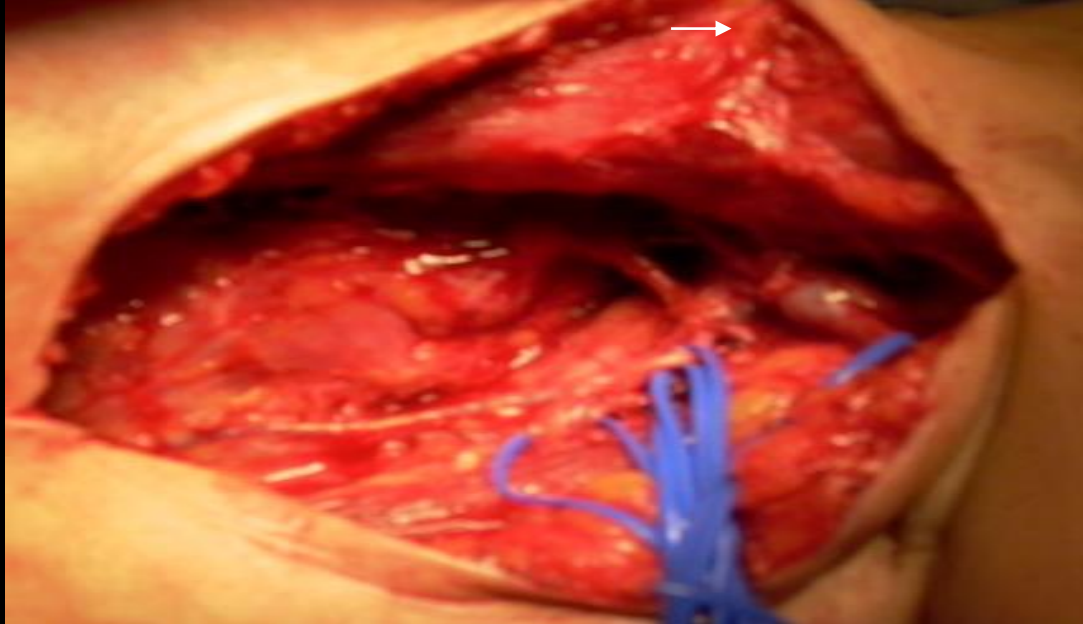


# PAIN, PALSY, LYMPHOEDEMA

- 2 DIFFERENT SITUATIONS:
- PAIN AFTER ADENECTOMY
- PLEXOPATHIES



# NEVROMA RELEASED AND COVERED WITH FLAP

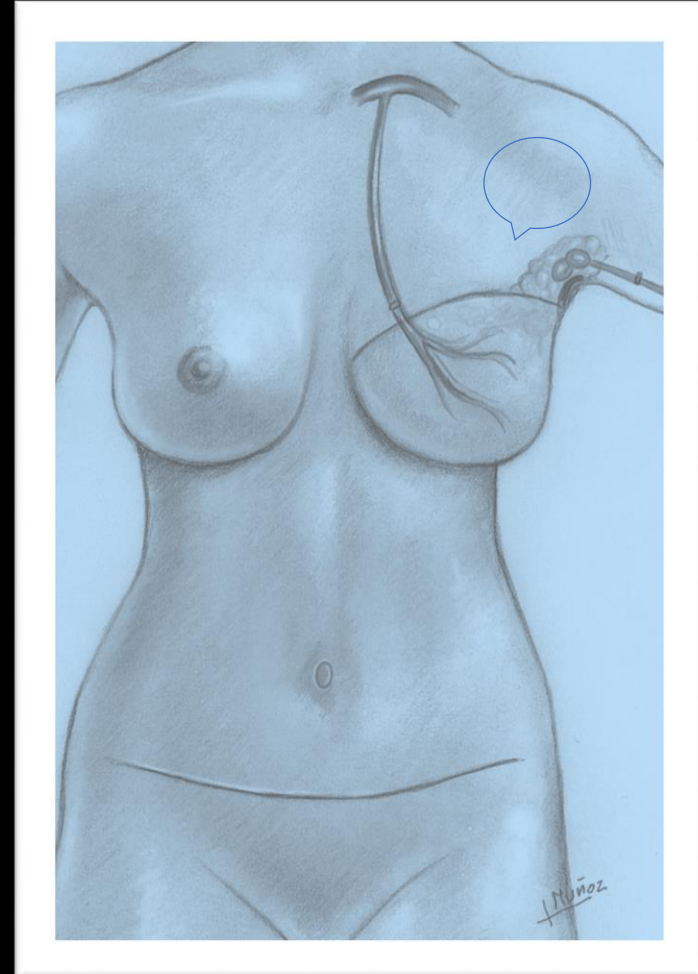
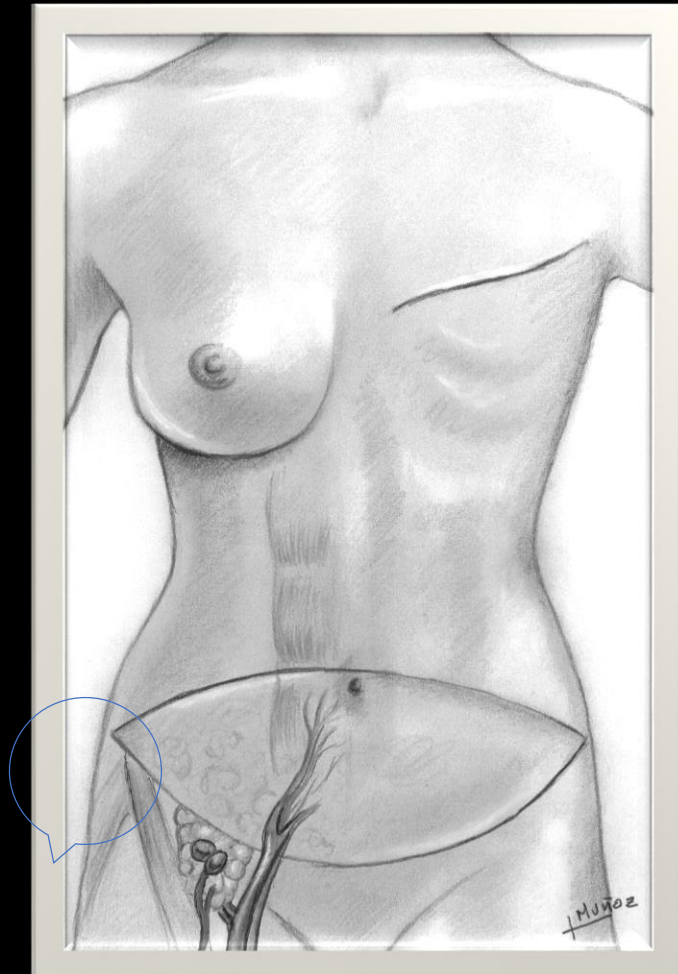




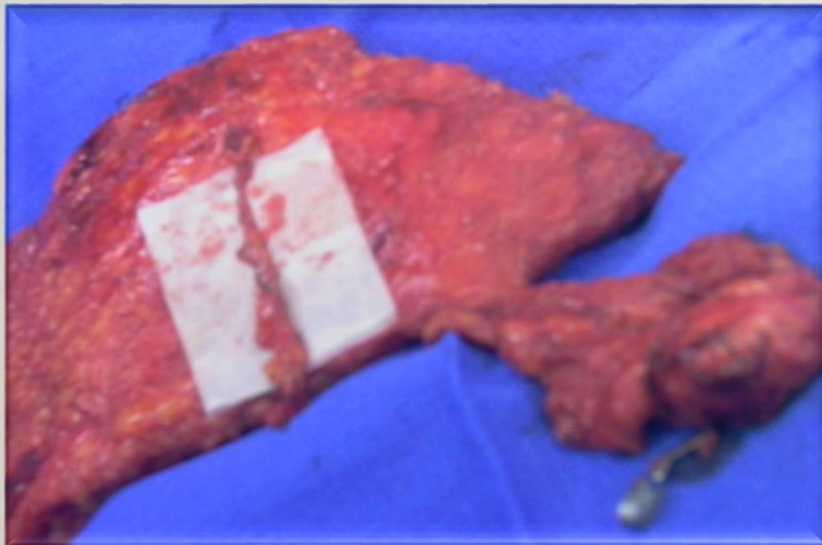
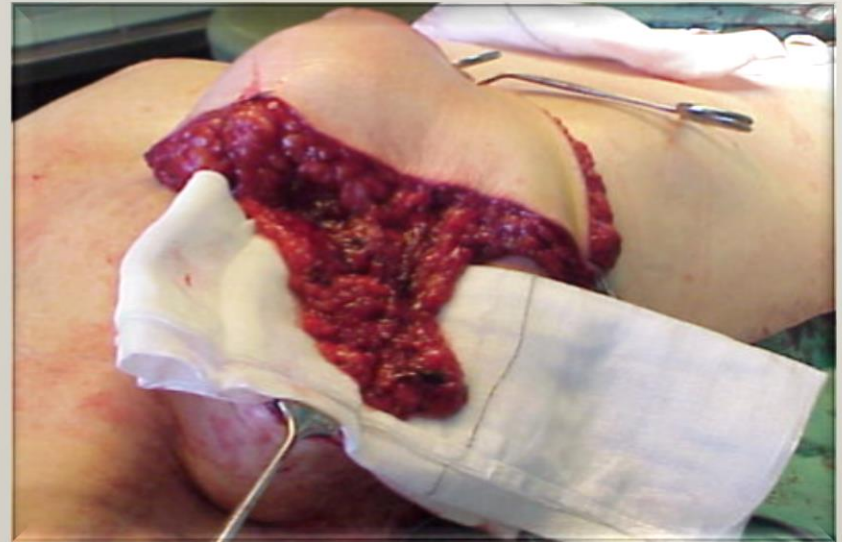
## MASTECTOMY AND LYMPHOEDEMA OPTIONS: DIEP AND NODES



# DIEP :NODES INCLUDED IN THE ABDOMINAL FLAP



# DIEP INCLUDING LYMPHNODES FLAP





**PREOP AND**



**6 M AFTER SURGERY**



Pre and.

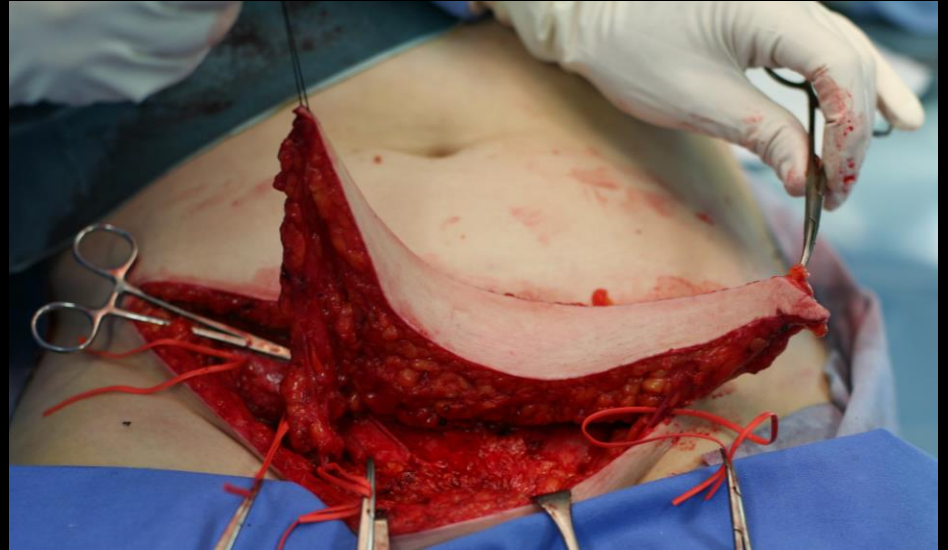


post op



# « ELEGANCE »

## FILLING THE BREAST PLUS TREATMENT OF LYMPHOEDEMA





**PREOP EXTREM FIBROTIC HAND  
AND 3 YEARS LATER**

**AFTER 1 YEAR,NO MORE PHYSICAL  
TREATMENT**

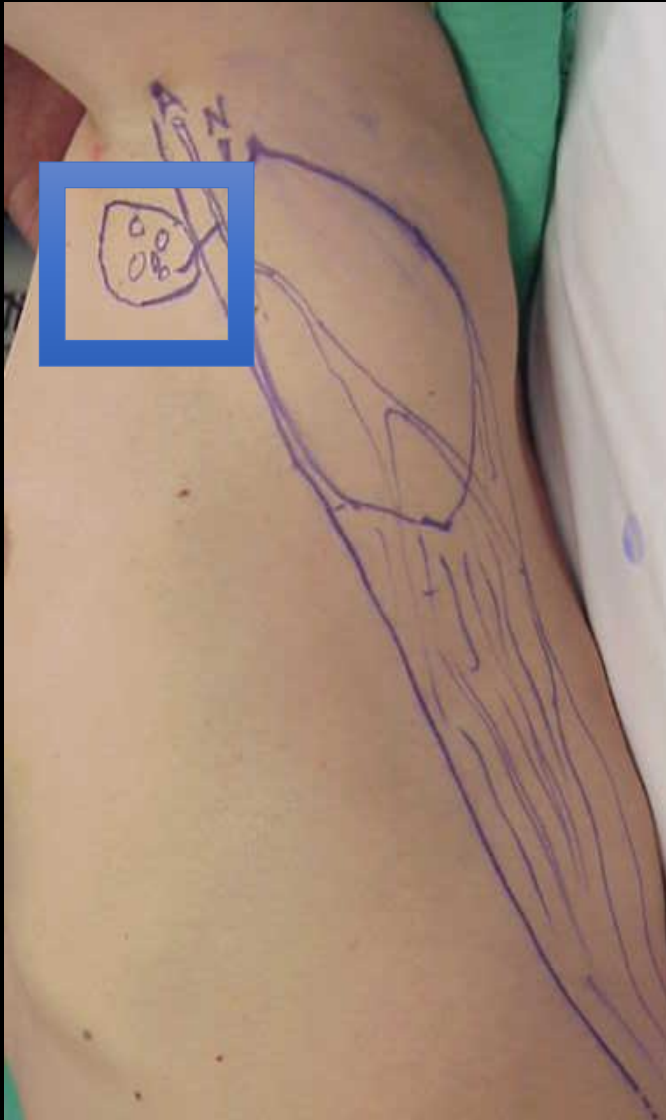


**Fibrosis++++**

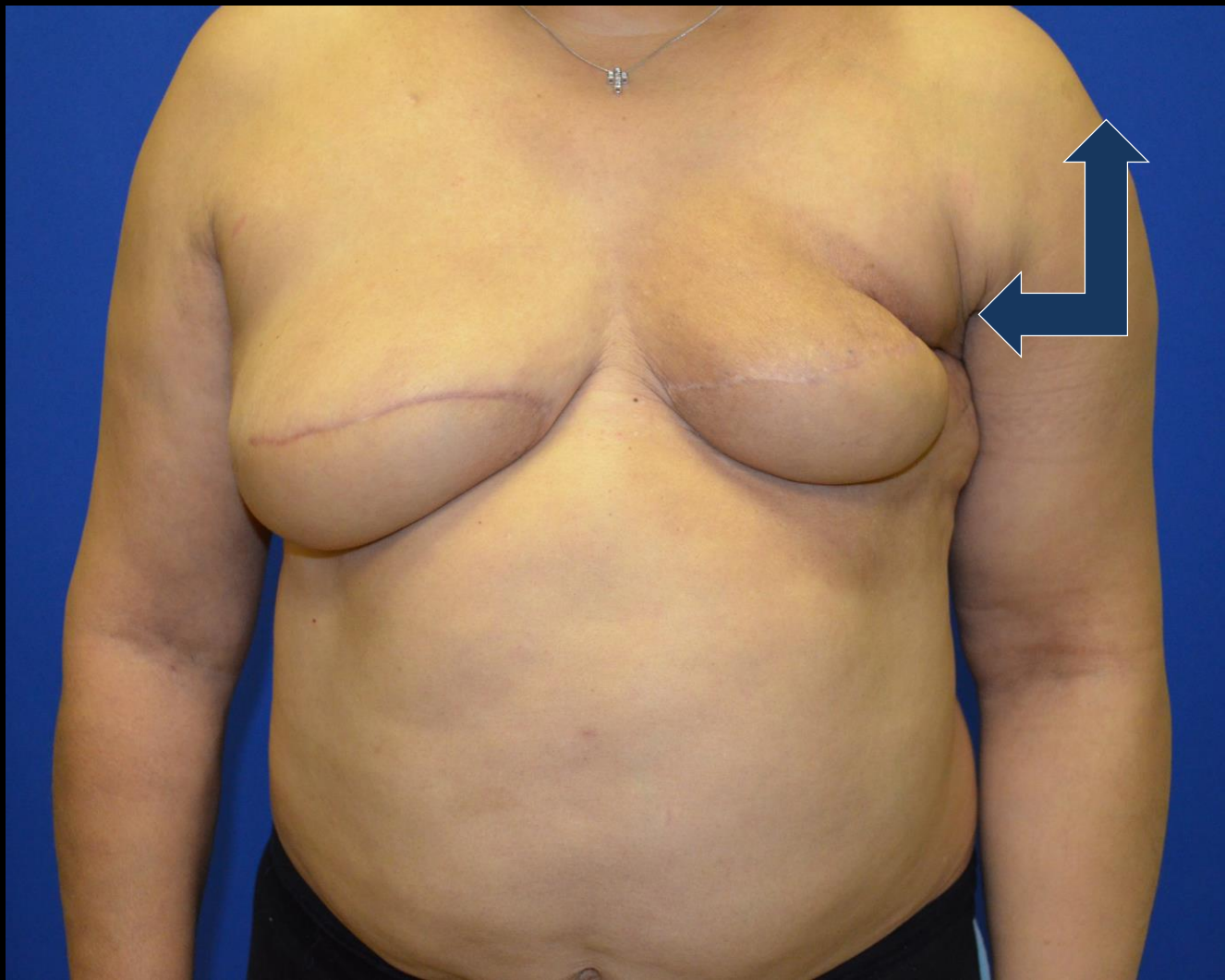


# LYMPHNODES CAN BE ADDED TO ANY KIND OF FLAP FOR IMMEDIATE RECONSTRUCTION:

## 1.DORSALIS FLAP

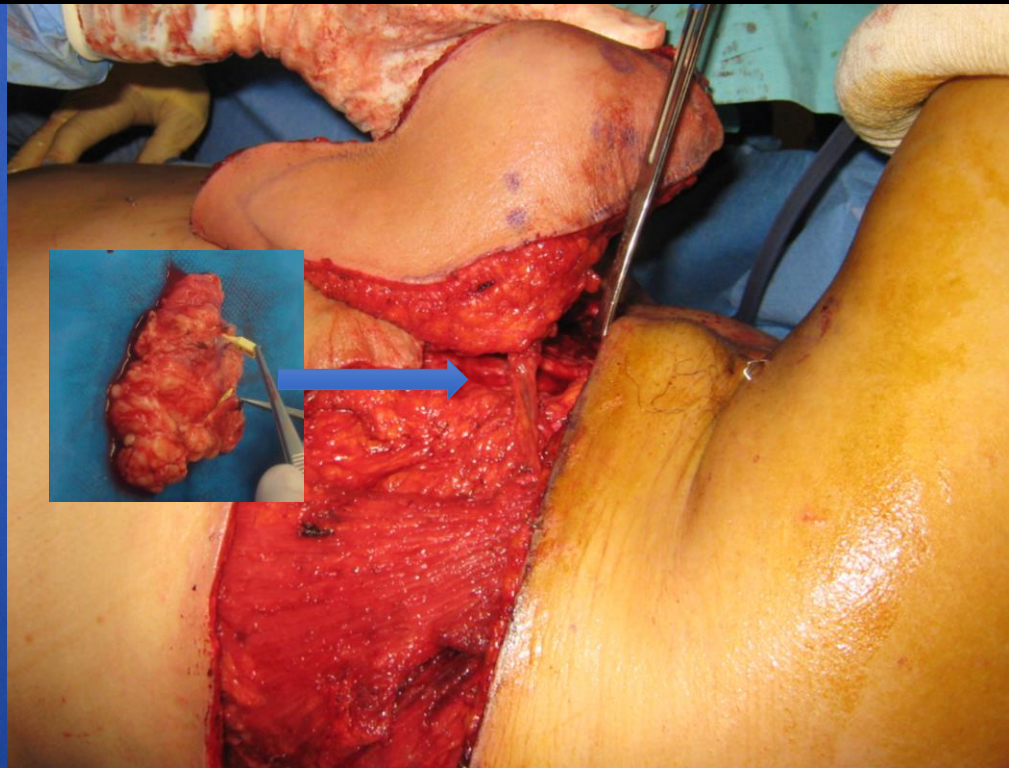
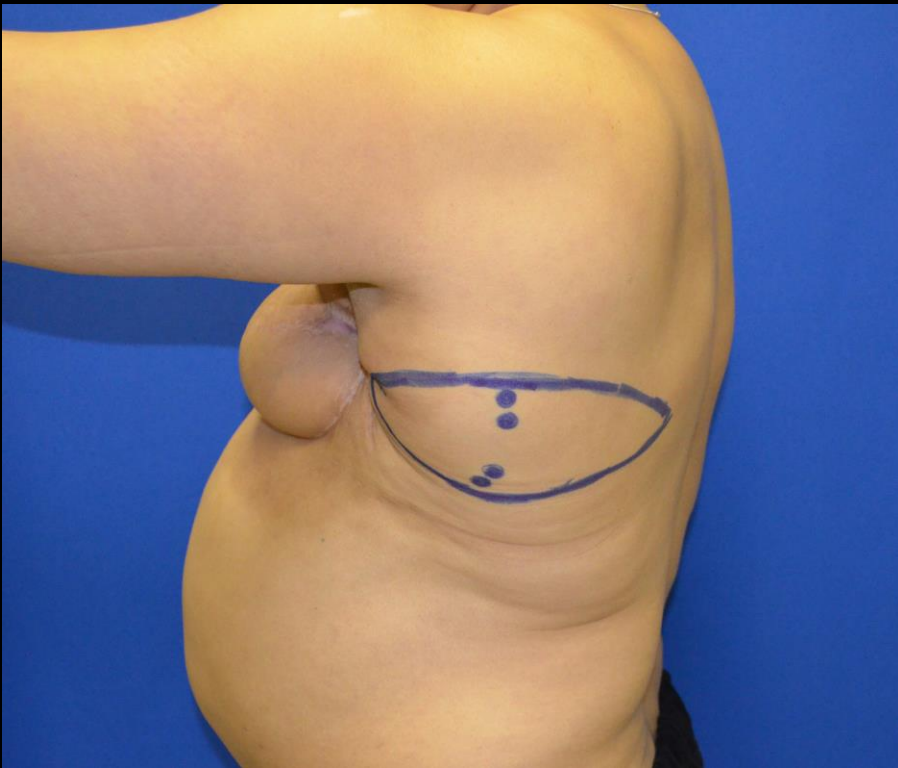


