

# MICROCHIRURGIA DEL LINFEDEMA

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Aggiornamento APEO 2022  
Dr.ssa Cristina Garusi

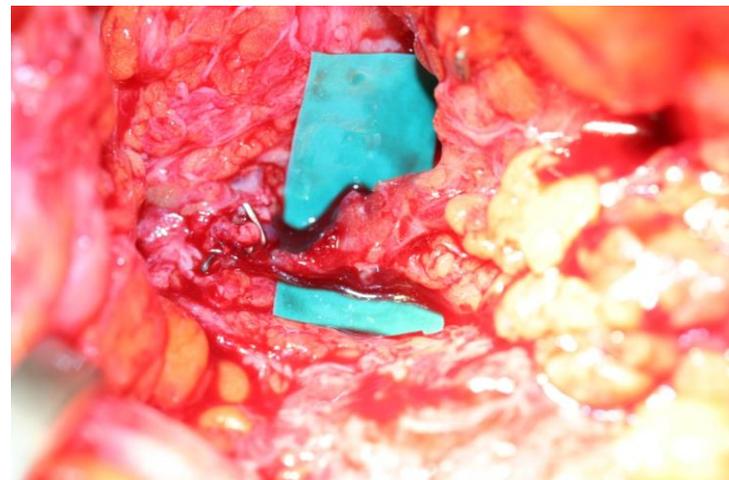


# Potremo distinguere due tecniche chirurgiche che possono agire sul sistema linfatico profondo e superficiale

- IL trapianto di LN vascolarizzato che aprirà alla gemmazione di nuovi vasi linfatici, rimuovendo il blocco del tessuto cicatriziale e creerà i presupposti per una funzione di drenaggio linfatico profondo attivo. Questi diventeranno attivi dopo 9-12 mesi, necessitano di linfodrenaggio dopo circa 1 mese dall'intervento.
- Le anastomosi linfo venose (ALV) ( vero by-pass) che collegano la linfa dei linfatici superficiali con una piccola vena superficiale e che drenano direttamente la linfa nel sistema venoso superficiale. Queste sono attive subito ma necessitano di essere mantenute aperte attraverso il linfodrenaggio che deve proseguire almeno per 1 anno



# Dovremo partire con Barcellona Cocktail dal primo momento?

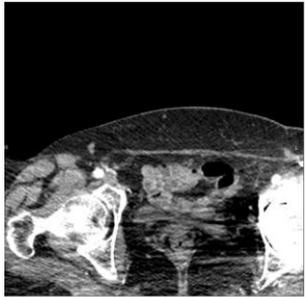
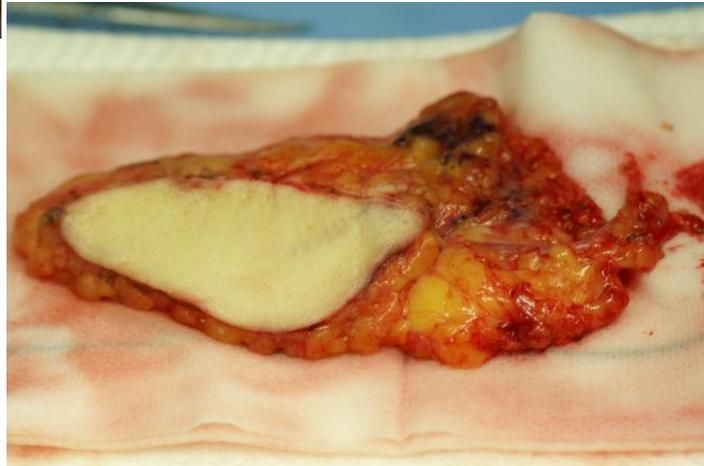
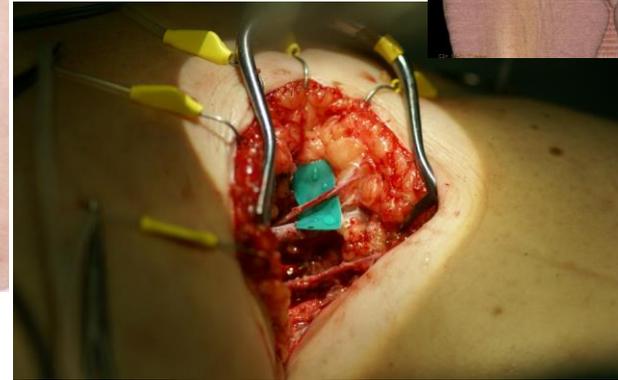
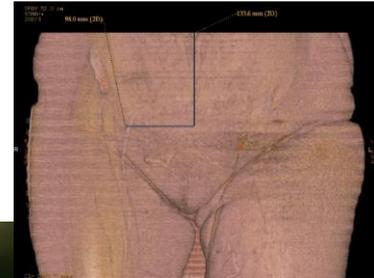