## AFTER BILAT DIEP, HOW TO TREAT LYPHOEDEMA AND CHRONIC INFECTION?





# TDAP WITH ADDED WITH FREE LYMPHNODES FLAP



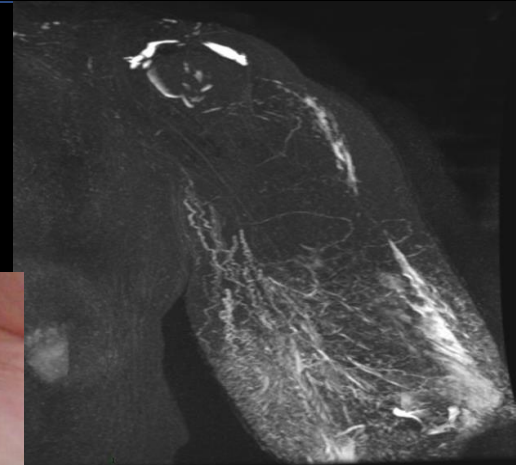




# ***INDICATIONS OF UPPER INGUINAL LYMPHNODES FLAP***

- **LYMPHOMRI : BLOCAGE**

- **FIBROTIC ZONES**



- **PAIN, PALSY**



- **CHRONIC INFECTIONS**

**BREAST RECONSTRUCTION**





# RESULTS

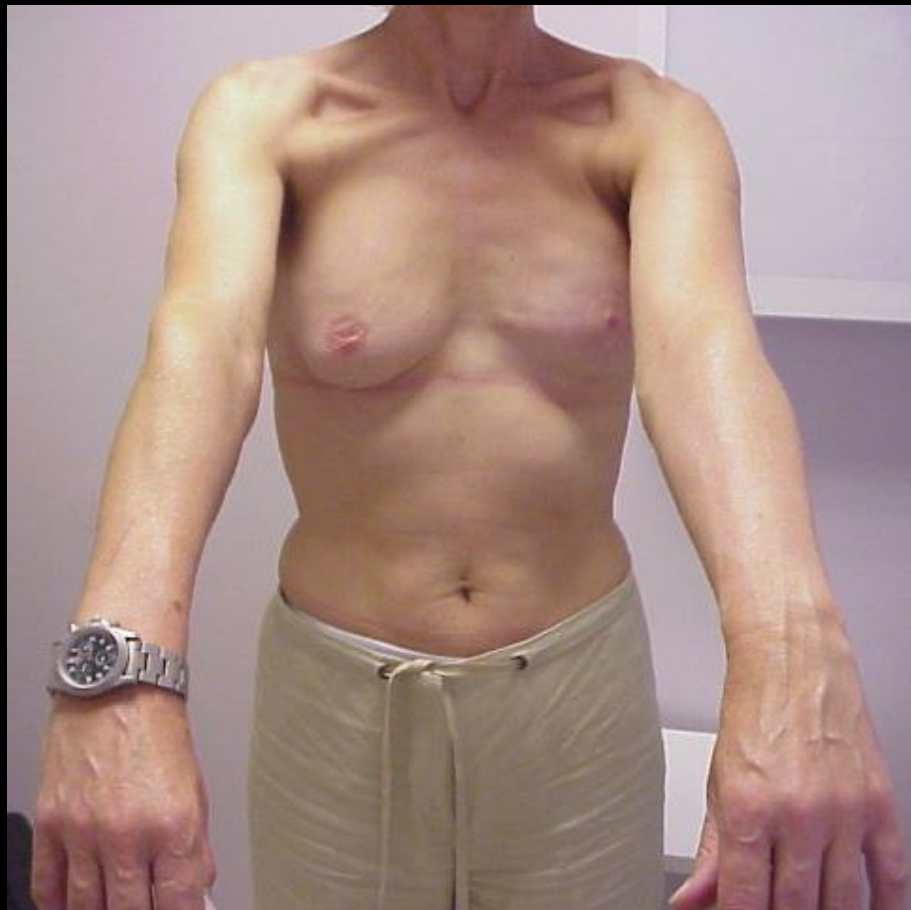
## STAGES 1, 2

- ONLY ALNT ARE ENOUGH

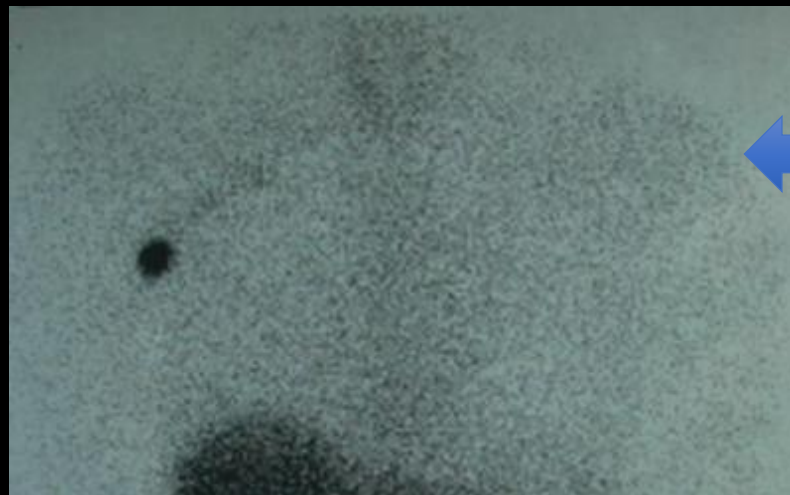
Pre and 1 y post ALNT normal activity, no sleeves, no physio



# PREOP AND 10Y AFTER ALNT WITHOUT ANY TREATMENT



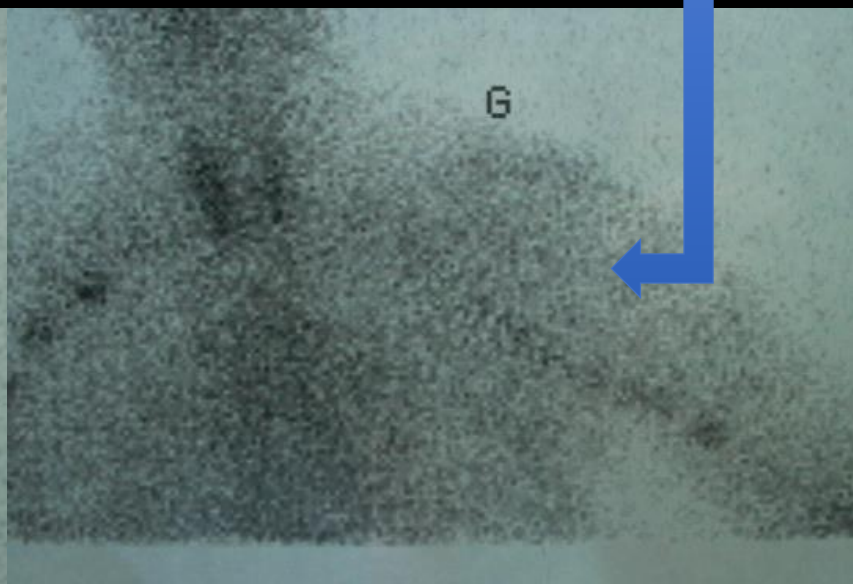
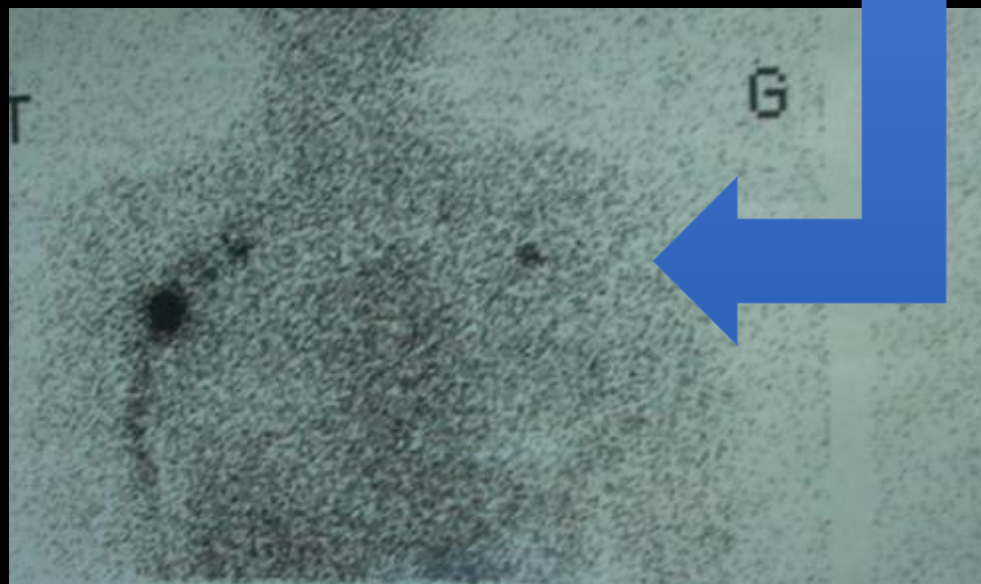




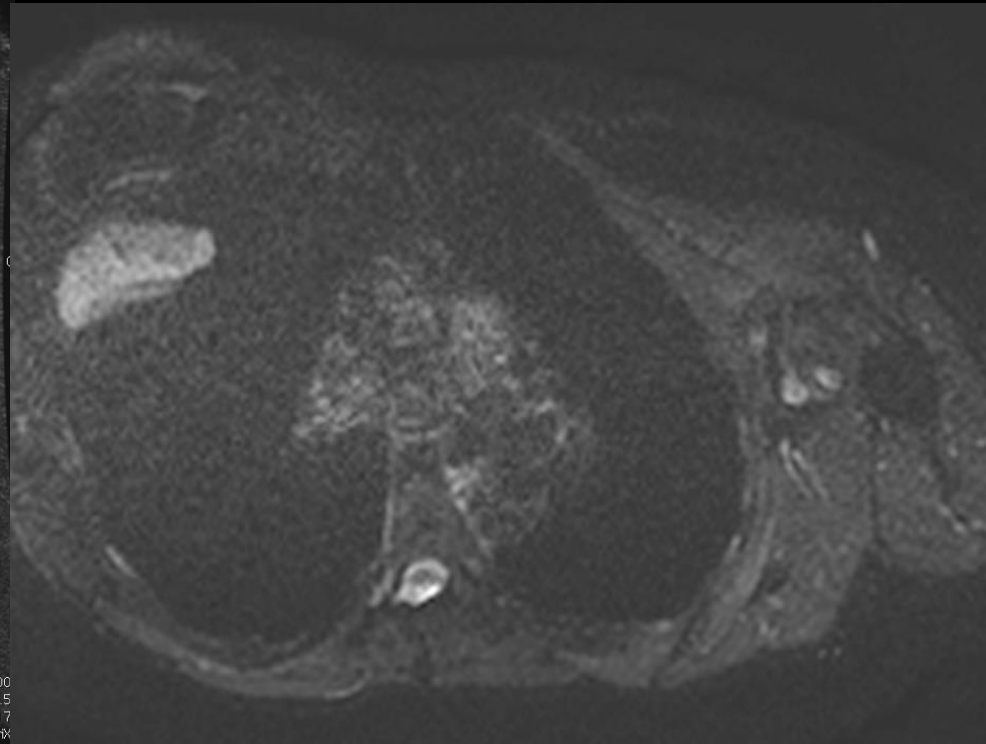
PREOP

1 YEAR P.OP

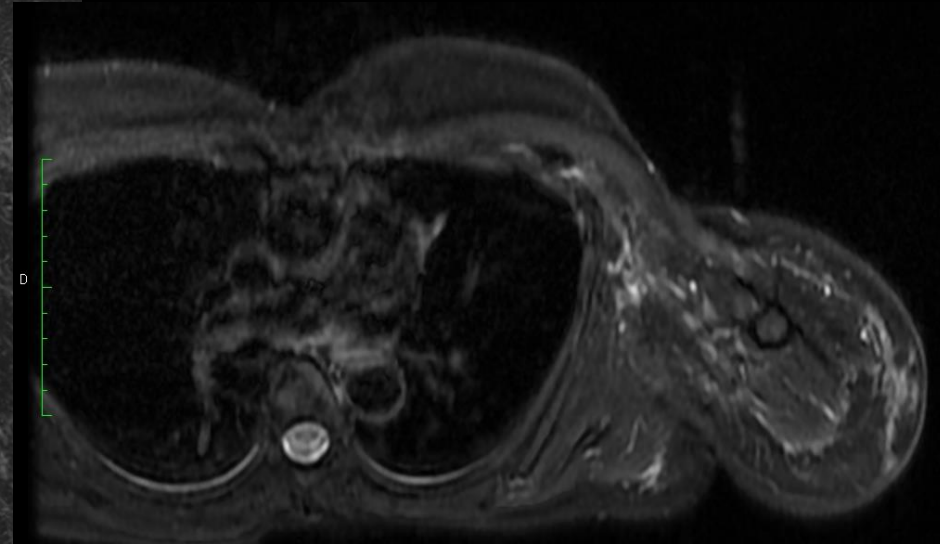
5 ANS P.OP



# 8 YEARS AFTER ALNT: NORMAL SITUATION



# 1 YEAR P.OP VESSELS AND NODES VISIBLE





PRE OP



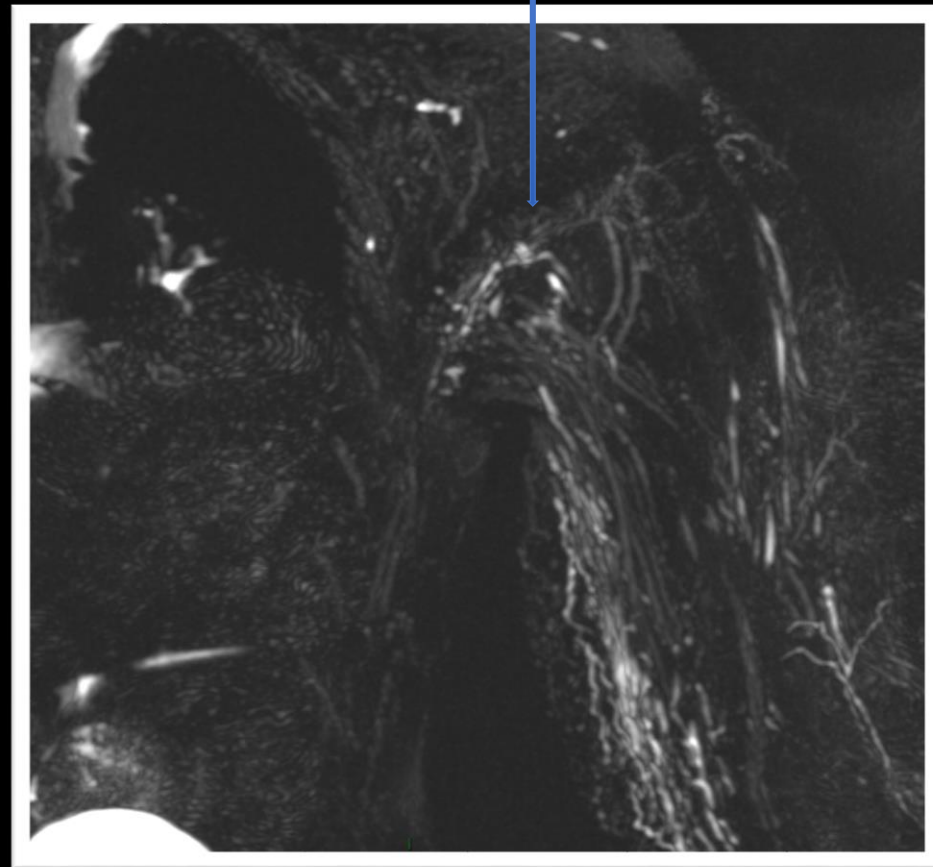
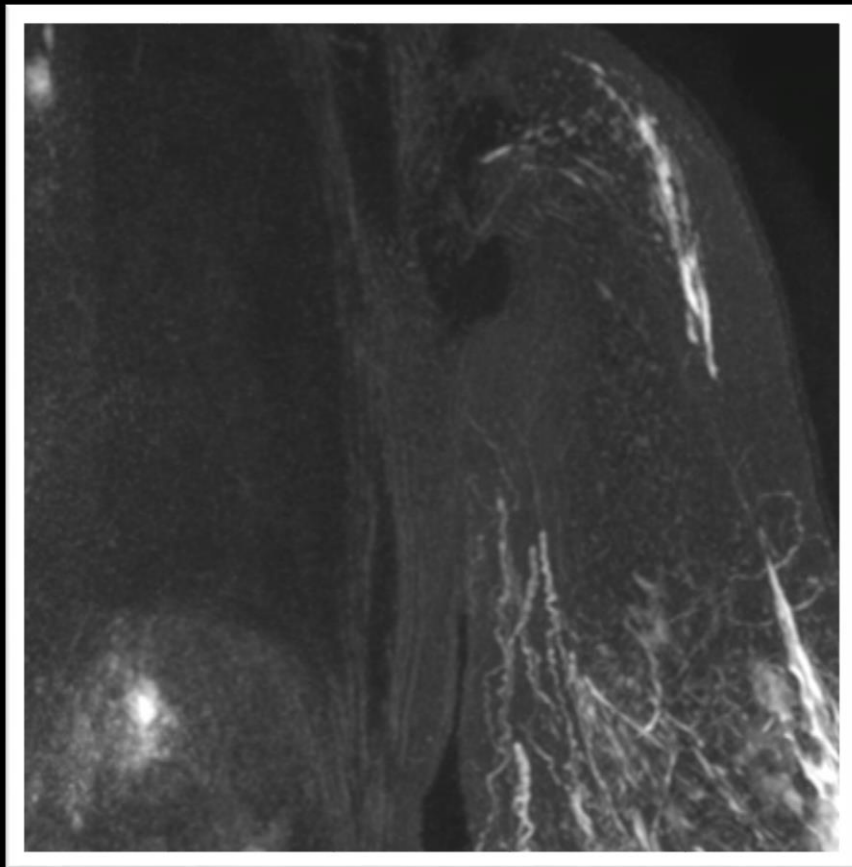
2 Y P.O.



**PREOP.**

**AND**

**1 YEAR AFTER**



- EXTREME FIBROTIC LYMPHOEDEMA,
- 1 YEAR P.OP





# RESULTS AFTER 5 YEARS

- 40% NORMALISATION
- 98% IMPROVED
- 2% INCHANGED

# STAGE 3, 4

- LOCAL RESECTION OF BAD SKIN
- AND
- LYMPHNODE TRANSFER AFTER 1 MONTH

# PRE AND 1 Y P.OP, SIEA





# ELEPHANTIASIS

## PRE OP

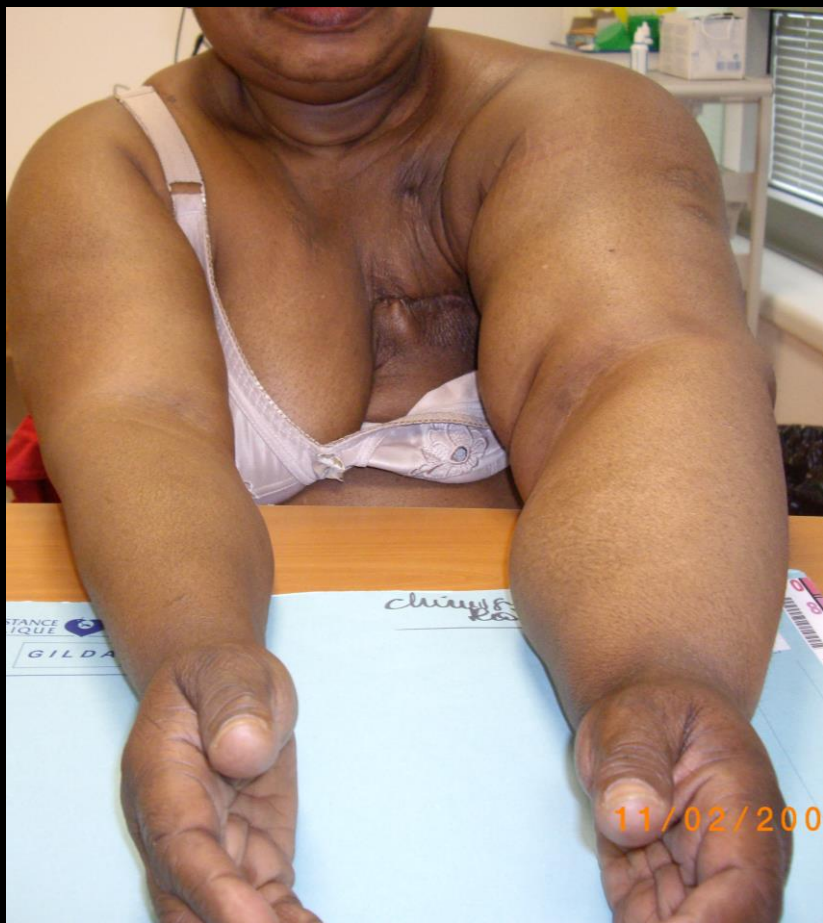
1 Y. P.O.

4 Y. P.O.





# 2 YEARS AFTER ALNT

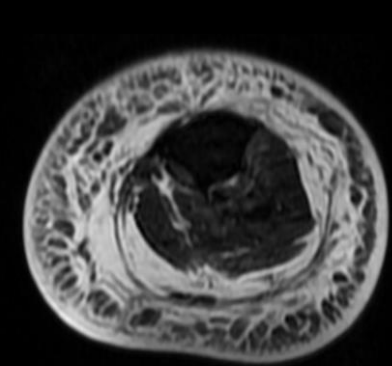
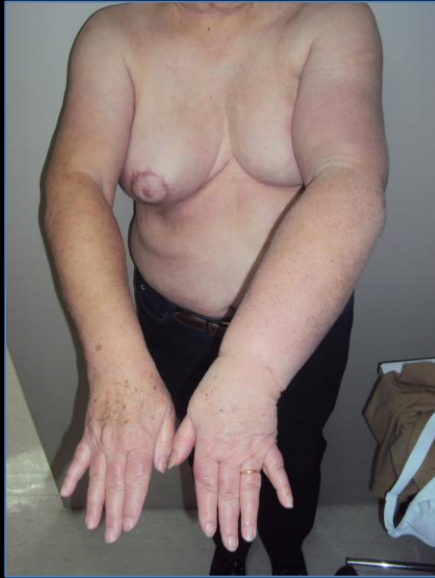


# PRE AND 2 YEARS AFTER SURGERY: LIPOSCULPTURE HAS TO BE DONE NOW





# ADDITIONAL EXTERNAL MINI LIPOSCULPTURE 1 YEAR AFTER LYMPH NODE TRANSPLANTATION, USING PEROP SPY



Liposculpture helped by visualization of the vessels with the laser and fluoresceine to avoid to destroy them



**Manual drainages , bandaging.**

**3X/week for 3 months post op.,no sleeves after ALNT**

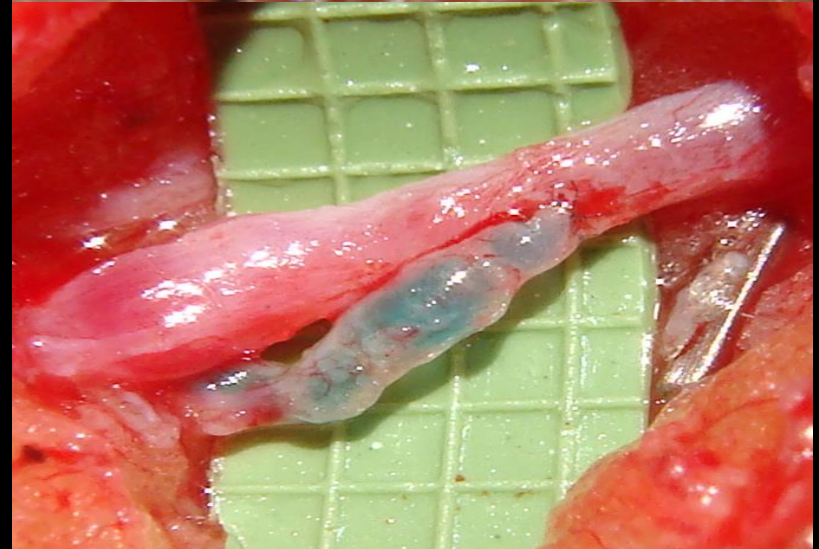
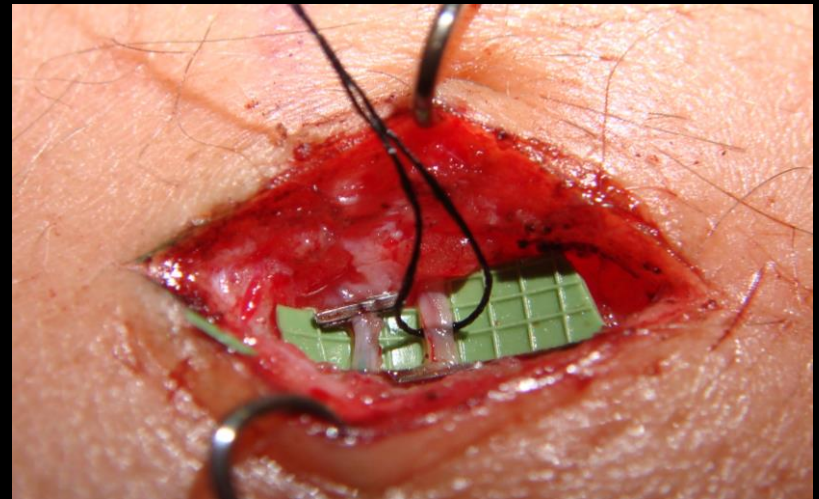
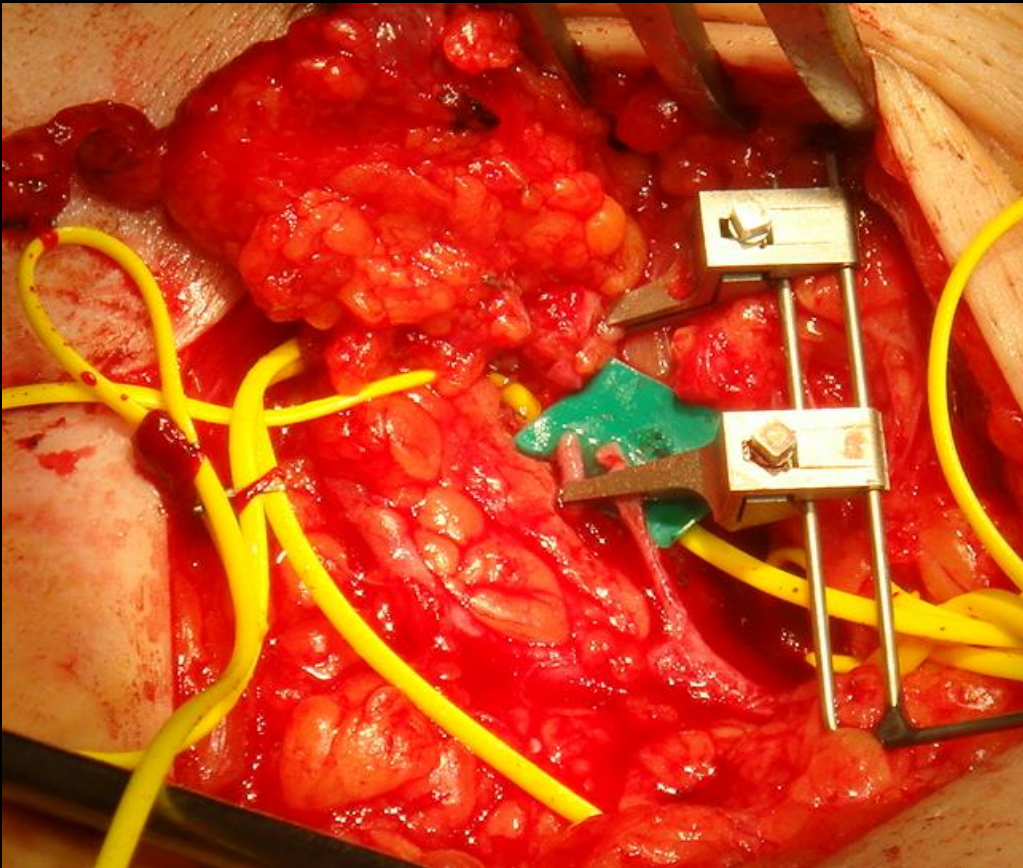
Auto-bandage





# COMBINATION OF LYMPHNODES TRANSPLANTATION AND DISTAL LV ANASTOMOSIS

- ONLY IF NOT FIBROTIC.
- ONLY LOCAL EFFECTS



EVEN IF 25 YEARS OF MASTECTOMY, 20Y OF  
LYMPHOEDEMA!  
8MONTHS POST ENLARGED DIEP





# SAME RESULTS WITH ENLARGED ALNT COMBINED WITH DIEP

10Y POST OP

8Y P.OP

10Y P.OP





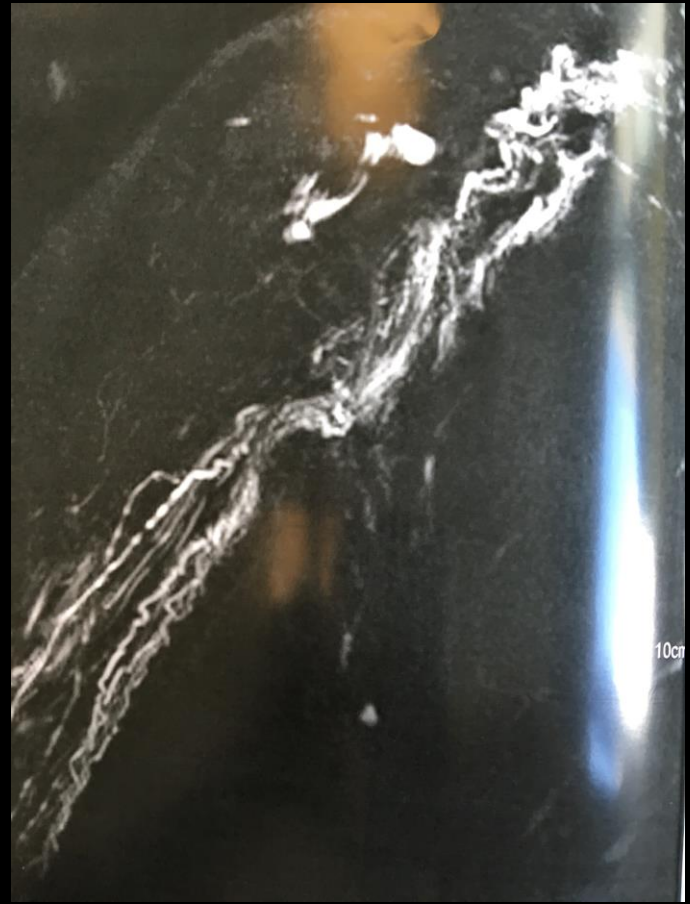
# IATROGENIC ON CONGENITAL GROUND?

- Hypoplastic cases

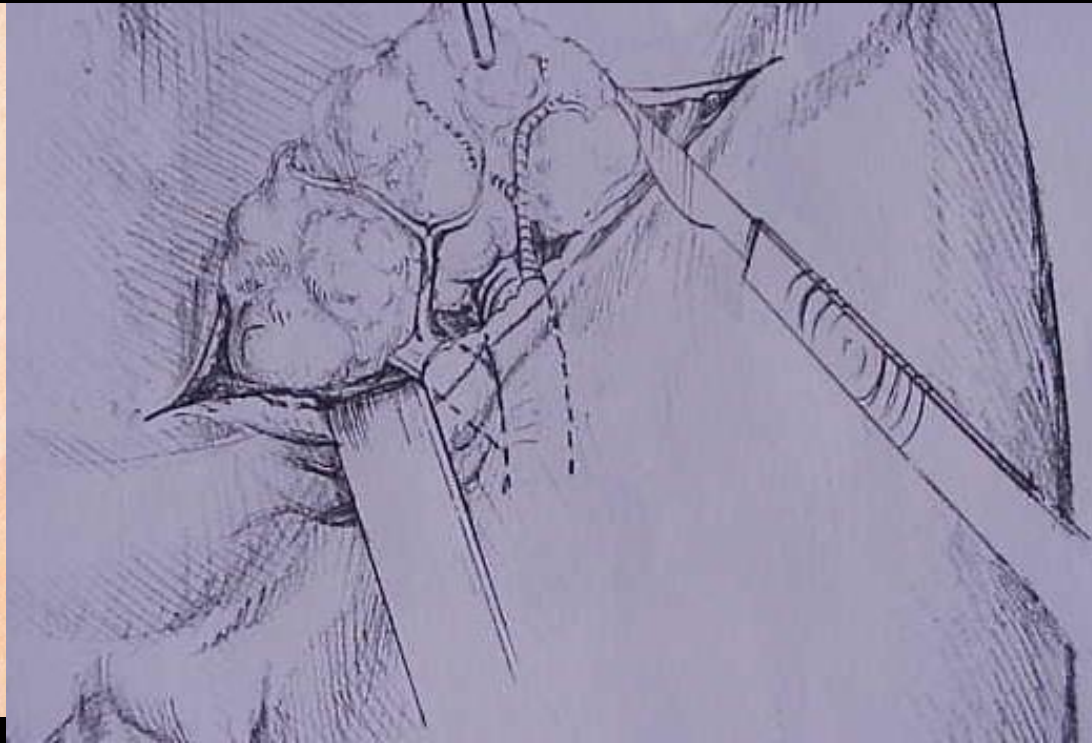


# CONGENITAL (?) UPPER ARM (AFTER FALL!!!)

- AFTER 1 TRAUMA, PERHAPS WEAKNESS OF THE LYMPHATIC SYSTEM....



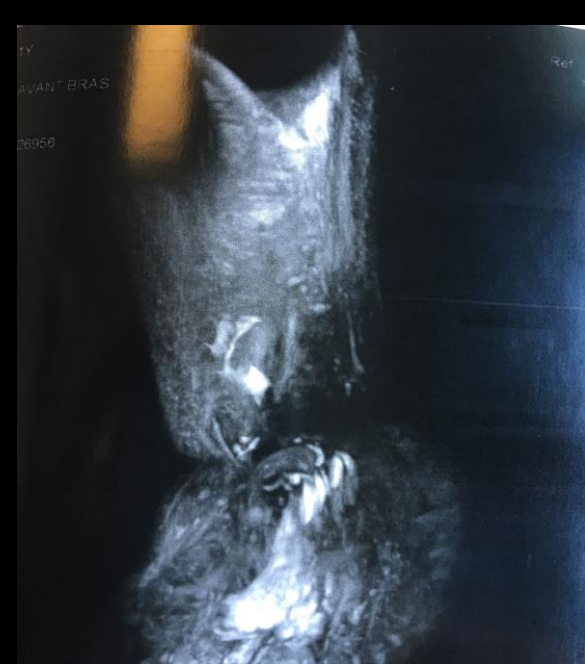
**OBLIQUE INCISION 1,5CM ABOVE THE INGUINAL  
CREASE, TILL INGUINAL CREST**





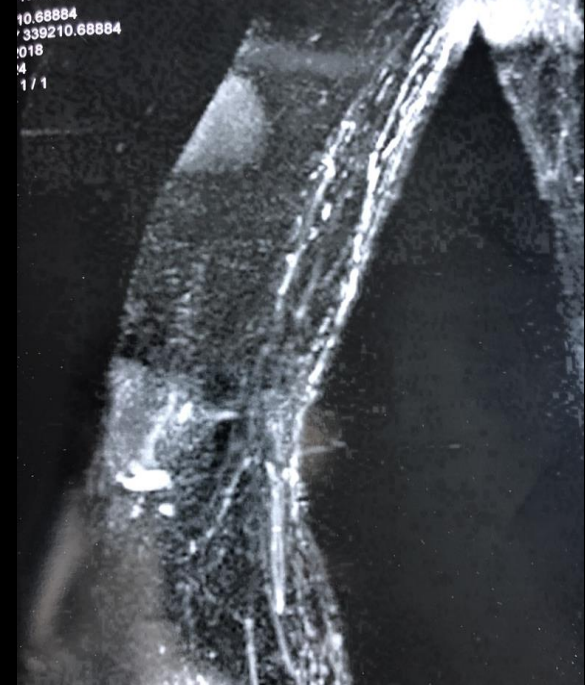
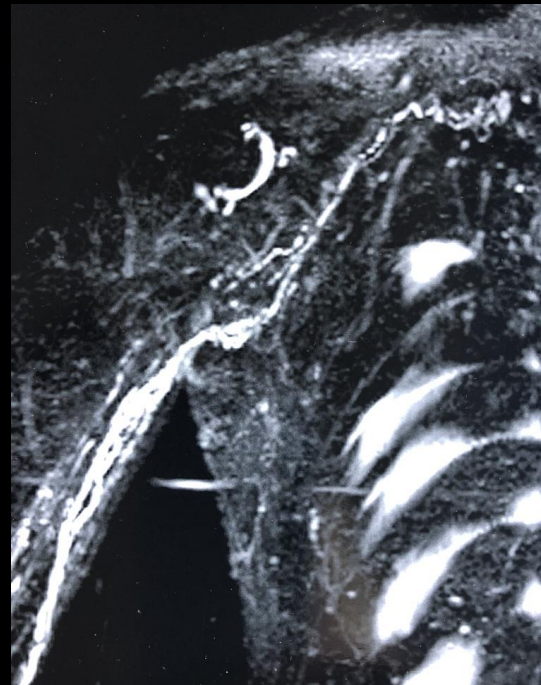
# **INSERTION AT THE ELBOW IN CASE OF DISTAL LYMPHOEDEMA**





Preop and 18 months.

after the lymphnode transplantation





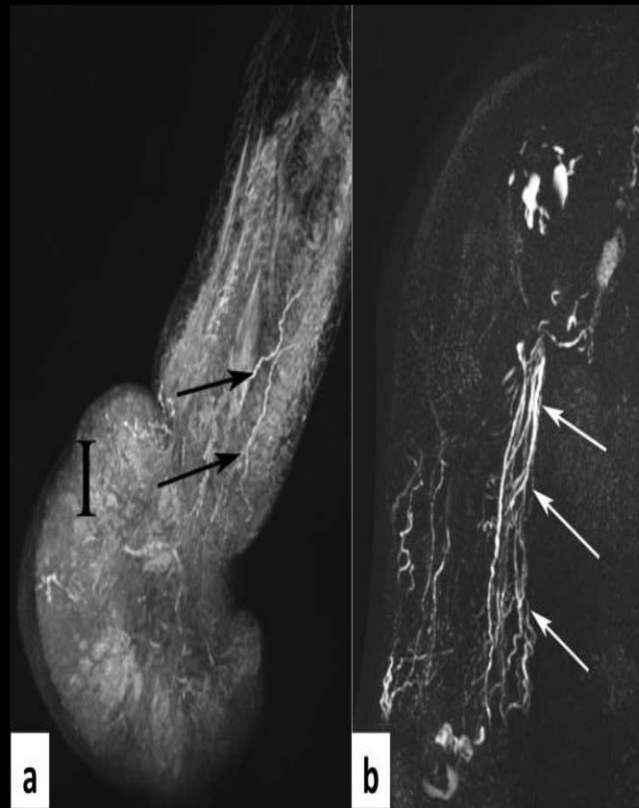
**1 YEAR AFTER**





# New lymphatic pathways

[Click here to download Figure Figure 2.jpg](#)



Lower extremity  
iatrogenic  
lymphoedema

# IATROGENIC LYMPHOEDEMA OF THE LEG

IN INGUINAL REGION:  
LYMPHOMA  
-MELANOMA, SARCOMA  
BUT ALSO AFTER AESTHETIC  
SURGERIES AND  
SAPHENECTOMY





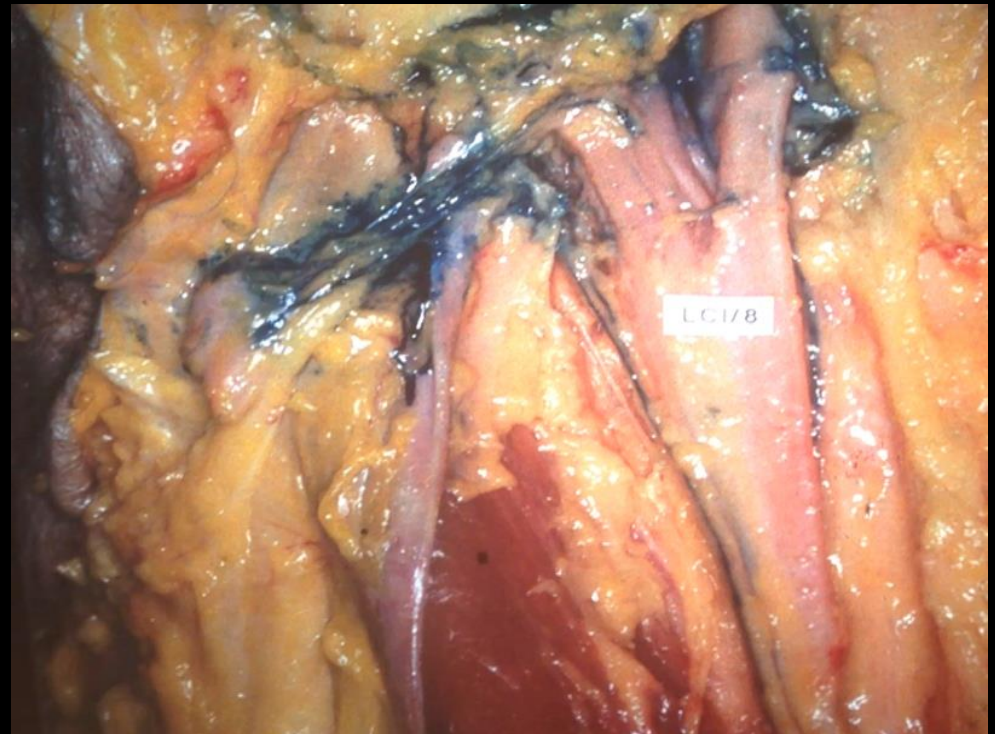
# LYMPHOEDEMA CAN APPEAR ALSO AFTER...



- ONCOLOGIC TREATMENT
- IN PELVIS TUMORS: UTERUS, PROSTATE,



LYMPHOEDEMA CAN BE CREATED AFTER  
SAPHENECTOMY, TIGH LIFTING, BIOPSY, LIPECTOMY,  
LIPOSUCCION!!!!