# PRIMO TRAPIANTO DI LN IN ITALIA E ALV IN IEO 12/12/2008

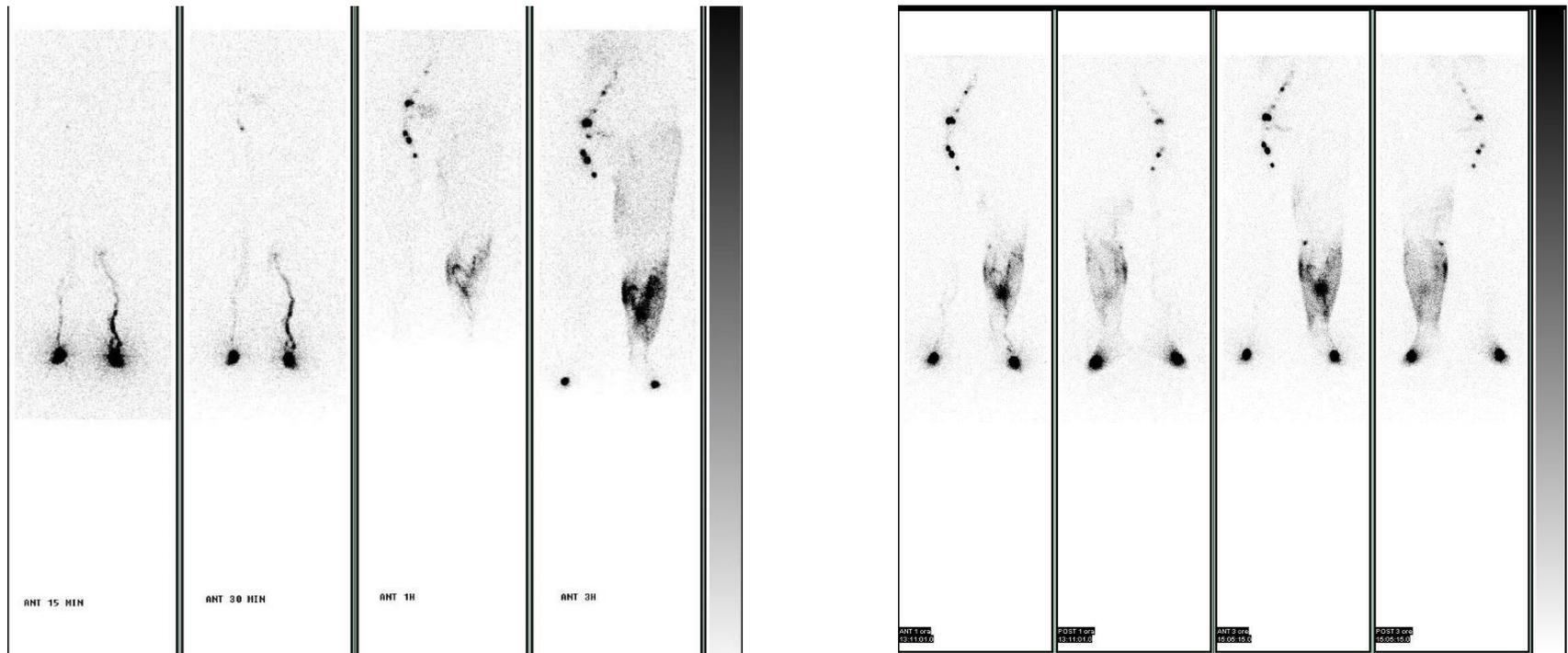
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Con la collaborazione di prof Jaume Masia, dr TC Teo, dr C Garusi