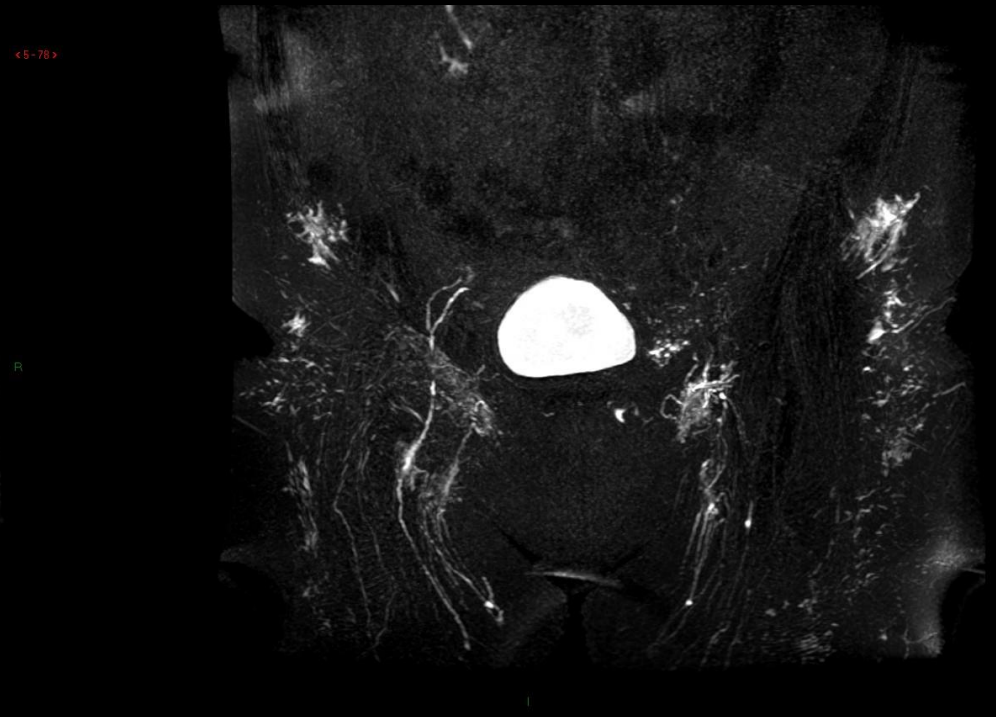
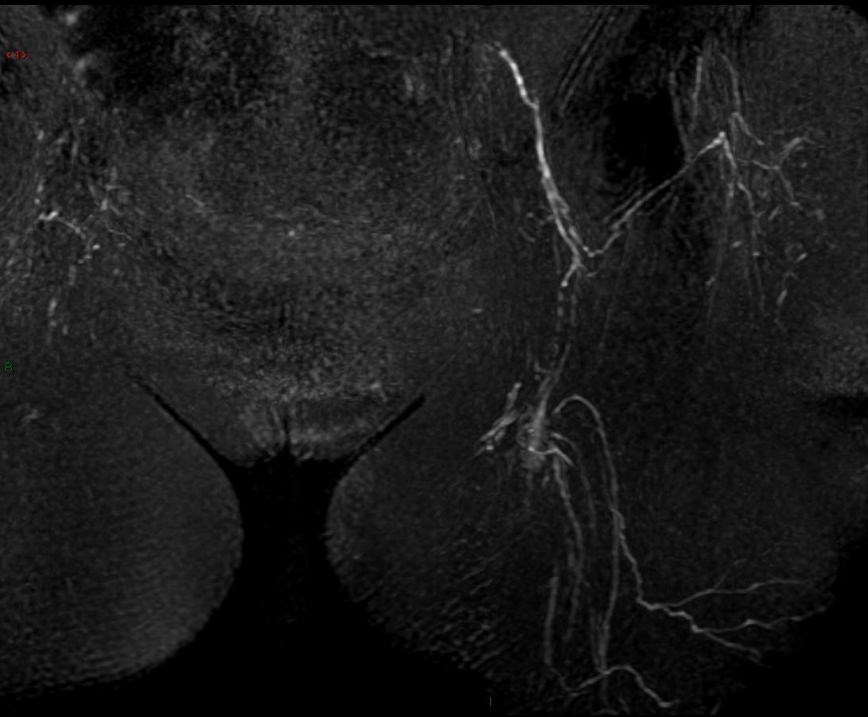


IATROGENIC LOWER LIMB

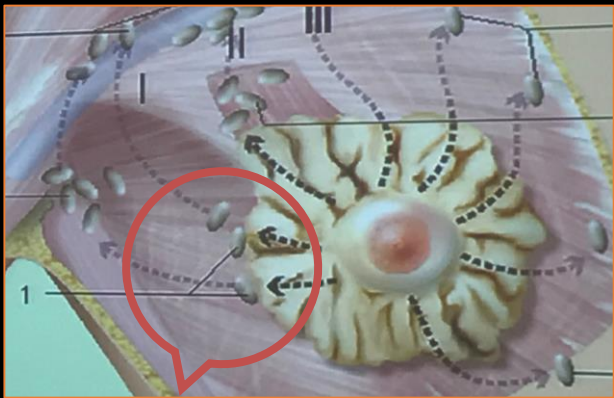
EVALUATION OF THE REMAINING PATHWAYS

IF THEY DO EXIST, TO IMPROVE THE RESULTS OF THE PHYSIOTHERAPY

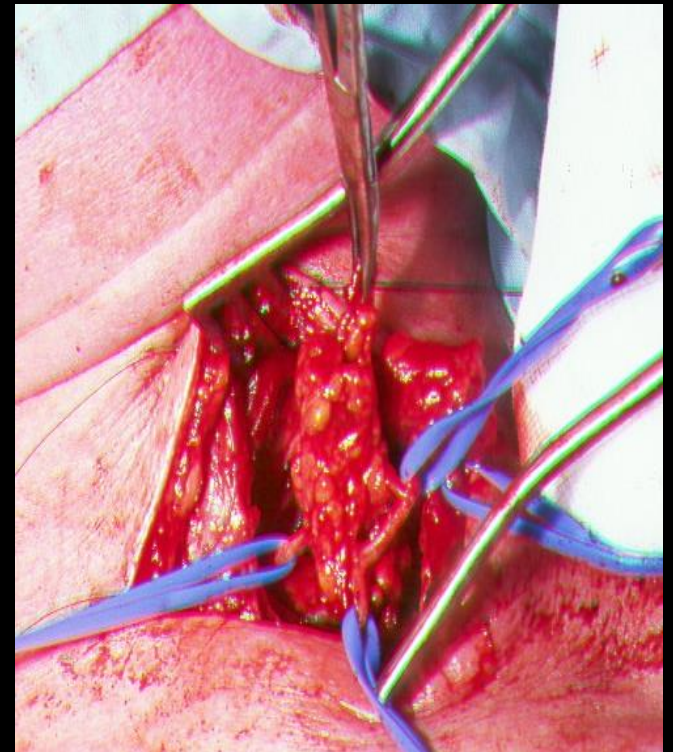
INDICATION OF RECONSTRUCTION IF NOT PATHWAYS







## DONOR SITES



# Il trattamento conservativo funziona? Yes if intensive but TEMPORAL

Caso 1:

Linfedema Al dx post-isterectomia

- Compliance
- Cost
- Clinical efficacy:



1^ trattamento  
7/9/2015



10^ trattamento  
29/9/2015

## Il mantenimento dei risultati

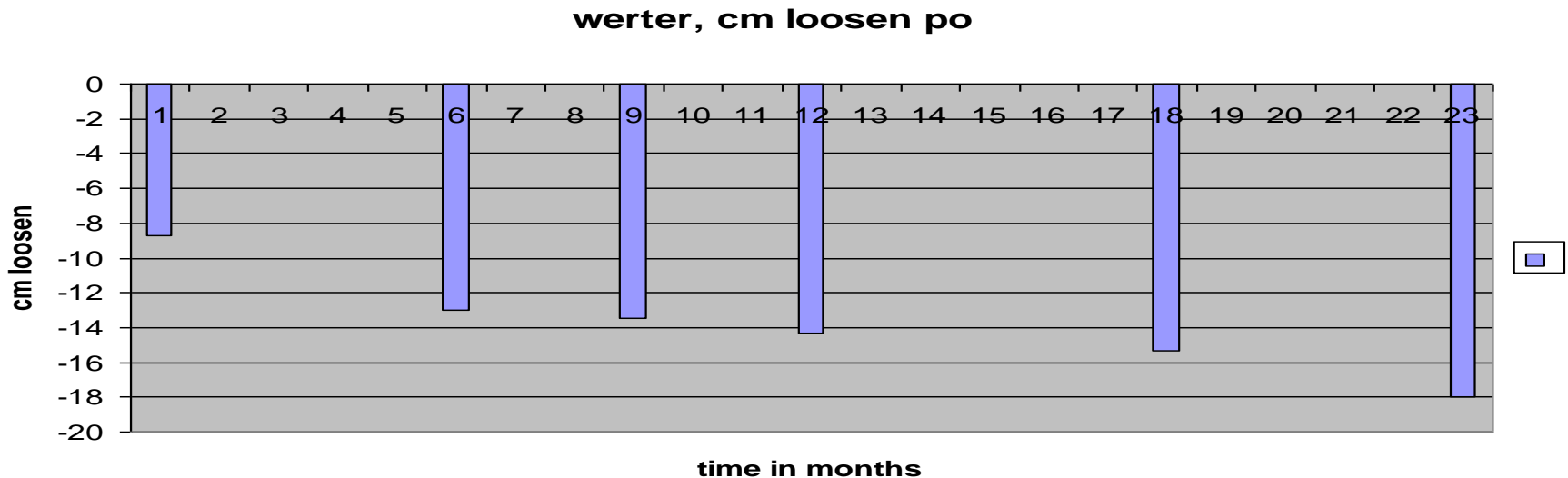




# RESULTS

## GRADE 1

- NORMALISATION AT 2Y IN 80%
- EXTERNAL LIPOSUCCION CAN BE DONE IF TRANSFORMED IN LIPOEDEMA



**Results after lymphnodes transposition results with no more treatment and no sleeves**

Linfedema congenito Al dx >> sin (mutazione Fattore V Leiden)



Luglio  
2014

Dicembre  
2015

Luglio  
2014

Dicembre  
2015

# Il mantenimento dei risultati

Caso 2:

Linfedema congenito Al dx >> sin (mutazione Fattore V Leiden)



**Docteur Corinne BECKER**

Chirurgie Lympatique

Clinique Jouvenet

6, square Jouvenet

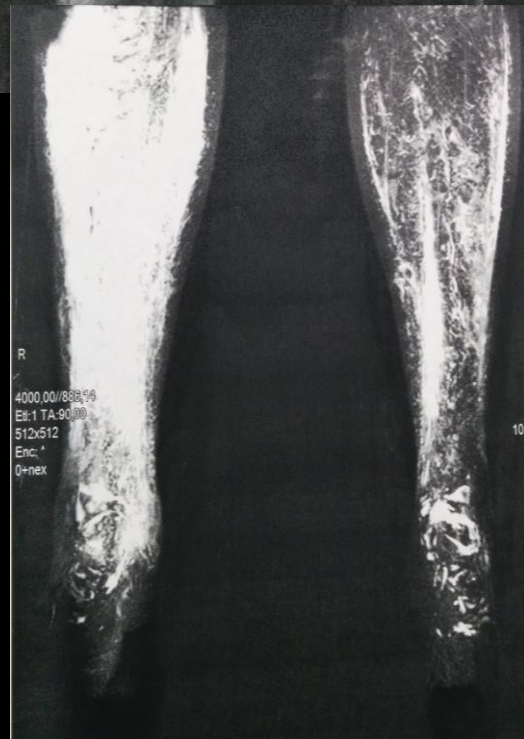
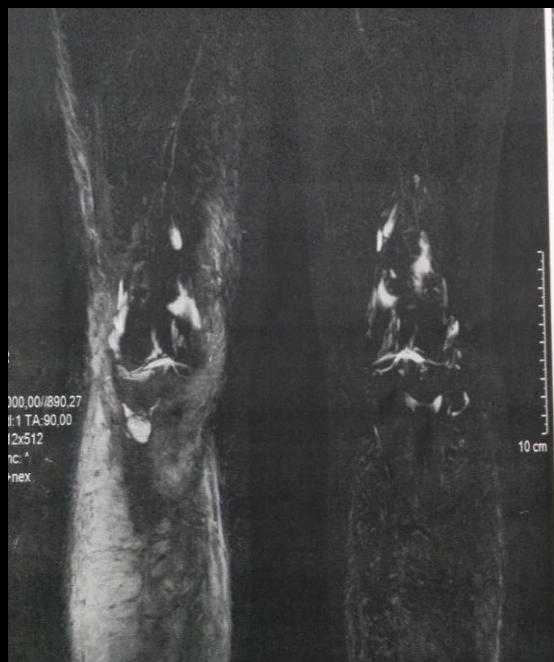
75016 PARIS

Tél. : 01 73 78 25 25

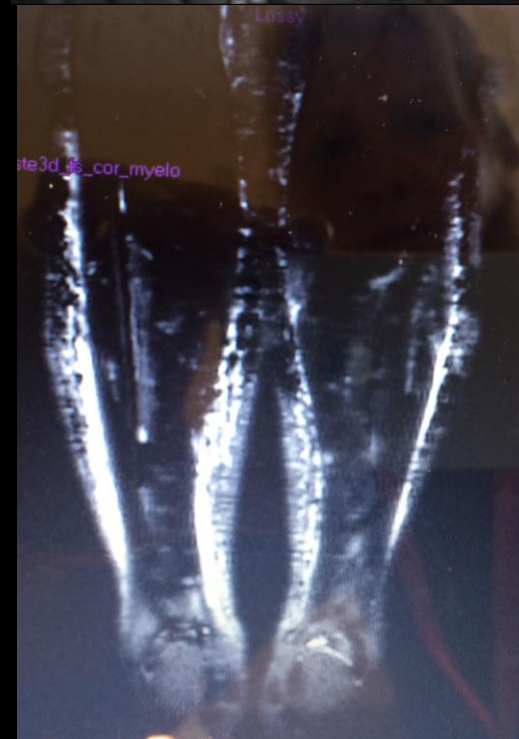
A Paris, le 21/11/14

Le bénéfice/risque de cette intervention est calculé: une diminution des infections, une amélioration de la qualité de la vie, une réduction des frais de kinésithérapie et compression.





Before



1 year  
later

lymphoM  
RI  
Pre and  
post op

Grade 2:  
lymphoedema Post hysterectomy



2y .p.opALNT.



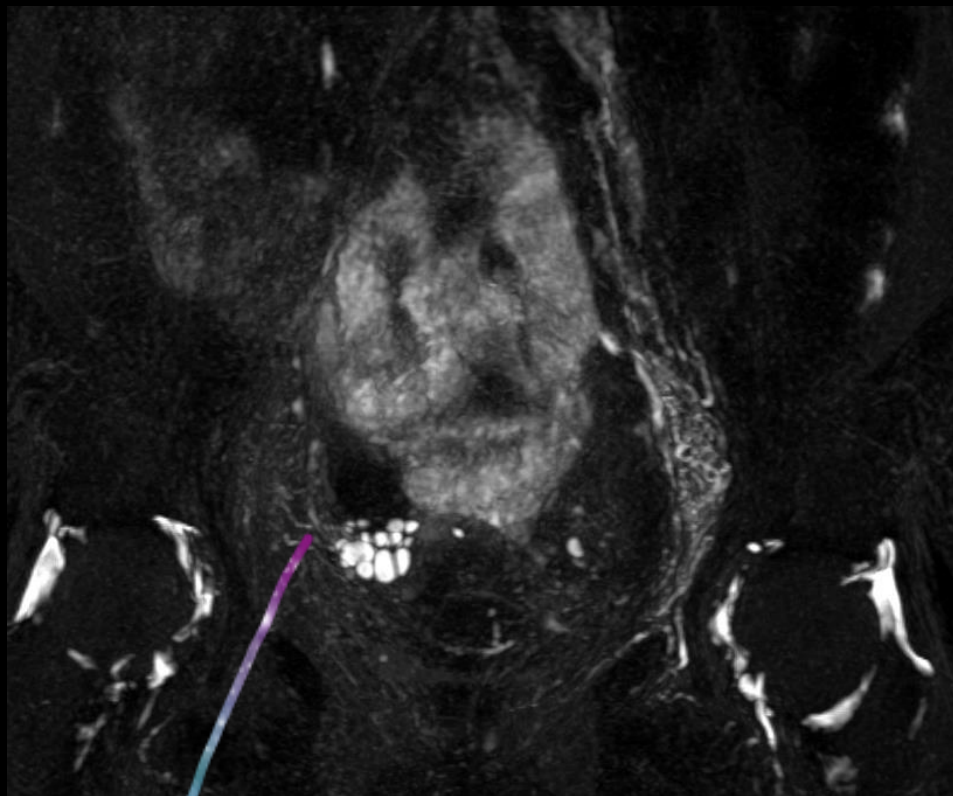
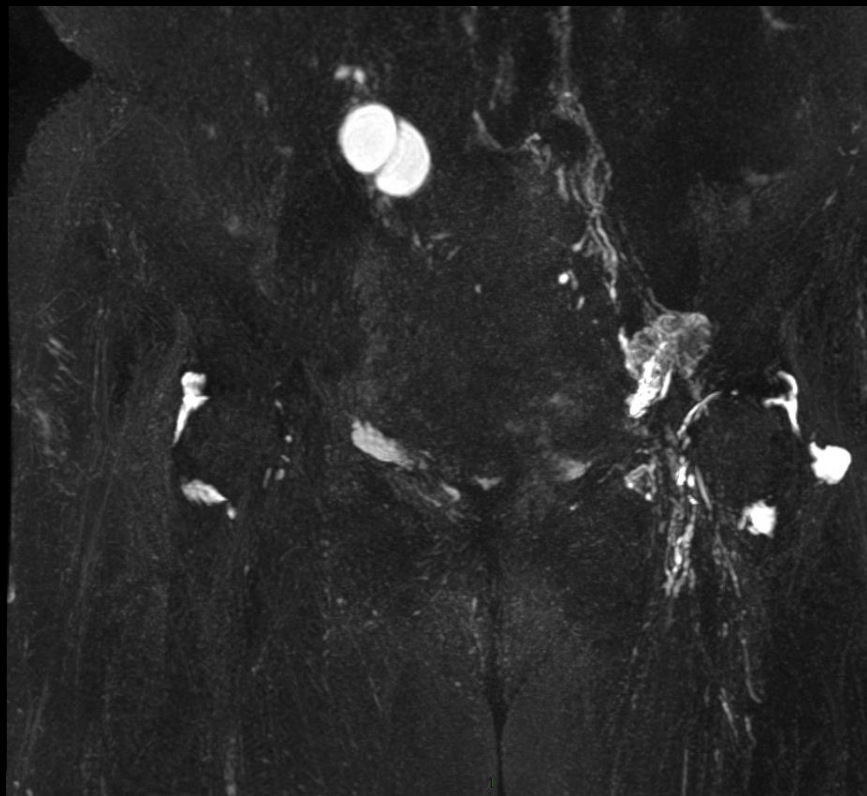


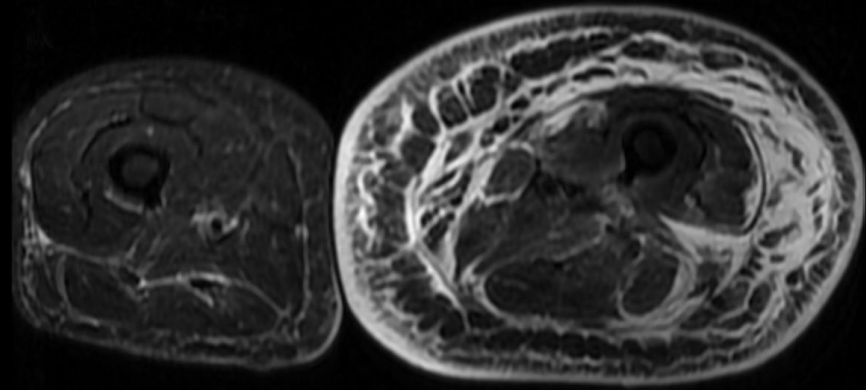


# PREOP 11 YEARS OF LYMPHOEDEMA AND 12 MONTHS AFTER LNT



## PRE AND POST LYMPHNODES TRANSPLANTATION IN DEEP INGUINAL AREA



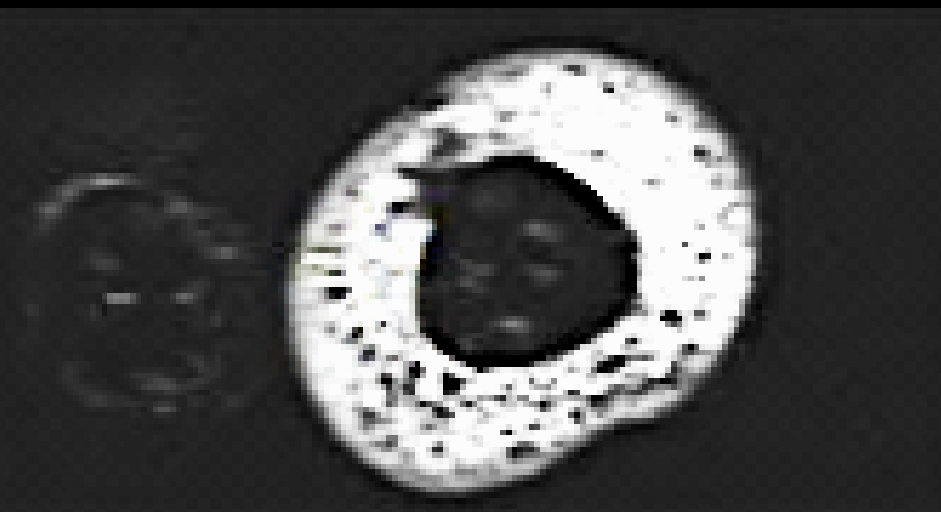


**LMRI:**

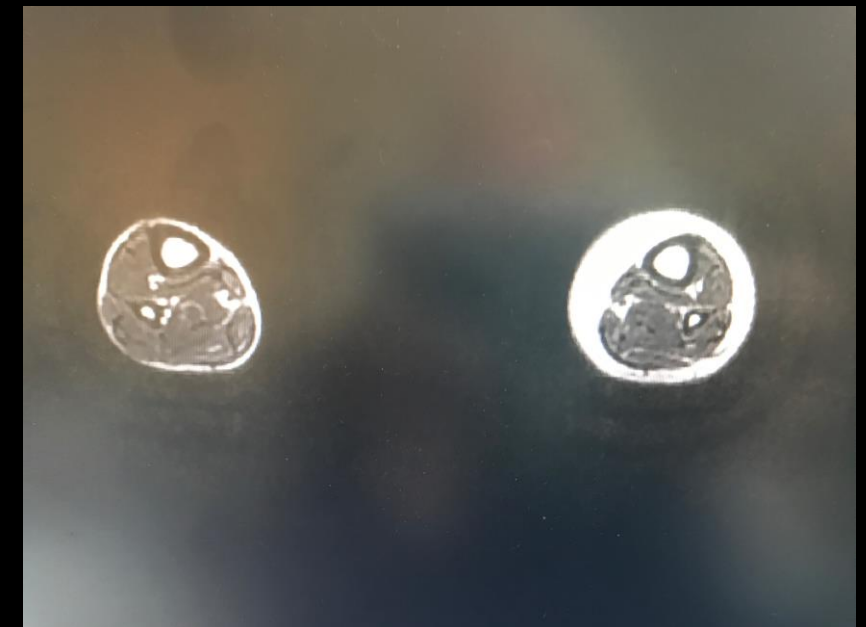
**MEASUREMENT OF THE  
THICKNESS OF THE SKIN  
, THE THICKNESS OF THE FAT**

**THE % OF THE WATER IN THE FAT**

**=Best evaluation of the results**



**2015**

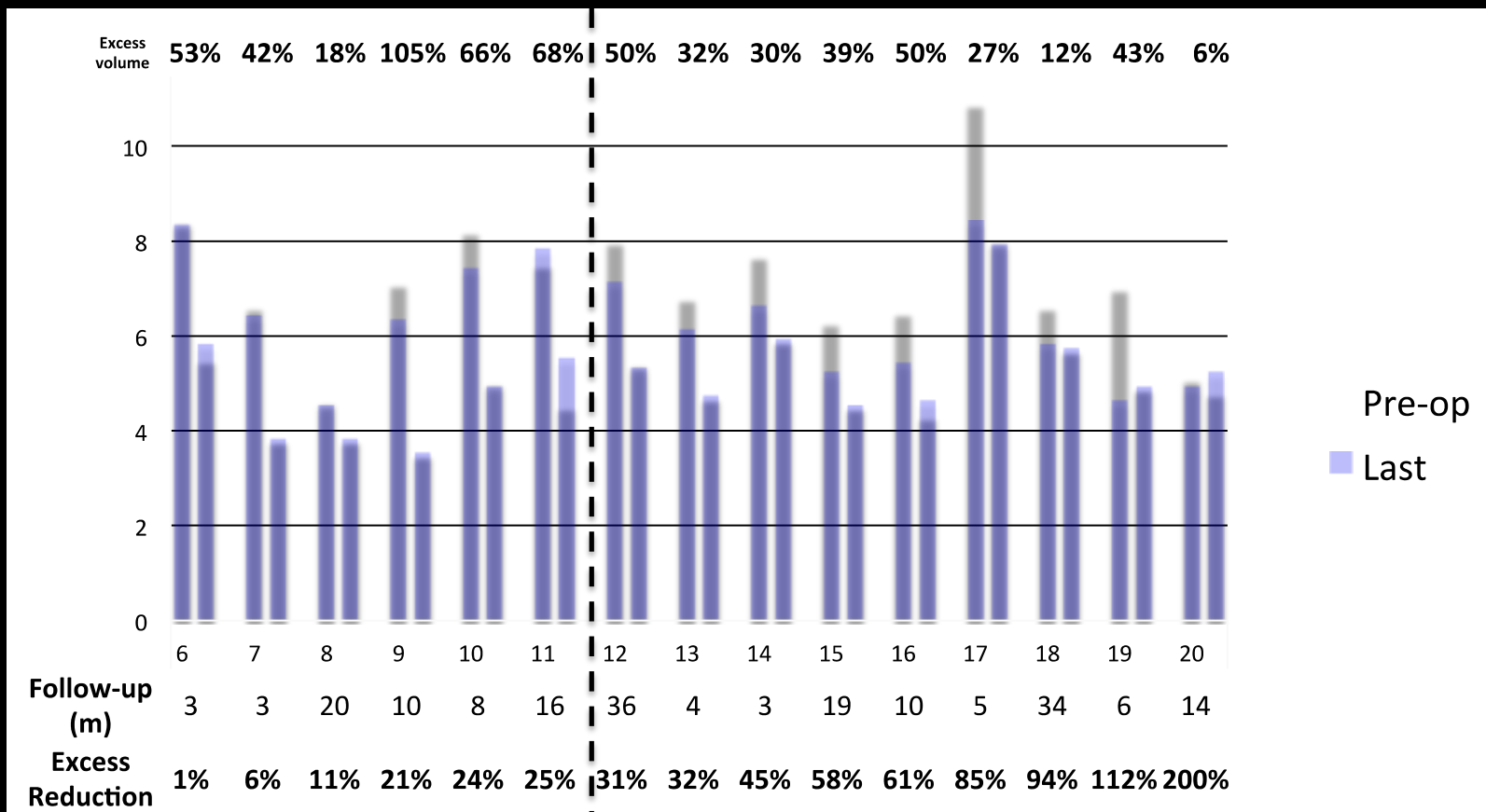


**2016**



# GRADE 2-3

REDUCTION OF **40%** OF THE EXCESS VOLUME AFTER 17 MONTHS



After treatment for prostatic cancer  
pre and 11 after ALNT in deep inguinal



RESULTS 8MONTS POST ALNT FOR LYMPHOEDEMA POST  
TREATMENT FOR MELANOMA WITH 2 FLAPS (INGUINAL AND  
RELAY AT THE KNEE)





***Works even in old lymphoedema chronic  
infected***



Preop(after thigh lifting!!)



12 y after ALNT

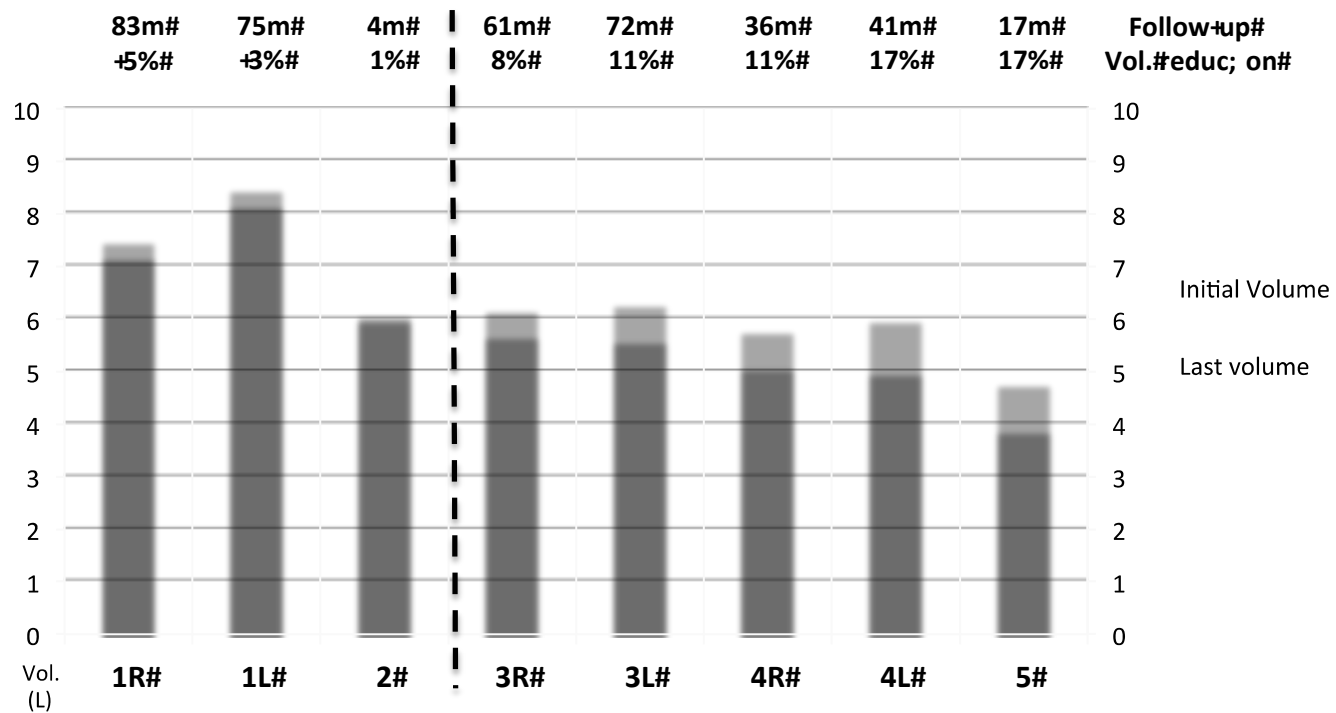


## STAGE 3

### BILATERAL OLD LYMPHEDEMA :

IMPROVEMENT FROM 17%, TO 40%

!!!OPERATE AS SOON AS POSSIBLE

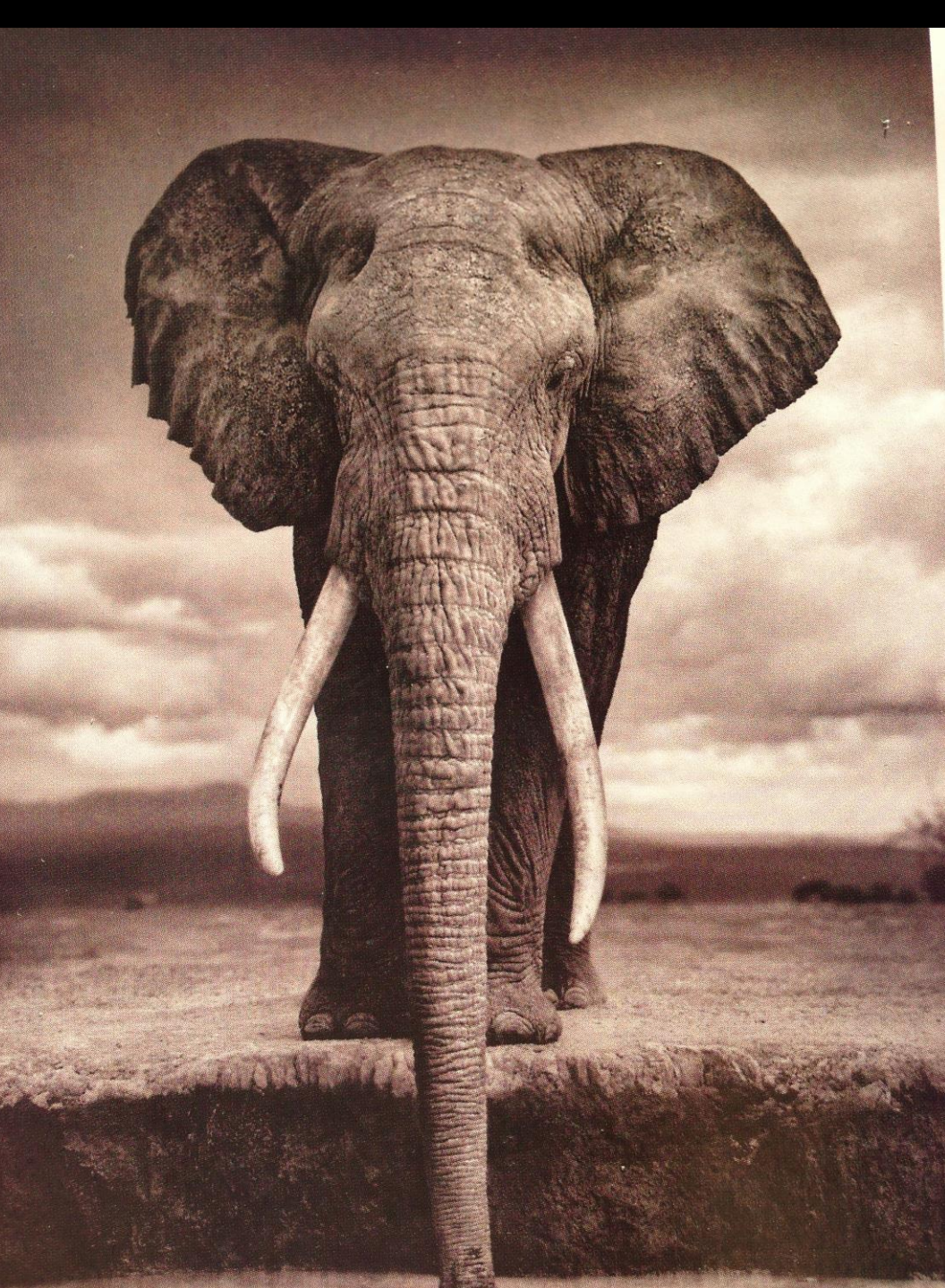




LV IS NOT INDICATED IN CASES WHERE THE LYMPHVESSELS ARE DESTROYED







CONGENITAL  
AL  
LYMPHEDE  
MA:  
SURGICAL  
TREATMENT



# DIFFERENT FORMS, TYPES AND...DIFFERENT TREATMENTS





- **LYMPHOGRAPHO MRI = DIAGNOSIS**

- SEQUENCE IDEAL**

- **LYMPHO-IRM 3D**
    - **CORONAL T2**

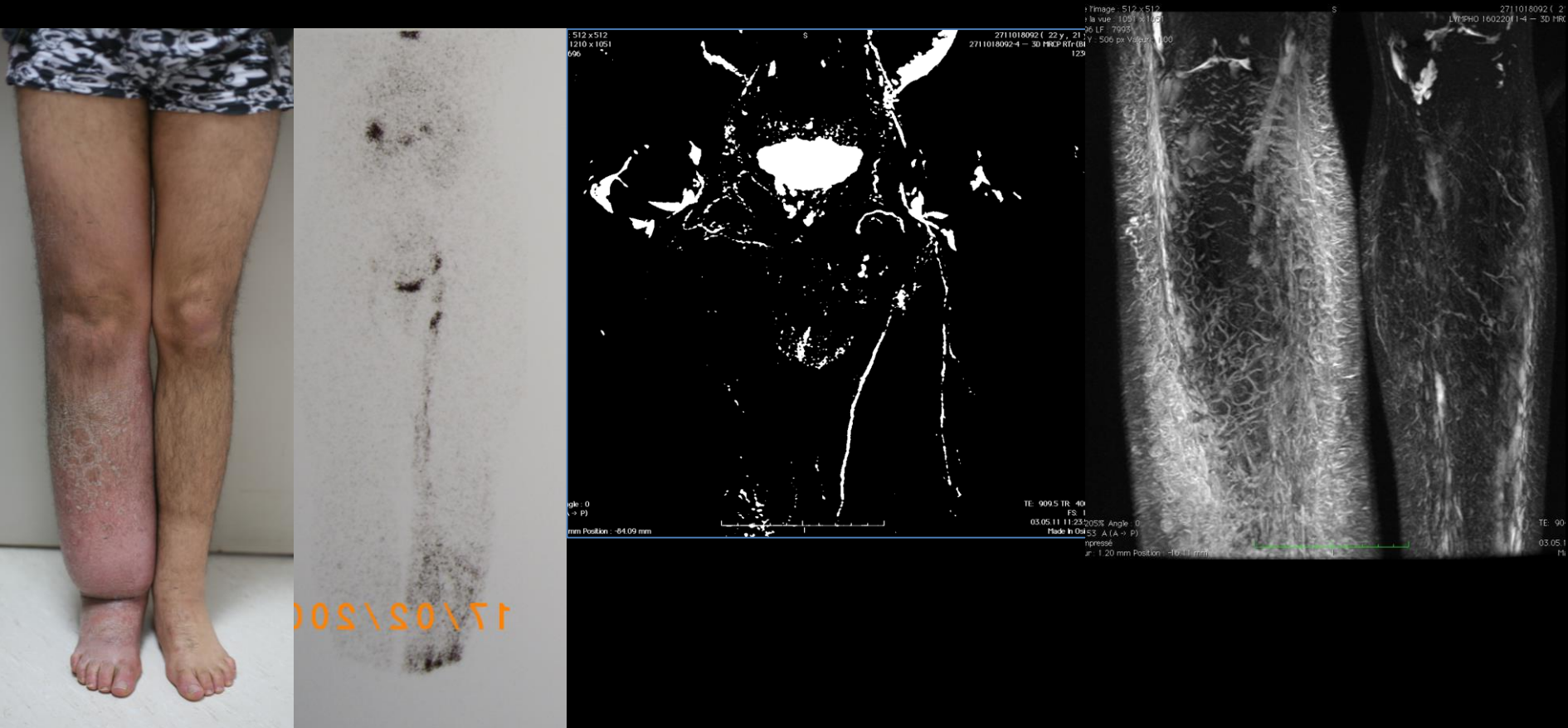
- **PLRIDISCIPLINAIR APPROACH**

- **NEEDS EXPERIENCE OF SUCH PATIENTS**
  - **NOT ONLY SURGICAL PERFORMANCE**

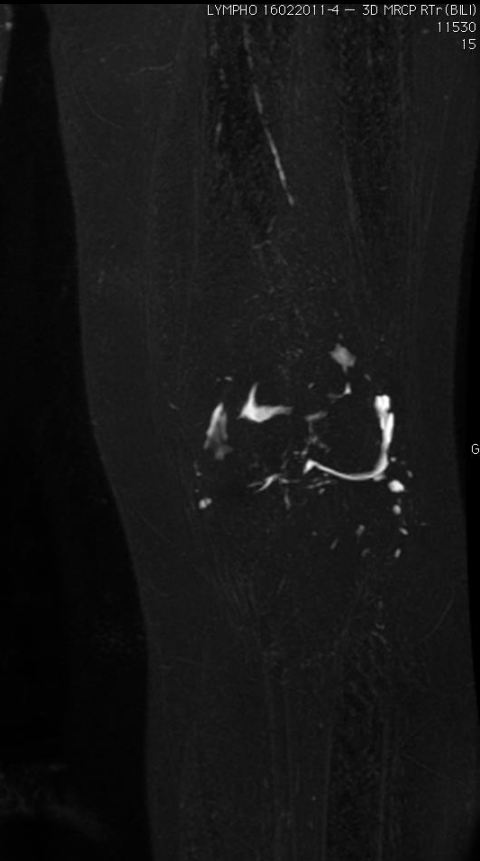
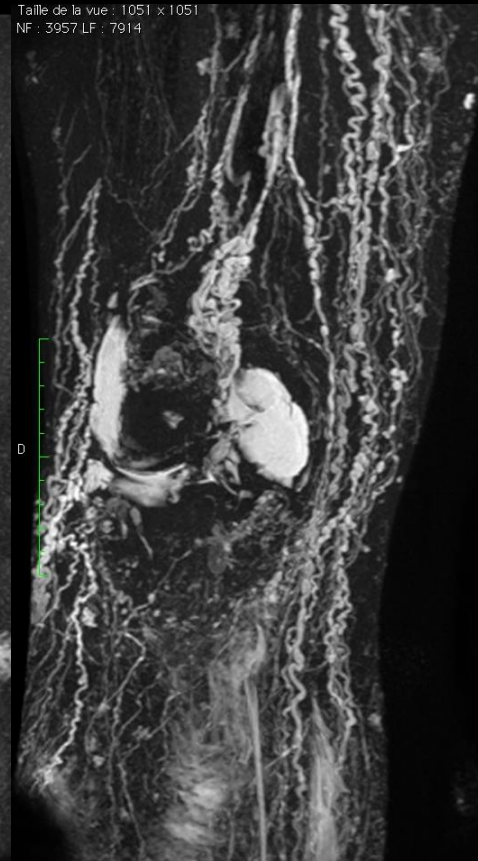