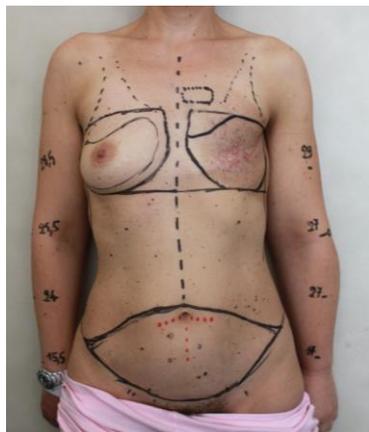




# LINFOSCINTIGRAFIA PRE E POST A 10 MESI CON RIDUZIONE IMPORTANTE DEL LINFEDEMA DOPO TRAPIANTO DI LN A LIVELLO POPLITEO SINISTRO



# Quando proponiamo una tecnica e quando l'altra?



- Arto superiore: importante è valutare anche la mammella. Se per esempio necessita di una ricostruzione mammaria contestuale..... Possiamo proporre un diep + trapianto di LN.
- Se invece non necessita di una ricostruzione mammaria, non ha retrazione cicatriziale ascellare, ha un linfedema principalmente distale, ha dei vasi linfatici, proponiamo alv



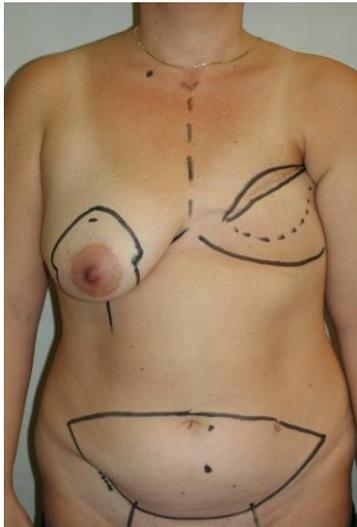


# Primo caso di DIEP + LN (2010) in IEO

- **DIEP in differita dopo mastectomia + rt**
- **Linfedema presente da anni**
- Non risultati della terapia conservativa.
- Programmato un Diep su singola perforante anastomizzato a IMA/V e trapianto di LN in sede ascellare
- **AngioTAC**
- **Nessuna misurazione specifica, non Linfo-RMN, nessuna idea del tipo di riabilitazione**