- LYMPHANGIOSCINTIGRAPHY:  
DYNAMIC BUT POOR  
INFORMATIONS-
- COMBINATIONS WITH  
FLUORESCENCE

## LYMPHO MRI!!!!

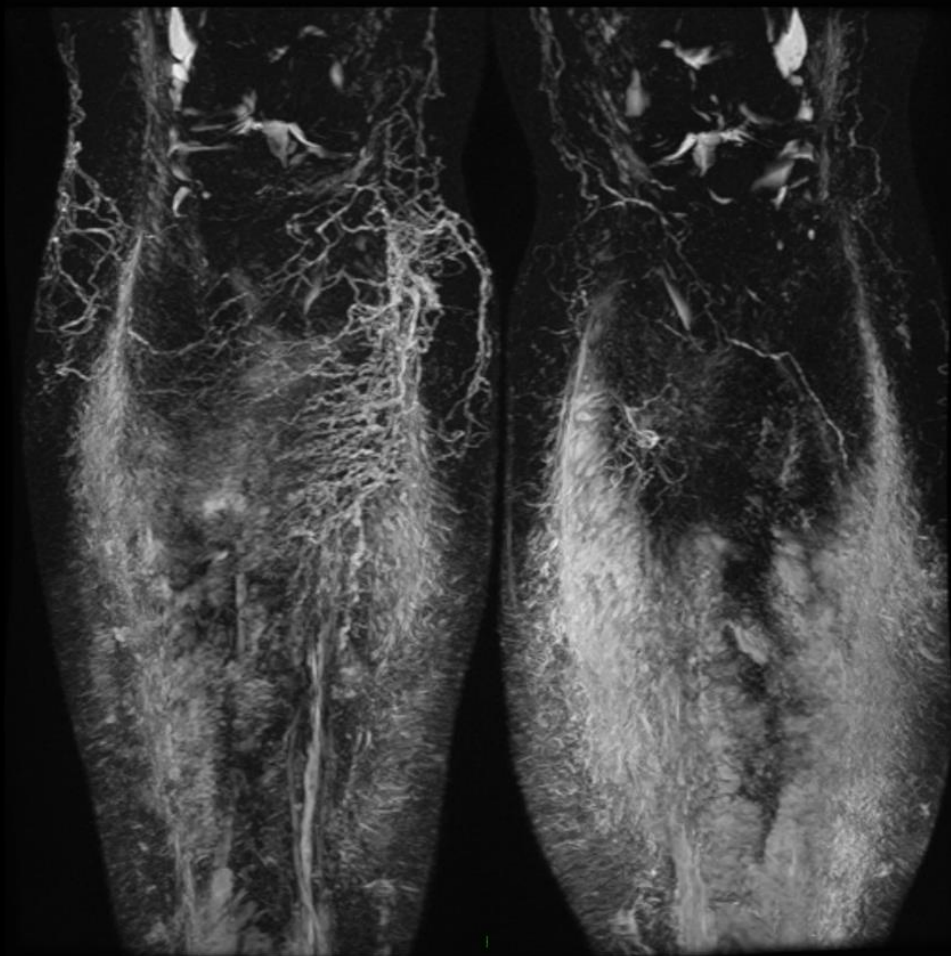


# HYPERPLASIA: INDICATIONS OF LVA NO LNT

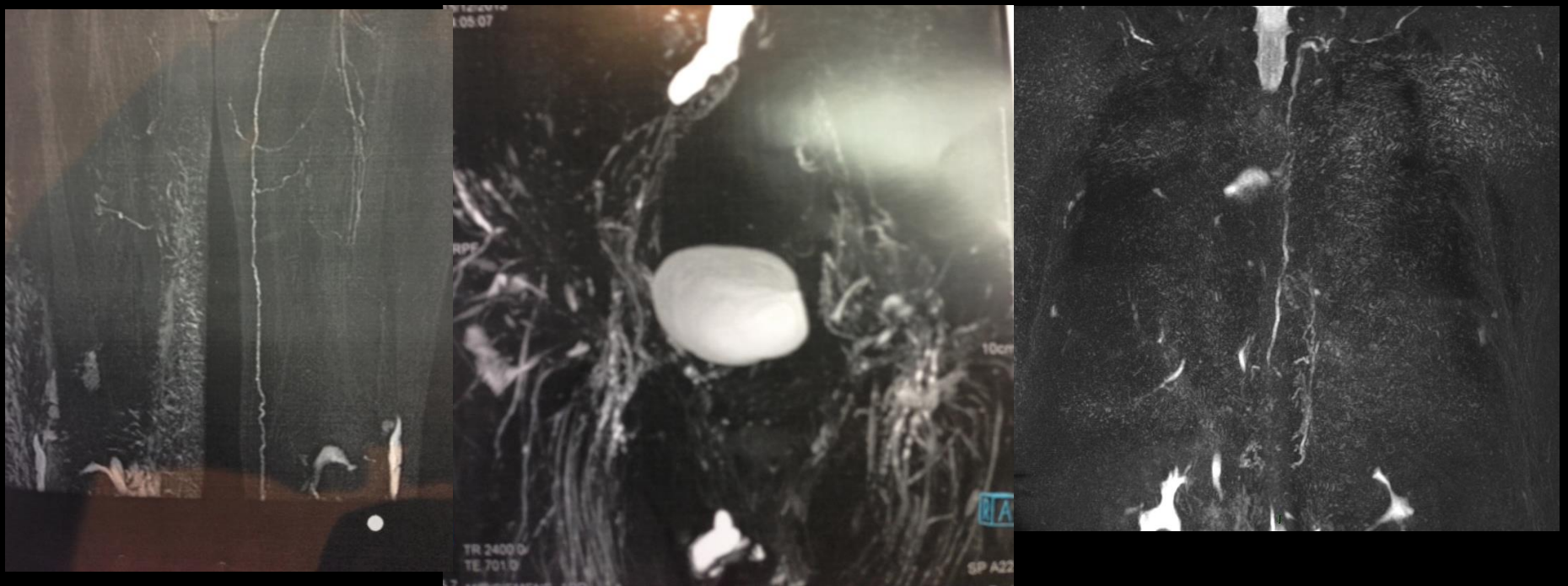




# **SAME PATIENT HYPOPLASIC AND HYPERPLASIC IN THE OTHER LEG!!!**



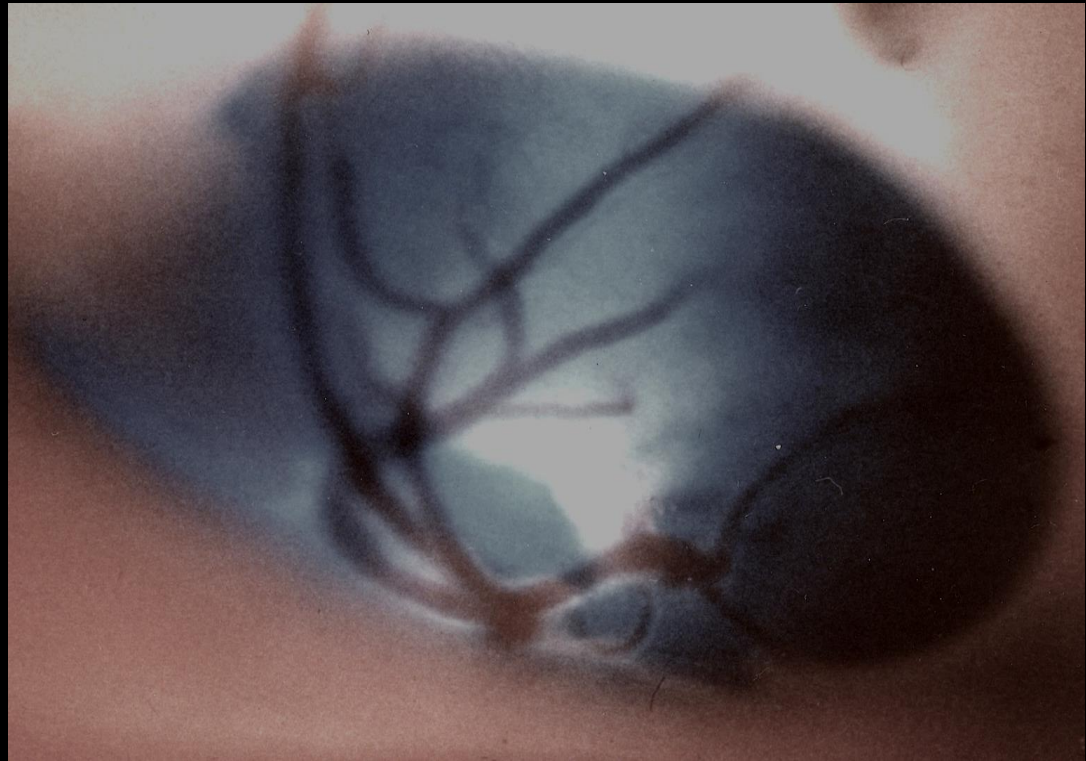
# LYMPHATIC IRM HYPOPLASIA, THORACIC CHANNEL LESIONS, HYPERPLASIA



WHY CAN LYMPHNODES  
TRANSPLANTATION WORK  
IN HYPOPLASIC CASES?

LYMPHNODES ARE PUMPING  
THE ECL

AND CONTAINS VEGF/C3  
WHICH CREATE NEW VESSELS





# Strategy:

**FLAP WILL BE INSETED WHERE THE LYMPHATIC  
VESSELS  
ARE NO MORE SEEN.**

- *IN DISTAL LEG EDEMA*

- *IN BIG LEG EDEMA:*

- **FLAP INSERTED IN  
INGUINAL AREA**
- **AND KNEE REGION**

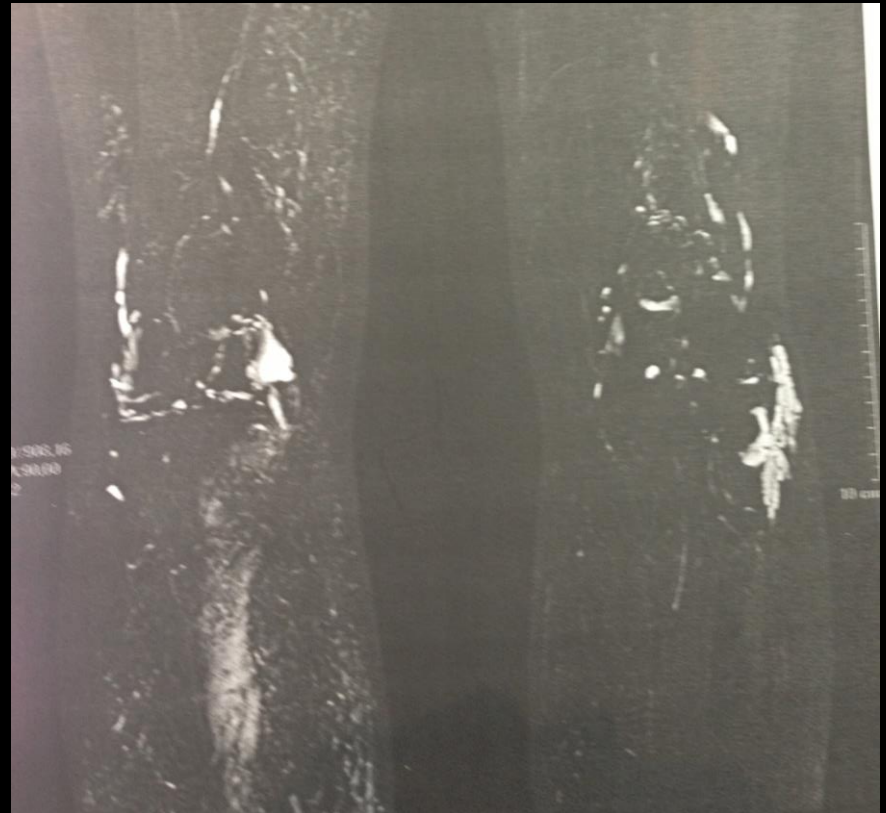
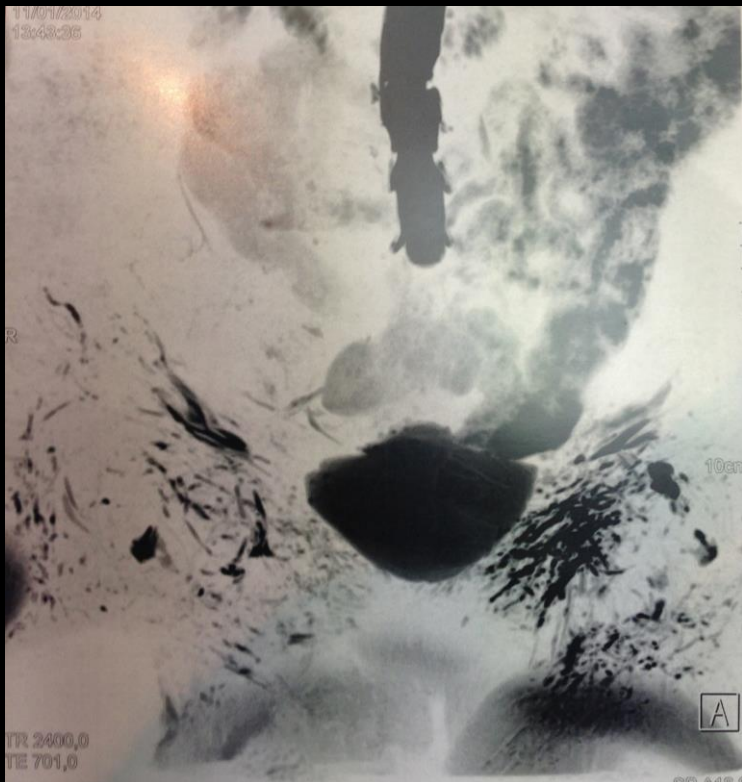
- **FLAP INSERTED  
DISTALLY ACCORDING TO  
LYMPH MRI**

**LATER, LOCAL LIPOSCULPTURES GUIDED WITH THE SPY DURING  
THE SURGERY,**

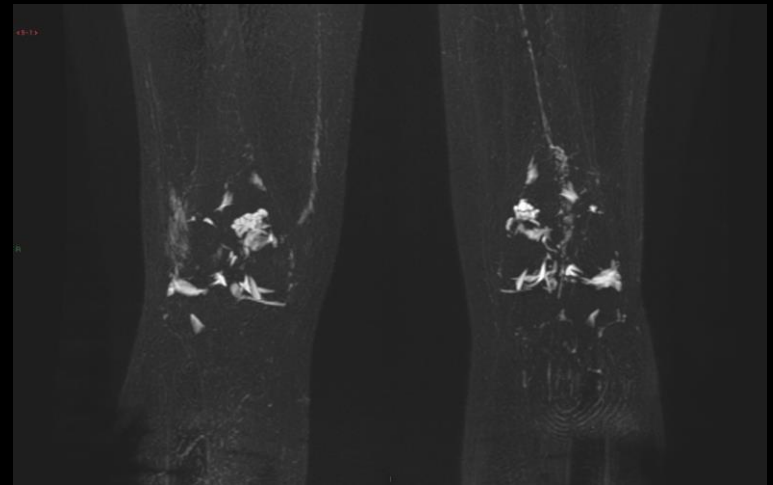
**AND LV ANASTOMOSIS FOR THE ANKLE IF VISIBLE LYMPHATIC  
VESSELS**

# FLAP MUST BE INSERTED WHERE THE EDEMA BEGIN

- lympho MRI helps!



# 15Y LYMPHEDEMA PRE AND 2 Y POST ALNT





# physiotherapy

- Manual drainages
- Bandaging
- 3X/week during 3 months
- Then
- Depending the severity





# Results after 3 years

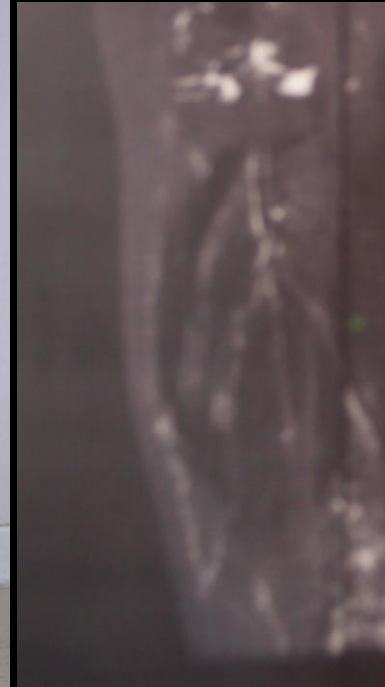
- Stage 1:
- 87% complete healing
- No infections, no stockings
- Other are improved



# STAGE 2-3

- MORE FIBROTIC
- MORE INFECTED
- SINCE MORE AS 5 YEARS

# 10Y LYMPHEDEMA RESULTS 1Y AFTER ALNT





Preop. And 1 ear after ALNT





# Humour important



# LYMPHEDEMA SINCE PUBERTY PREOP AND 12 YEARS POST INGUINAL FLAP

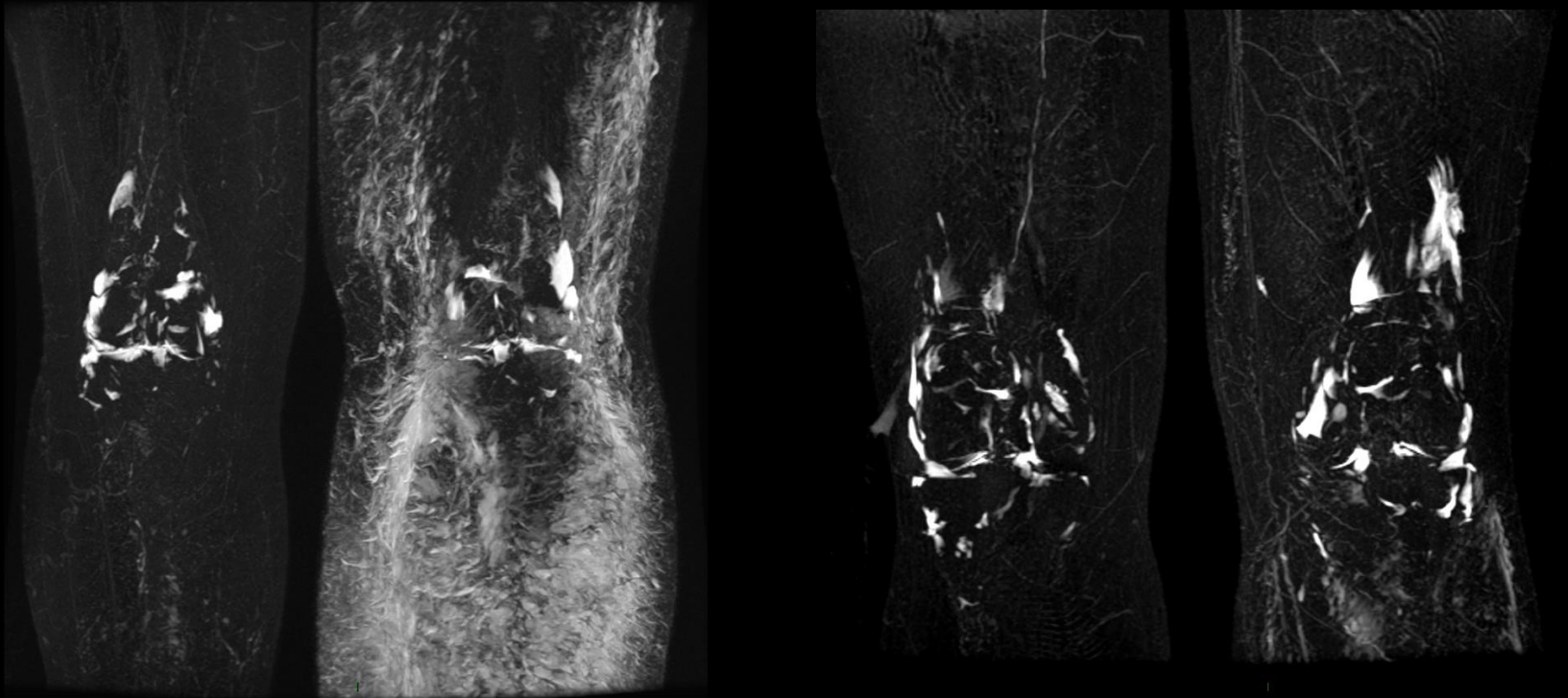




# Lipoedema and lymphoedema: Lymphnode transplant at the knee and lipo (hips)



## PRE AND POST ALNT , 1 YEAR AFTER

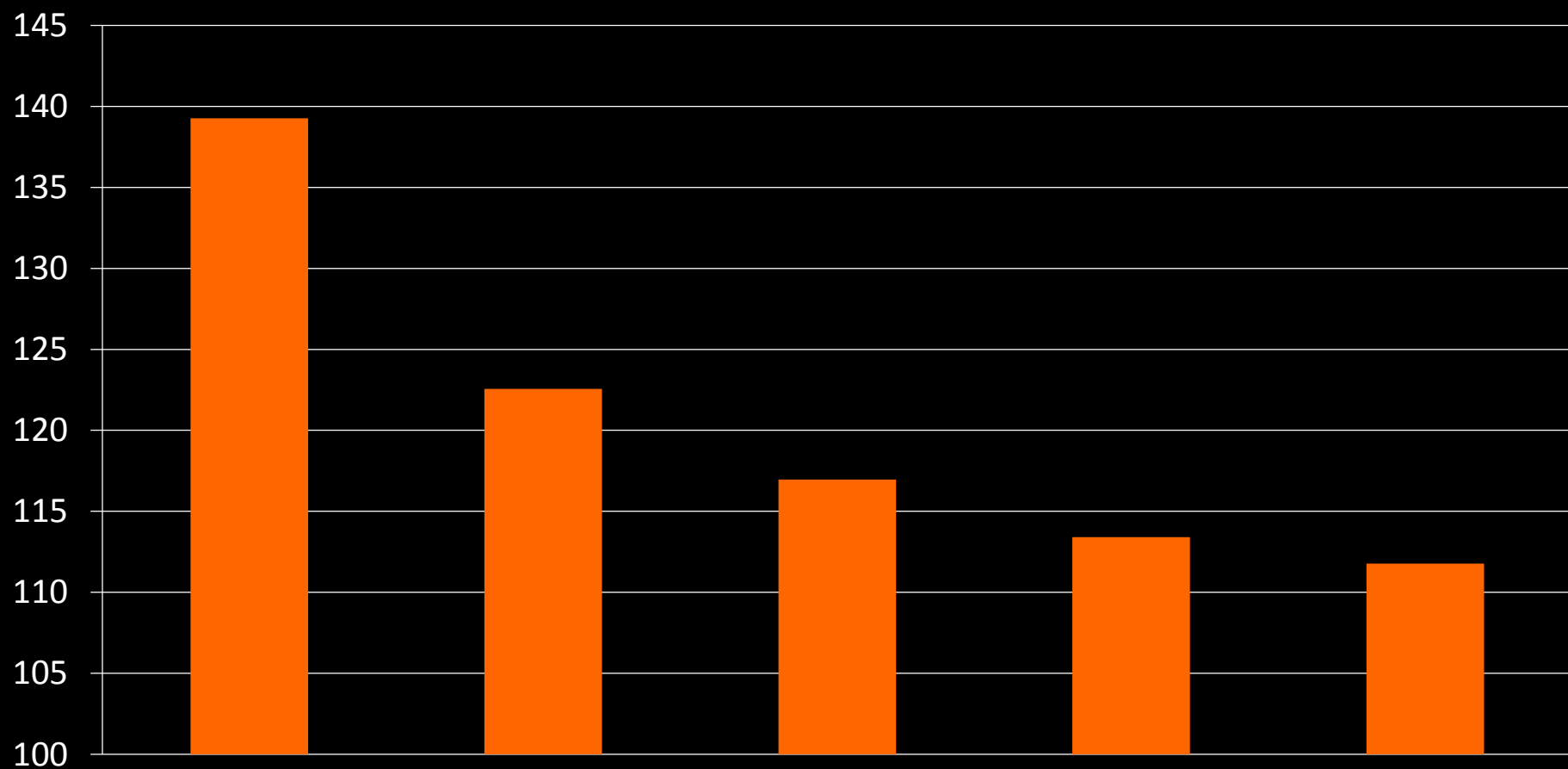


# STAGE 2 AFTER 3 Y

- =38% BECOMES NORMAL
- =62% PATIENTS IMPROVED,
- REDUCTION OF 33% OF THE VOLUME OF MORE
- INFECTIONS 5% ONLY
- LYMPHO IRM:NODES VISIBLES AND NEW VESSELS