# Caso clinico per DIEP su singola perforante + trapianto di LN



# MDCT con la migliore perforante a sinistra e LN a destra.

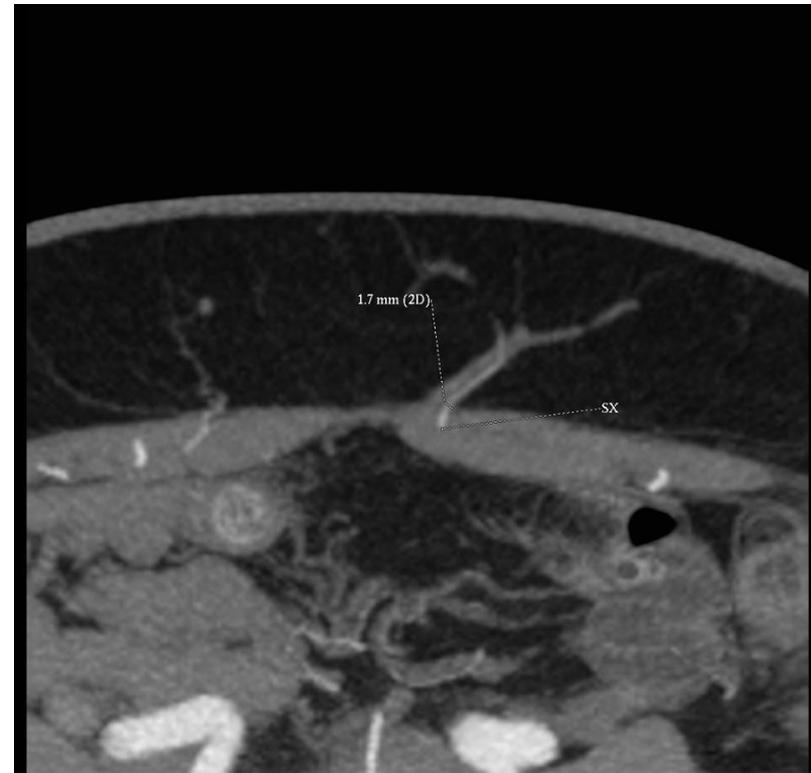
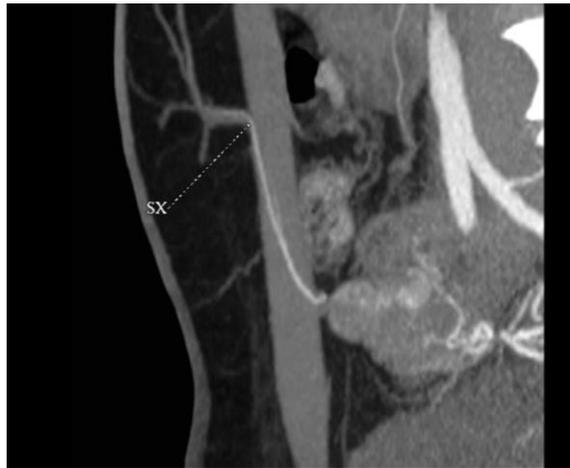
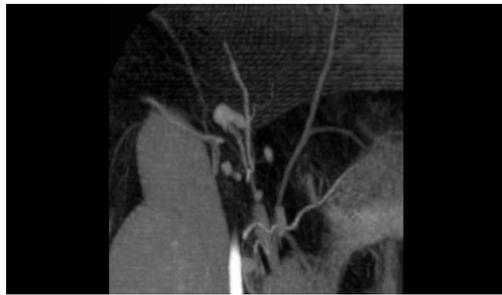
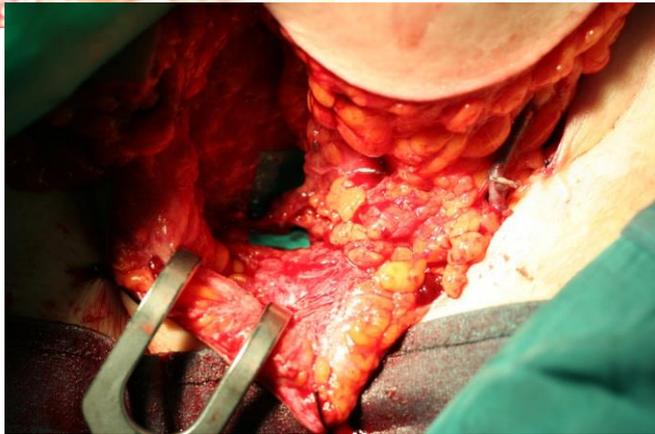
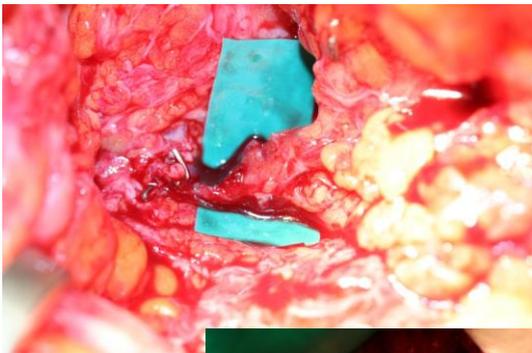
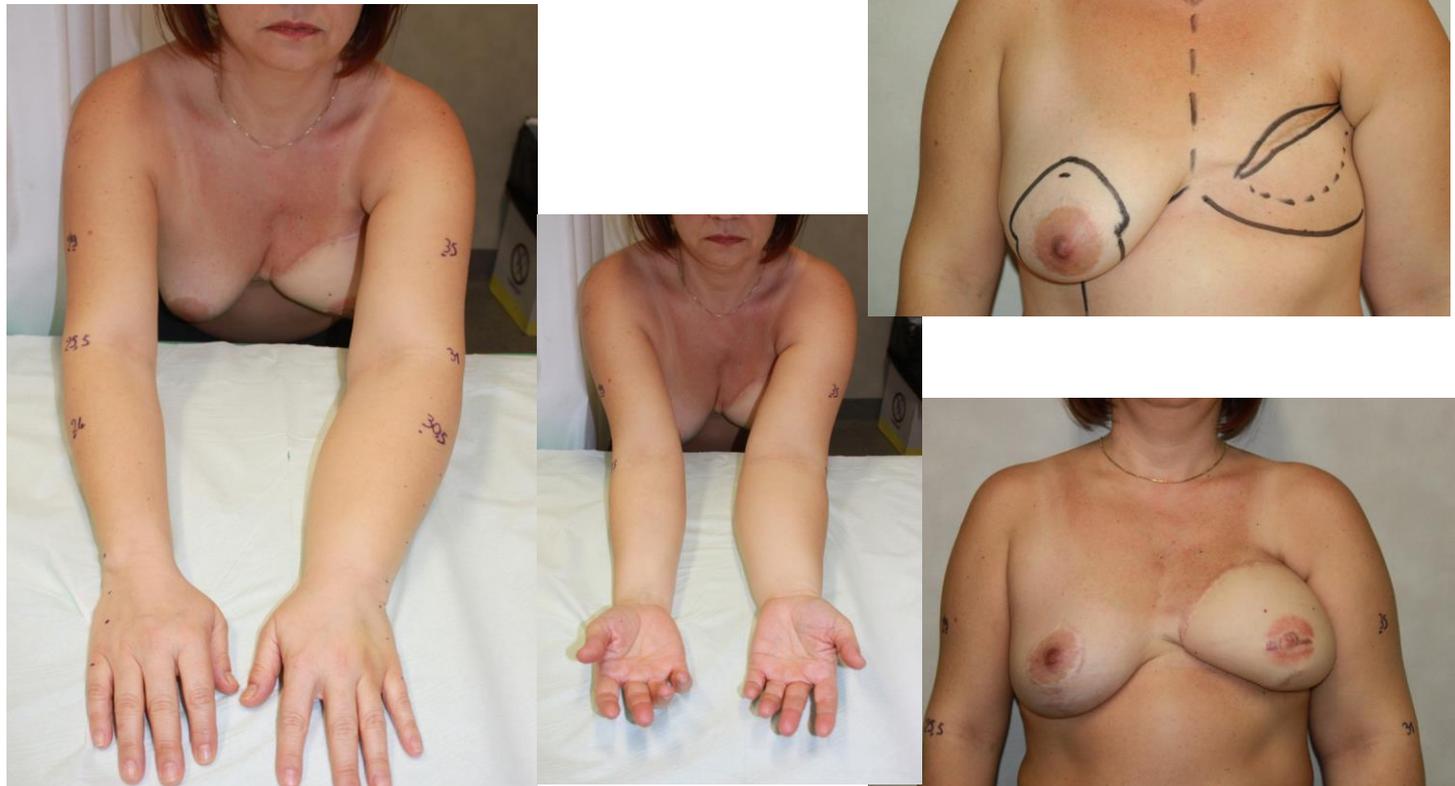


Immagine intraoperatoria di anastomosi dei LN e risultato al momento della RAC e lipofilling  
Soggettivamente lo sente piu leggero.....

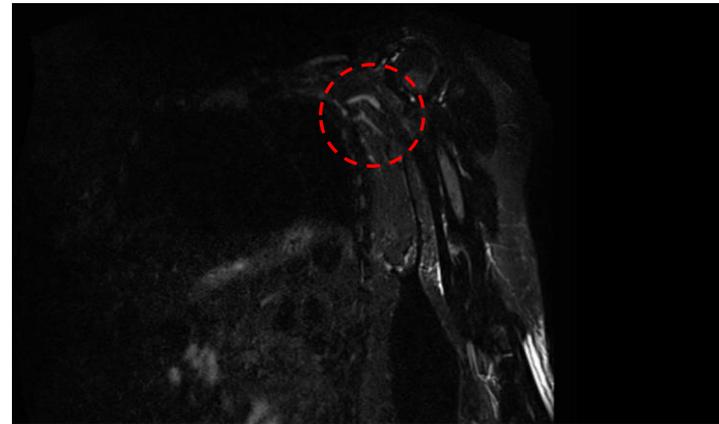
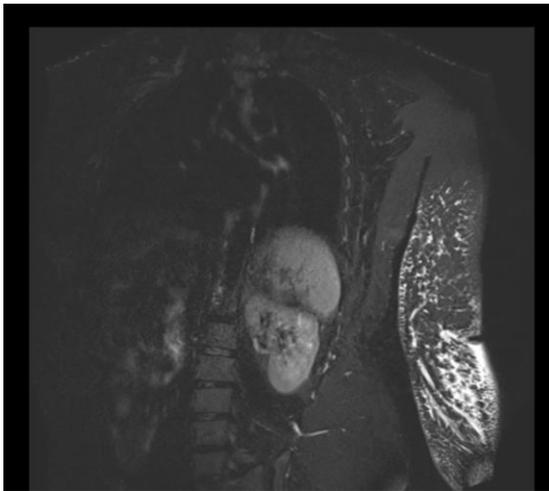


# Preoperatorio e risultato a due anni.



LinfoRMN ....iniziali  
risultati.