VOLUMETRY OF THE LIMB COMPARED WITH NORMAL SIDE)



**Preop**

**6months**

**12 months**

**18m**

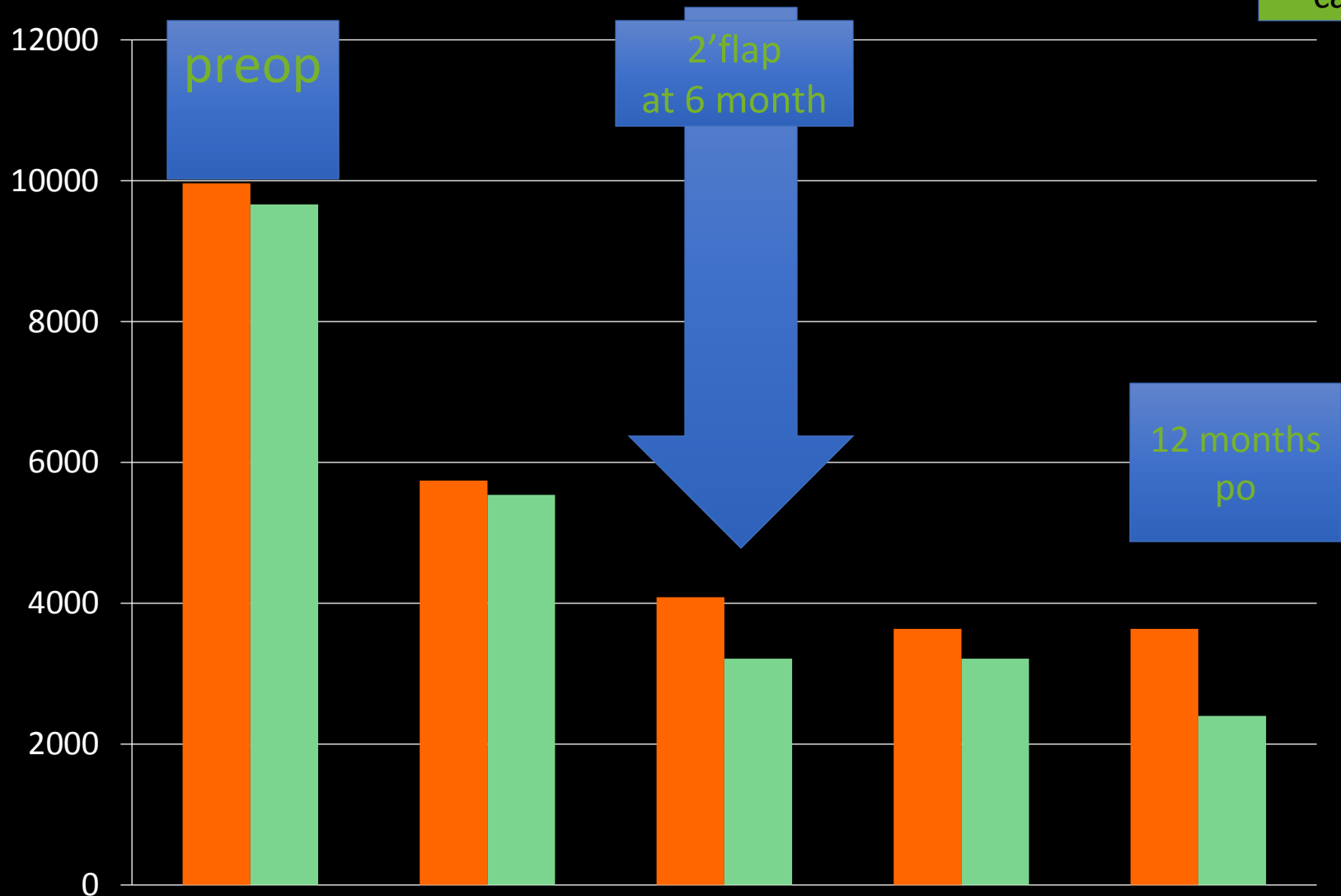
**24m**

# Difference in volume in comparison with normal side

## After 2° flap at the knie, improvement under the knee

thigh

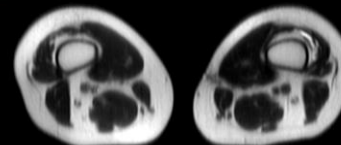
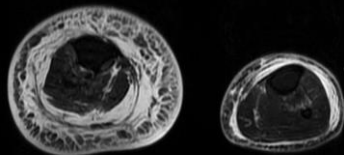
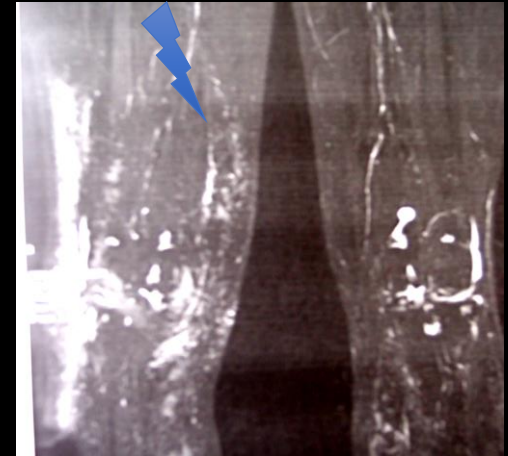
calf



# RESULTS

# MRI

- TRANSPLANTED NODES VISIBLE
- LESS LIQUID
- NEW PATHWAYS
- NO MORE HONEY COMBS
- FAT DEPOSIT VISIBLE

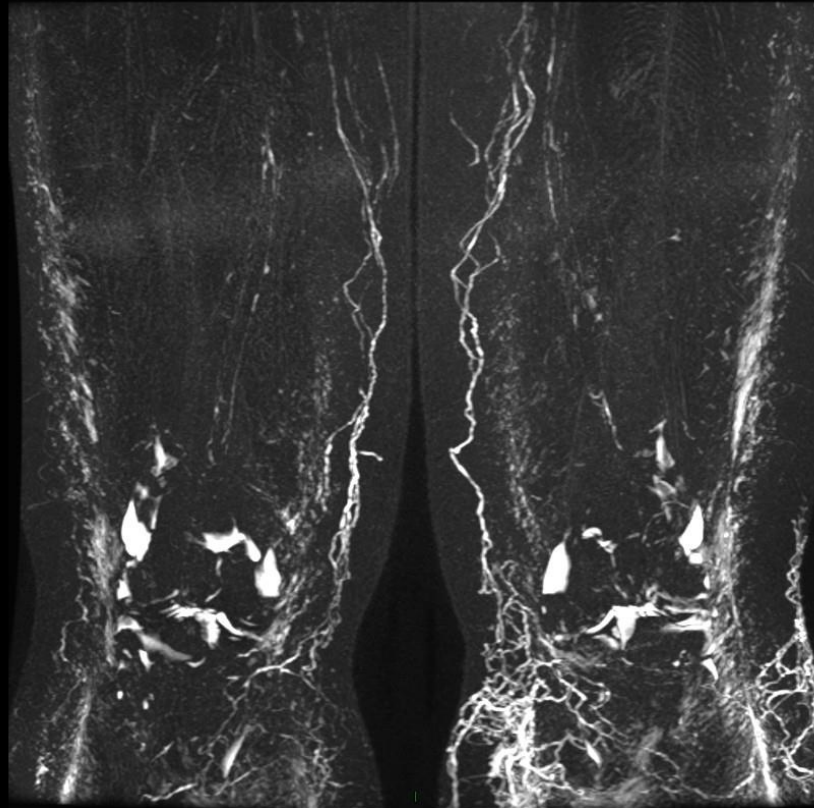




# PRE AND POST ALNT



# REGROWTH OF LYMPHATIC VESSELS



«1-5»

Я

STAGE 3 -4:

CHRONIC INFECTIONS  
HARDNESS OF THE SKIN AND THE FAT  
DERMATOLOGIC PROBLEMS



# 15Y LYMPHEDEMA RESISTANT TO PHYSIO 1 YEAR AFTER ALNT



S  
MPHO  
EY\_IMAGES  
de 4 - 1

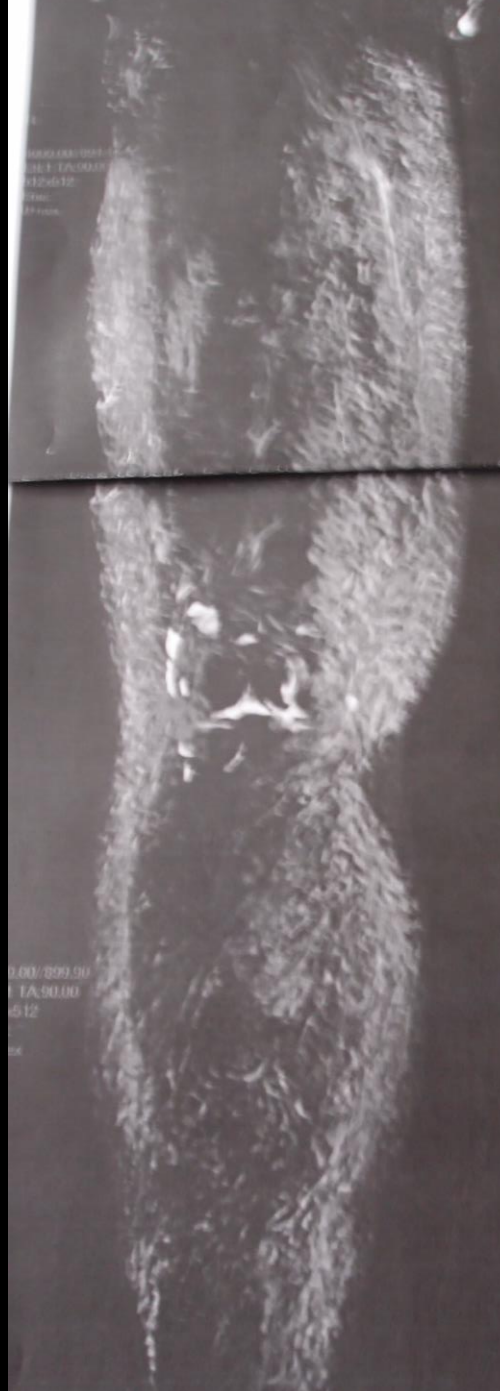
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# Combination of lymphnodes transplantation

- with dermolipectomies and liposculptures



# EXCISION+ALNT



preop



18 monts  
po

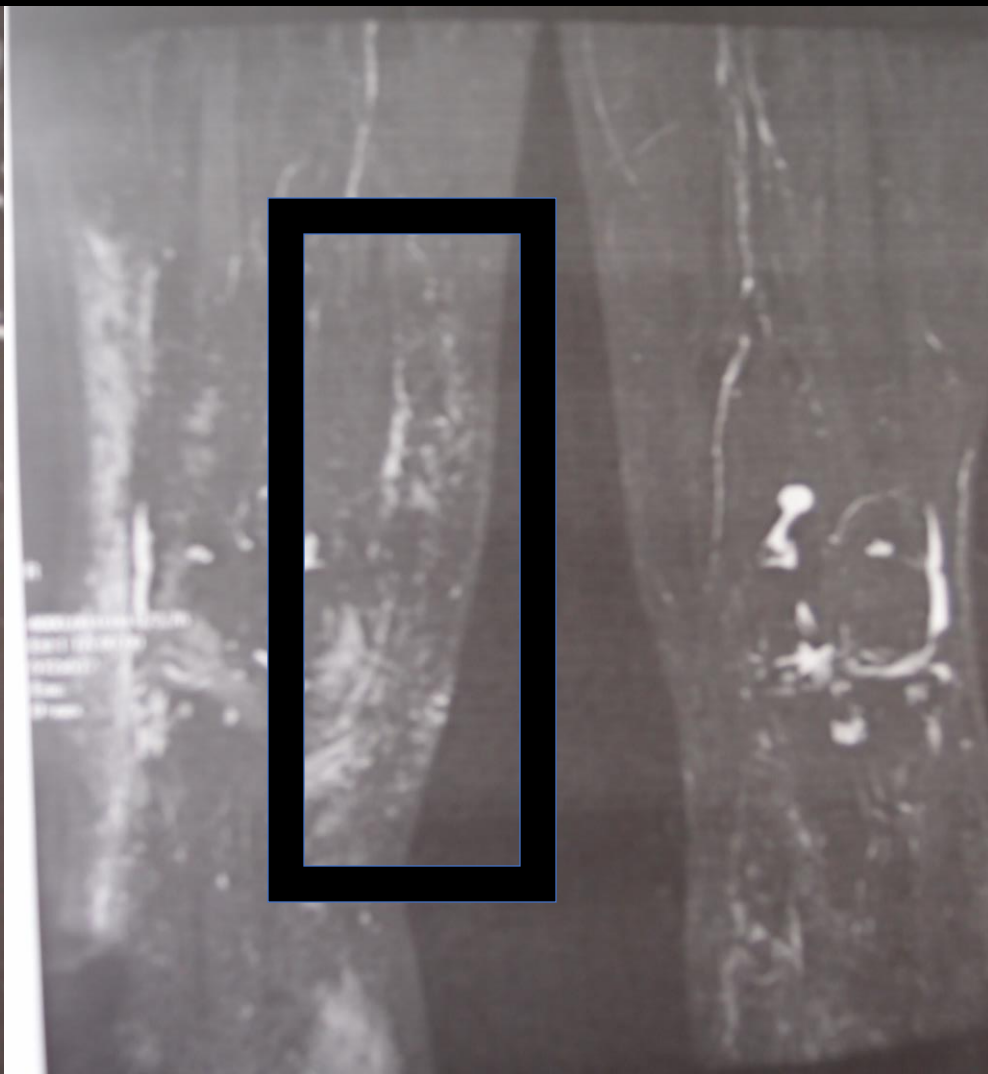




SHE TRAVELLED 5 DAYS FROM SIBERIA TO COME.....6 MONTHS  
POST OP







# Obese patients

- Diet
- Mobility
- Bariatric surgery
- Plastic surgery
  
- *But lymphoedema must be treated!!!*
- *Multi infections, vicious circle*

# Lymphoedema, obesity:

lymphnodes transfers at the knee region if distal edema and later dermolipectomies





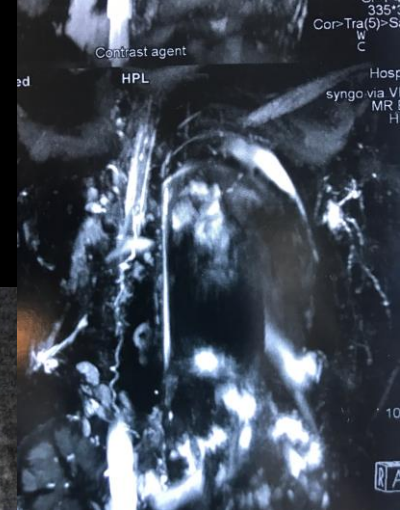
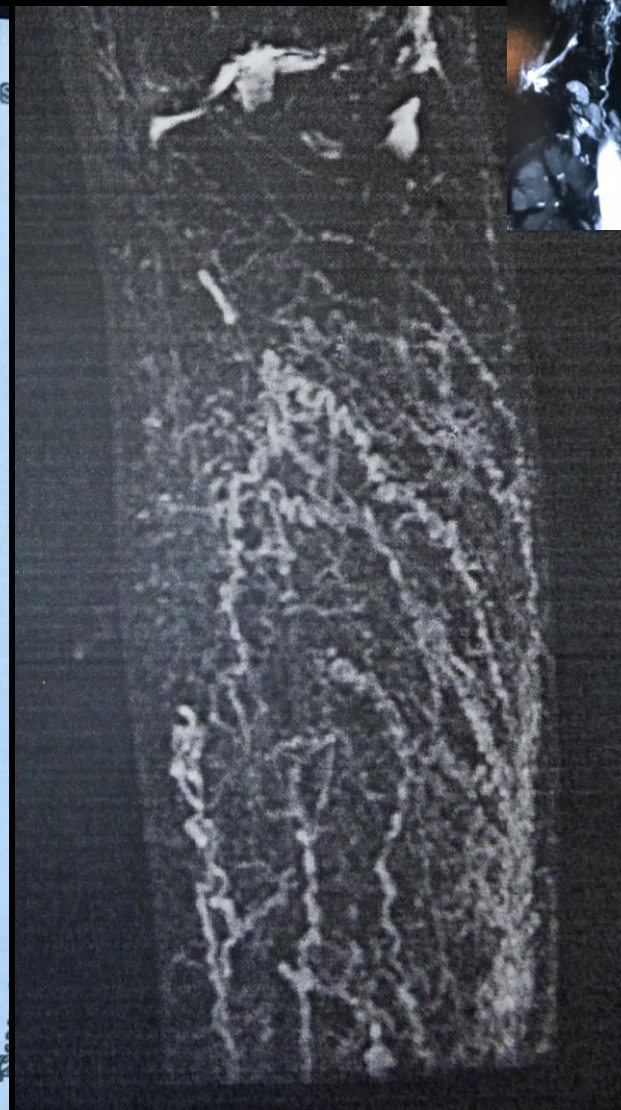
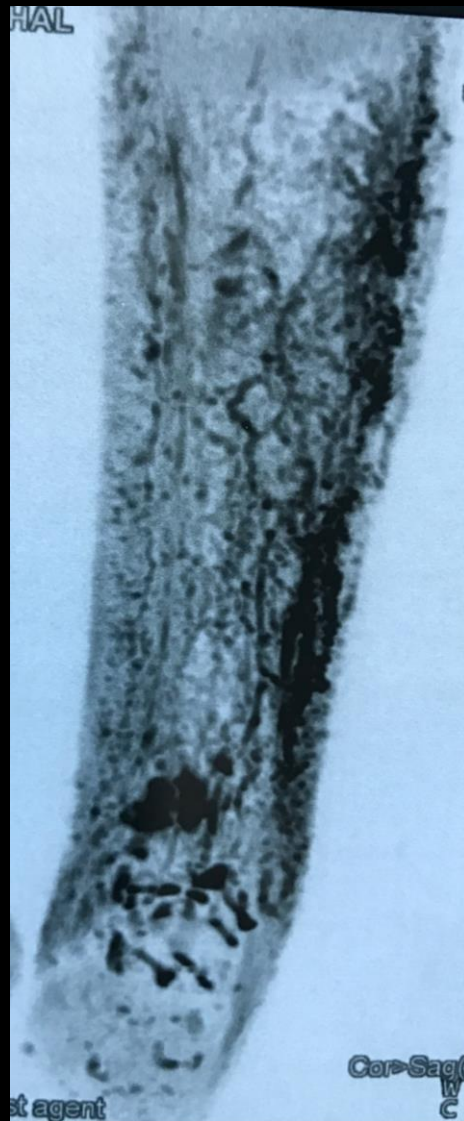


LV anastomosis can work in hyperplastic cases





# PRE AND 6 M POST OP LV







# **TREATMENT OF LYMPHOEDEMA IN CHILDREN**

**BECKER. C  
GIARDINI . D  
PAPPENDIECK . C**

A big hand can hide a true pathology!  
Always LMRI and good clinical  
examination