Migliorata la parte del  
braccio, molto meno  
sotto al gomito

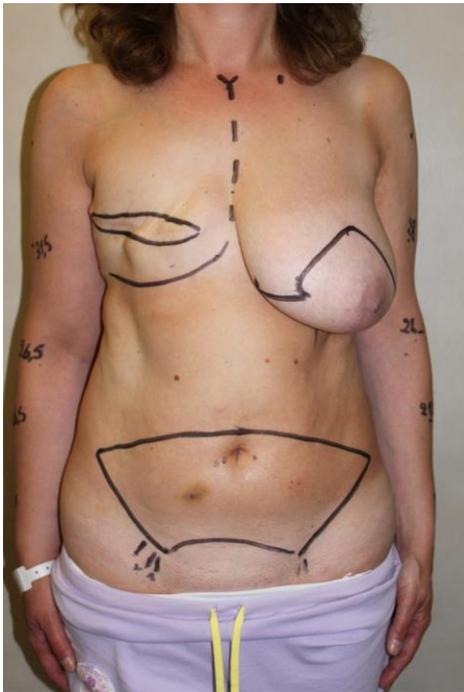


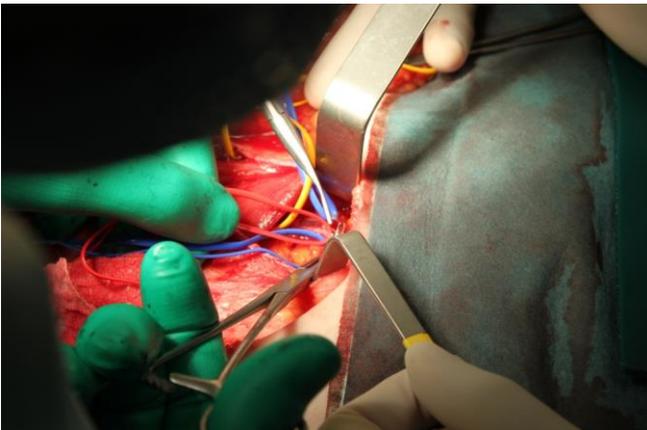
# Primo TAKE HOME MESSAGE

- **Dobbiamo valutare obiettivamente** ( formula matematica del tronco di cono) la **differenza volumetrica** fra un arto e l'altro
- **Dobbiamo considerare il BMI** e peso della paziente
- Deve **proseguire con FKT** per oltre 1 anno dopo l'intervento
- **Vorremo vedere un cambiamento dei linfatici**
- I risultati del trapianto di LN solo lenti, dopo almeno 1 anno, non prevedibili, dipendenti dalla determinazione della paziente nel seguire con le FKT per almeno 2 anni.



# Un altro caso di DIEP + trapianto di LN

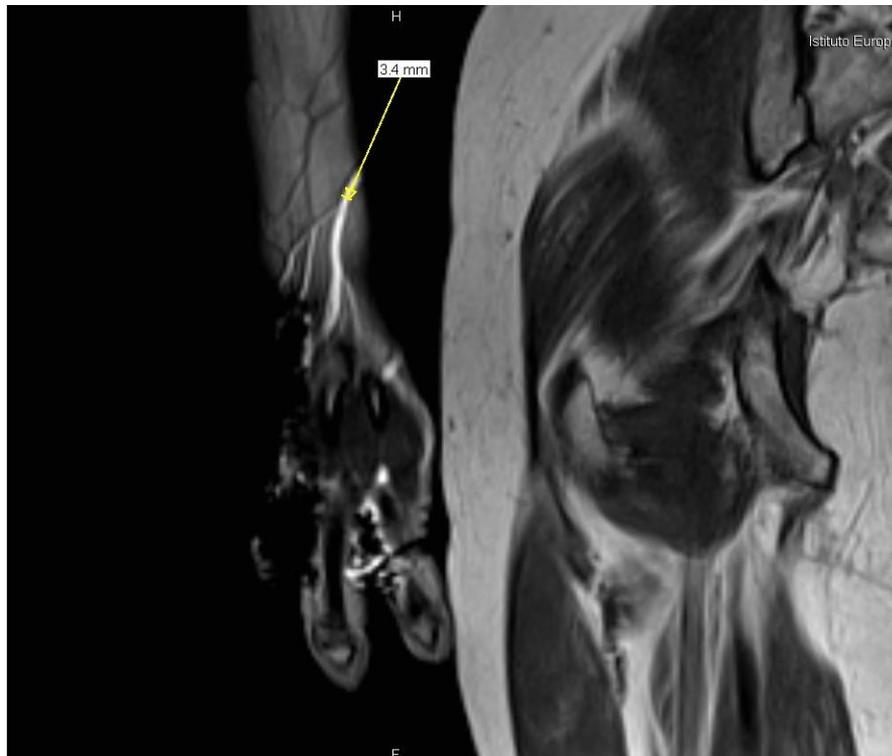




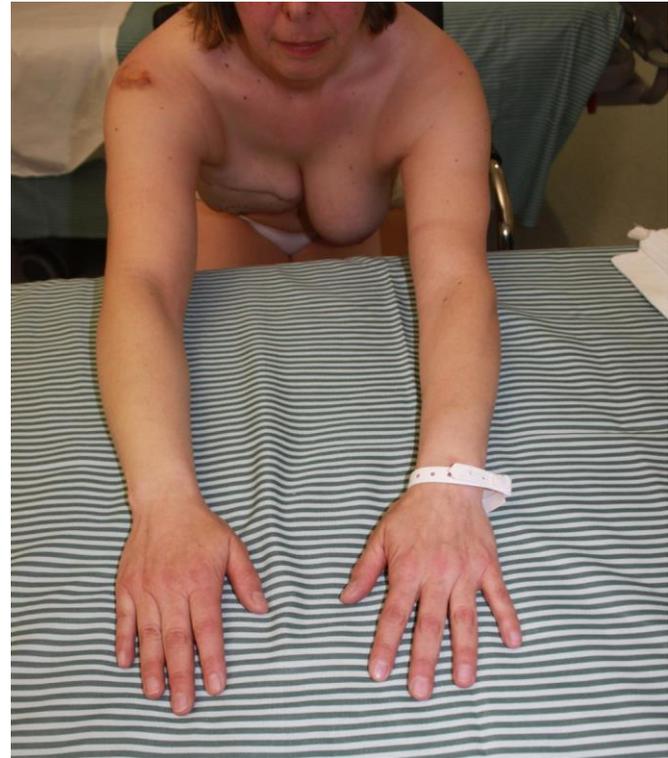
# Resultado a 5 mesi: soggettivamente molto migliorato