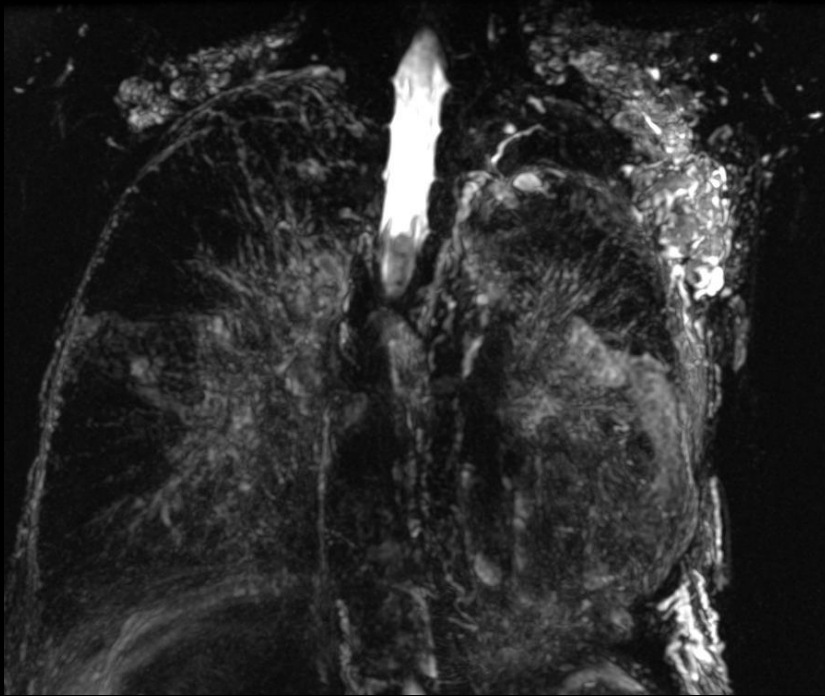


Hypo  
plasy

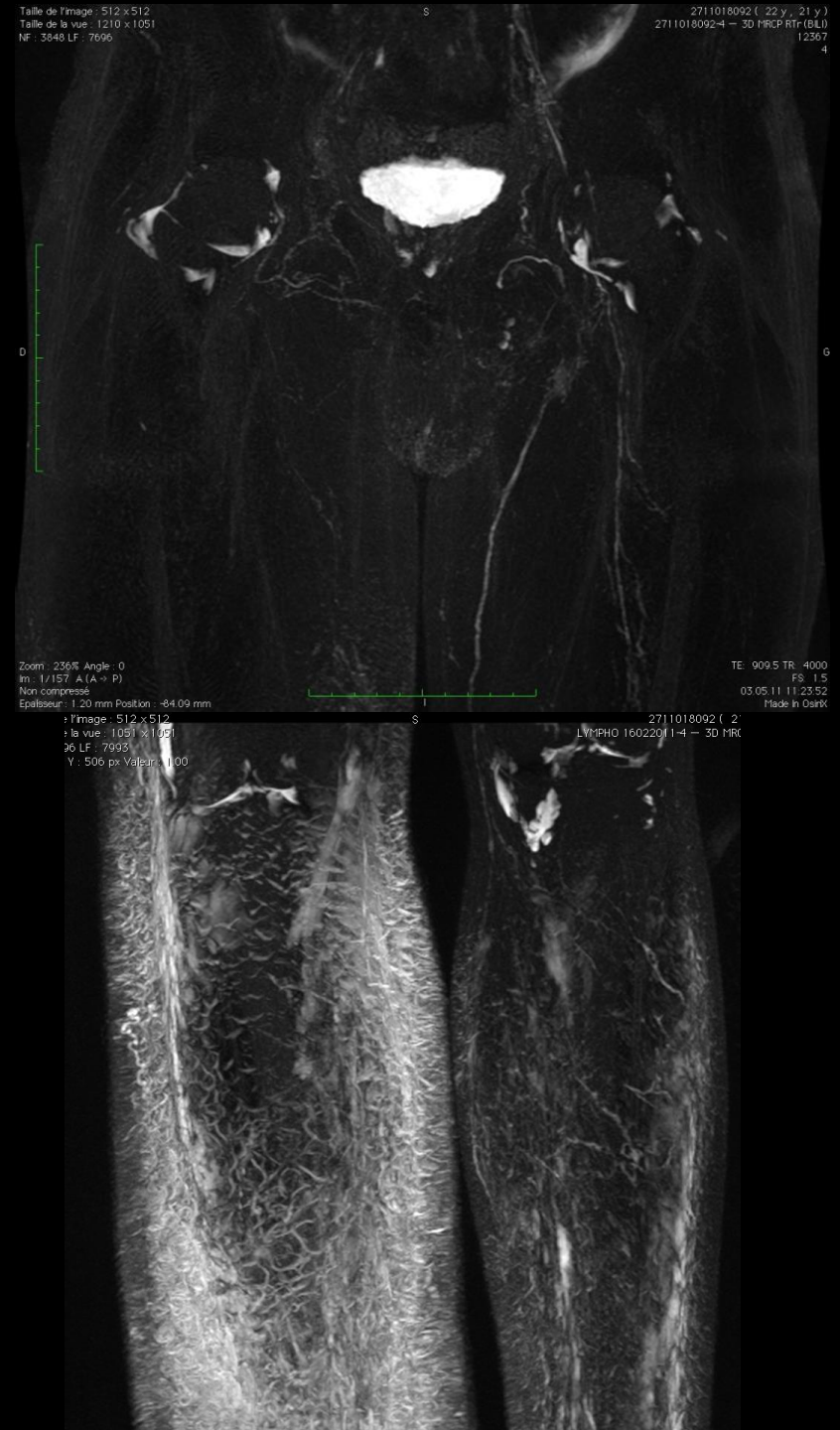
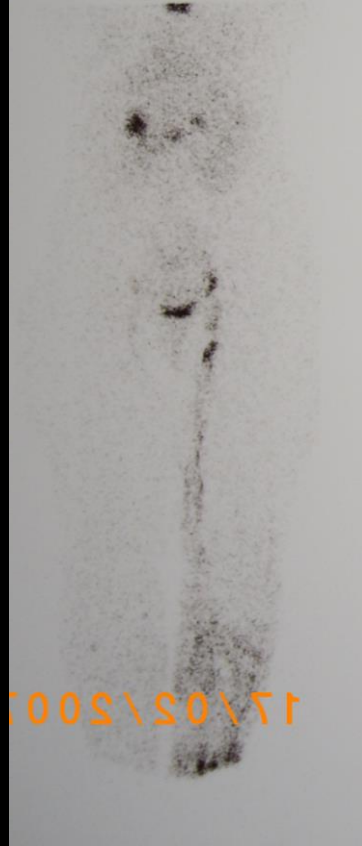




# Lymphoedemea of the 2 legs and chylothorax: thoracic channel lesion and hypoplasia



# Lympho MRI!!!! Gives much more info as isotopy





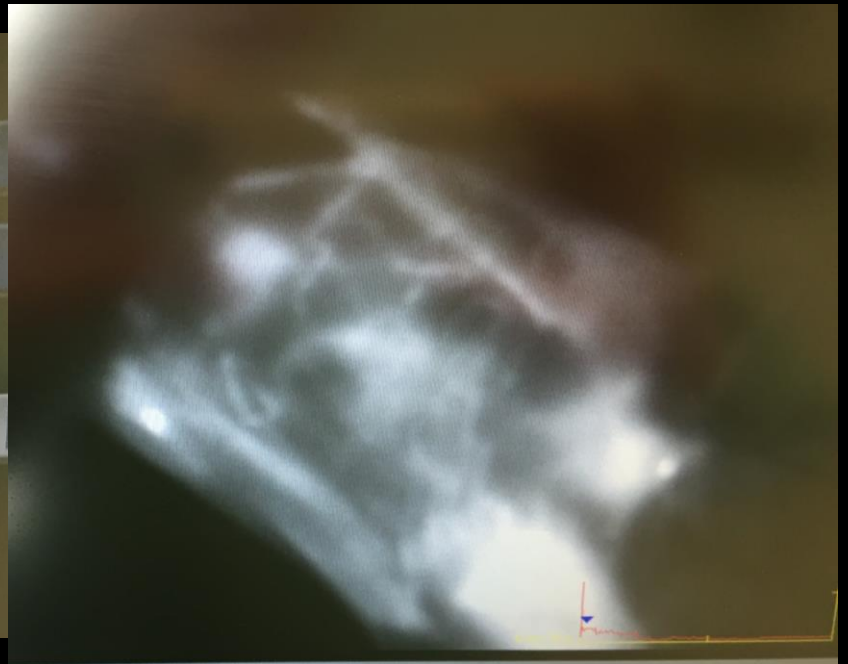
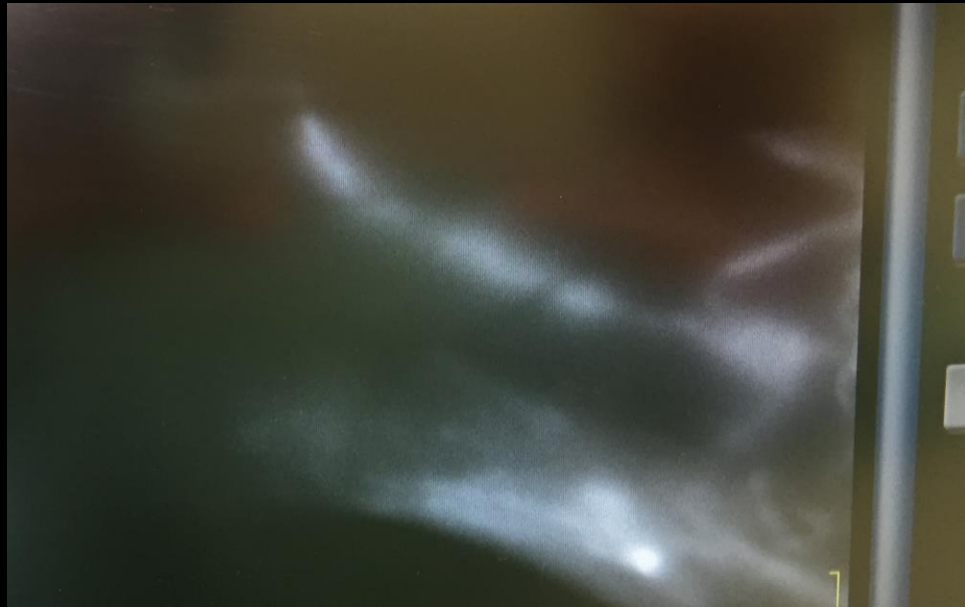




# ***Dynamic evaluation:***

***SPY and fluoptic***

**can show the lymphatic vessels but  
superficial network only (laser limits)**



# Results of lymphnode transplantation in children



- In inguinal region if proximal lymphoedema
- At the knee if distal lymphoedema
- Combination with resection in big fat deposits

!

AT.  
11 MONTHS



Result at 2 years old



At 5 years old

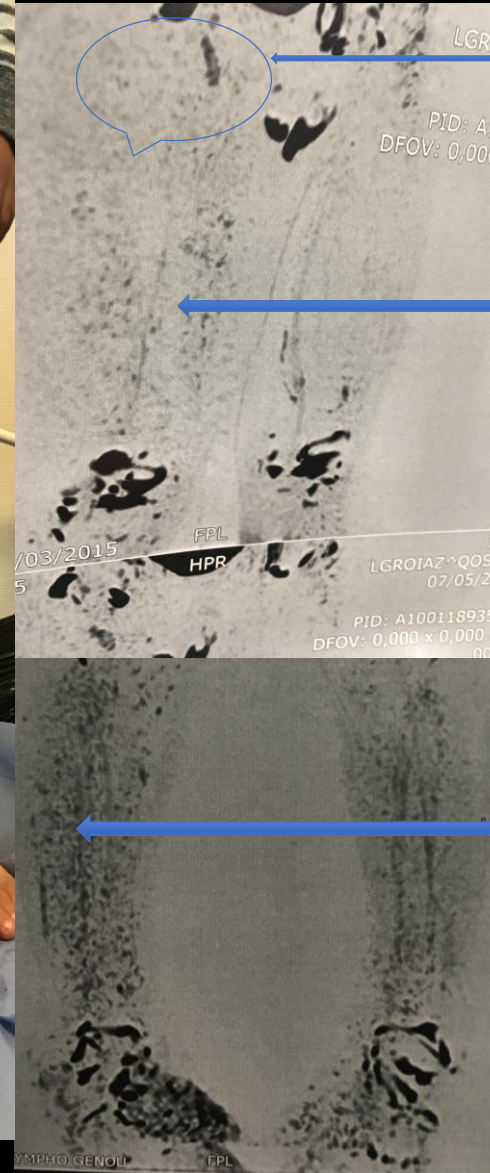
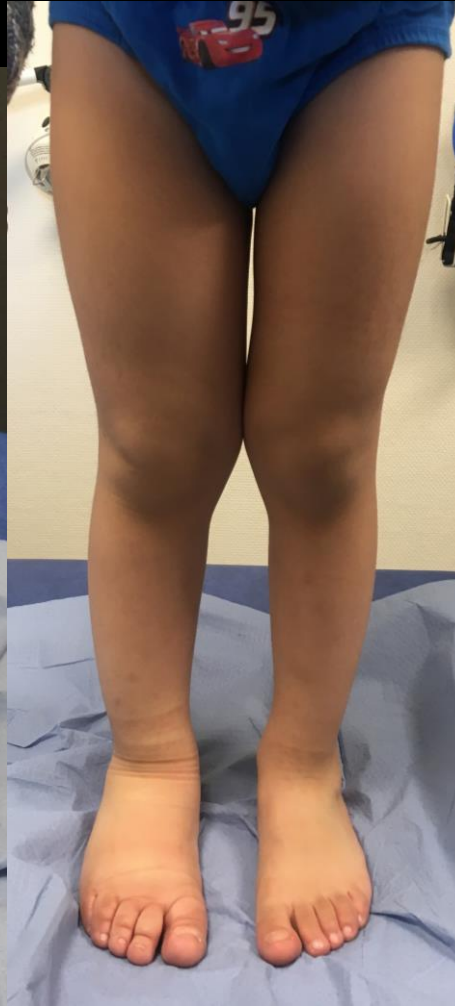




Preop  
transplantation in the inguinal region

1 year

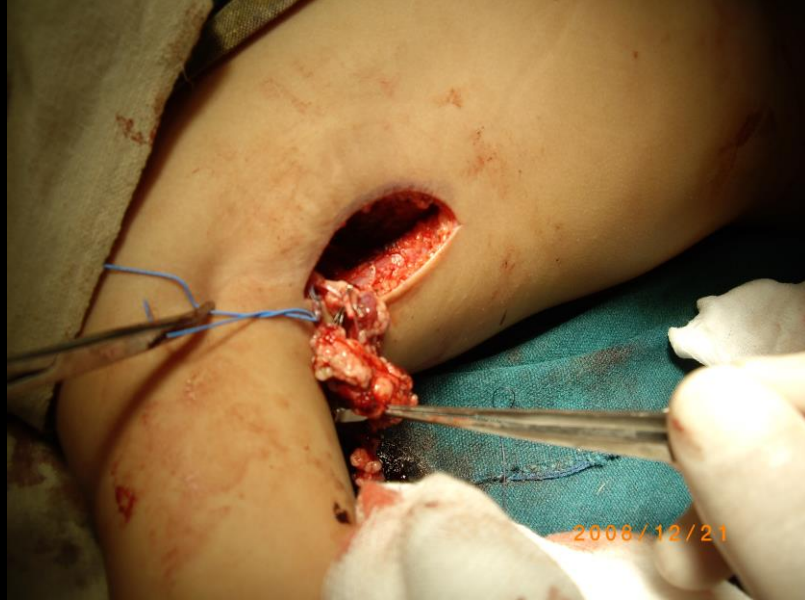
2 years after



## Lymphnode transfer at both knees early results







Distal lymphoedema:  
Combination of lymphnode transfer  
inserted at the knee  
and local excision





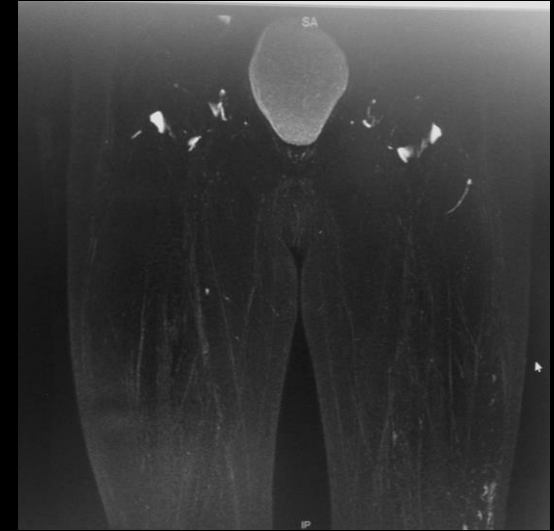
One side operated at 6y old



6 years later.....FIBROSIS on  
not operated leg!!!!



9Y OLD BOY LYMPHEDEMA SINCE BIRTH  
AND 9 YEARS AFTER 2 ALNT AND MINI LIPOSCULPTURES





Results after ALNT at 6 years old  
later improvement at the toes by mini resections of the  
folds





**Do not wait to operate!!!**

Baby not treated becomes that  
after 20 years of suffering

Result 5 years

after 2 lymphnodes transplantation





Sep, 2017 (08 months)



Nov 2018

3 years old, pre and after 6 months ALNT





3 years old child:pre and 6 months after  
nodes transposition inguinal region

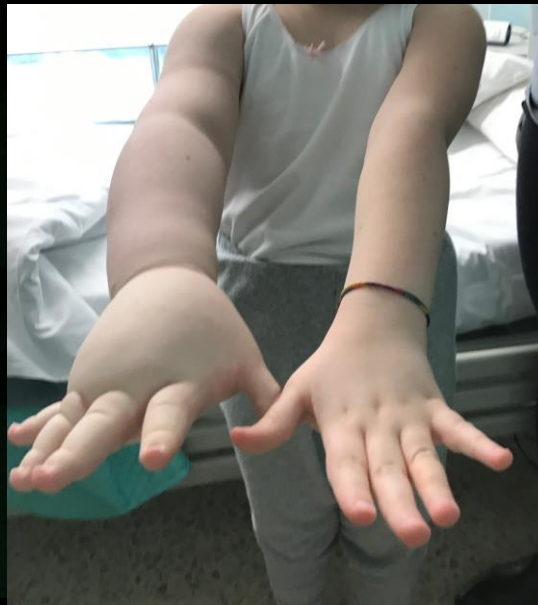




Excision result after 2 years



At 6 months old  
Came at 6 years old  
result after lymphnode transplant and  
excision on the hand





Local liposculptures where no lymphatic vessels  
visible by spy  
complex pathologies, few- or no- donor sites

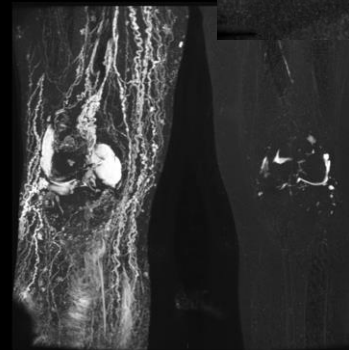
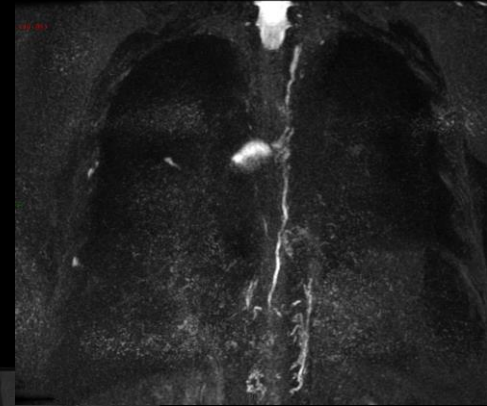


# LV bypass indicated in

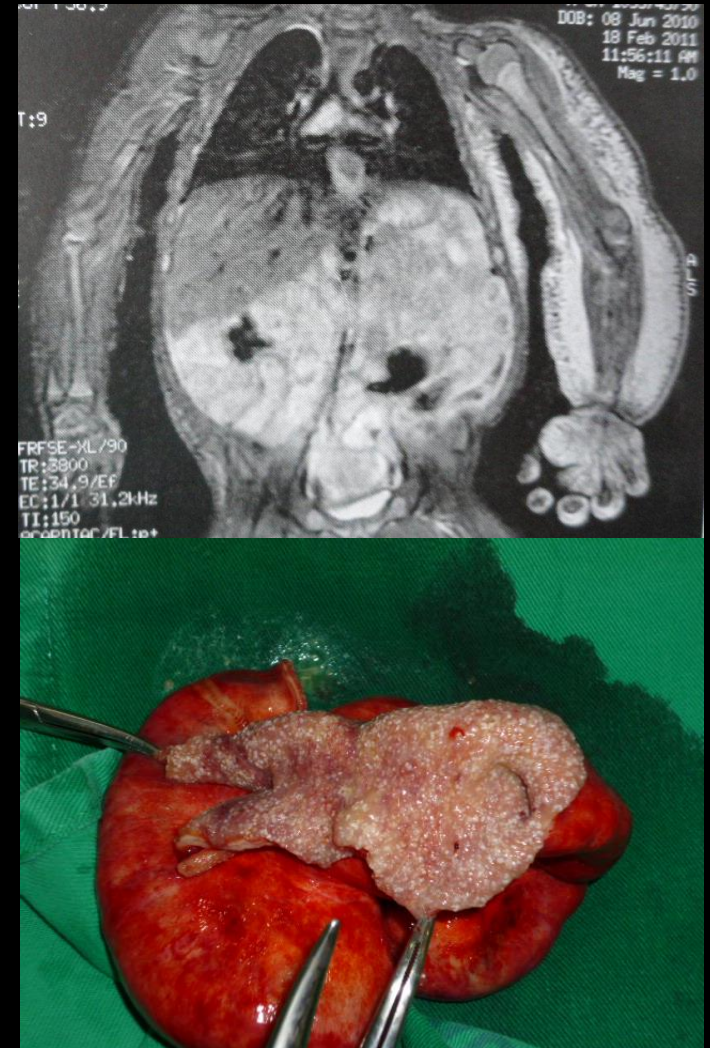
- Thoracic channel syndrome

- hyperplasia

- Local effusions with some lymphatic vessels



# Waldmann disease in Pediatrics Resections of lymphangiectasies and LV bypass

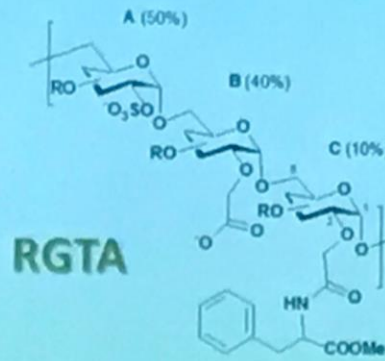




OPERATE YOUNG PATIENTS !!!!  
QUICK MALIGNANT TRANSFORMATION OF  
SOME LYMPHOEDEMA



# cacipliq



RGTA

OTR<sup>3</sup>

- Regenerative medicine promoter of growth factor activities (neuritogenic - neurogenic).
- Extracellular Matrix support for neural progenitors niche (neurogenic).
- Interaction with tau protein or proteins involved in HS internalization (anti-tau).



**VERY INTERESTING PATHOLOGY**  
***MULTIDISCIPLINAIR APPROACH***

**THE PERFECT RESULTS WILL BE  
ONLY ACHIEVED IF THE  
COMPREHENSION OF EACH CASE  
IS REACHED**

**DO NOT WAIT TO TREAT THEM  
BEFORE THE FIBROSIS !!!!!**

**RESEARCH TO BE DONE  
CONTINUE TO WORK  
TO MAKE THEM SO HAPPY!!!!**



My lymph.com  
girl under motivation to change