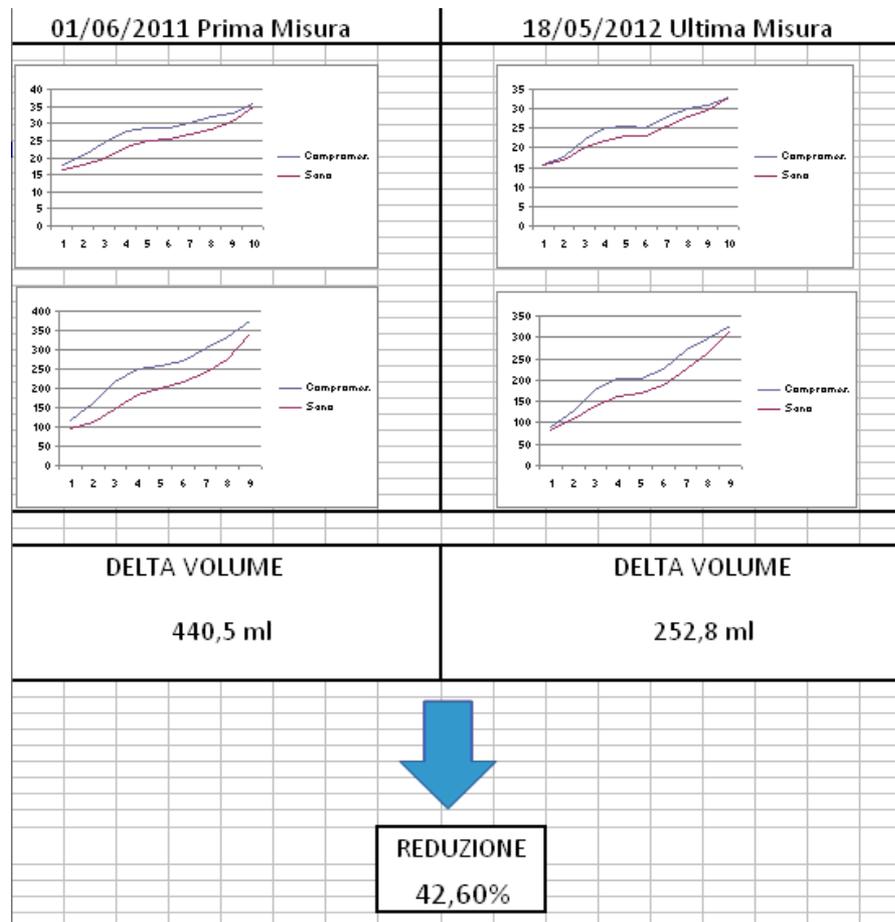


# LynphoRMN: visibile il linfatico



# Resultato ad un anno

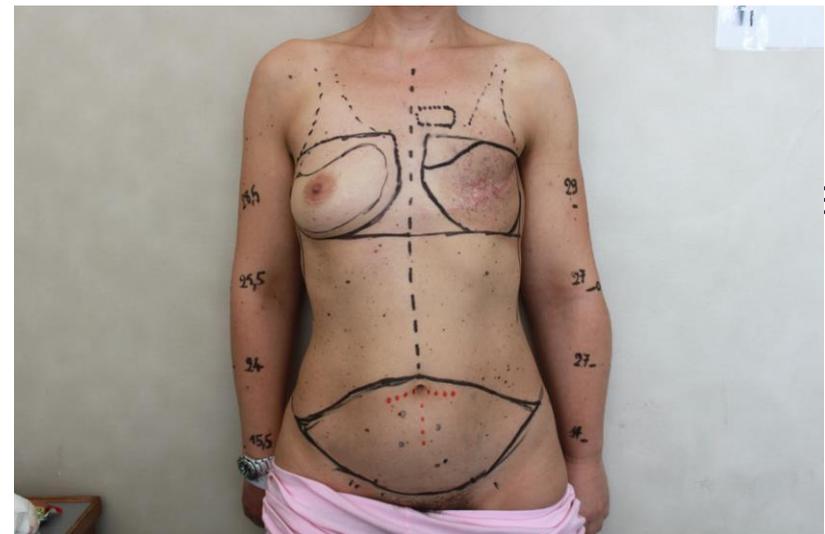
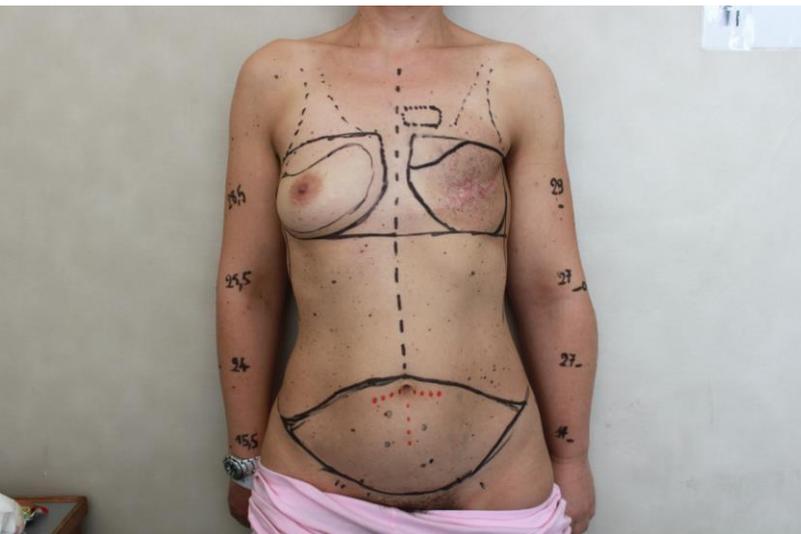




# 2012

## 39 anni, DIEP + trapianto di LN

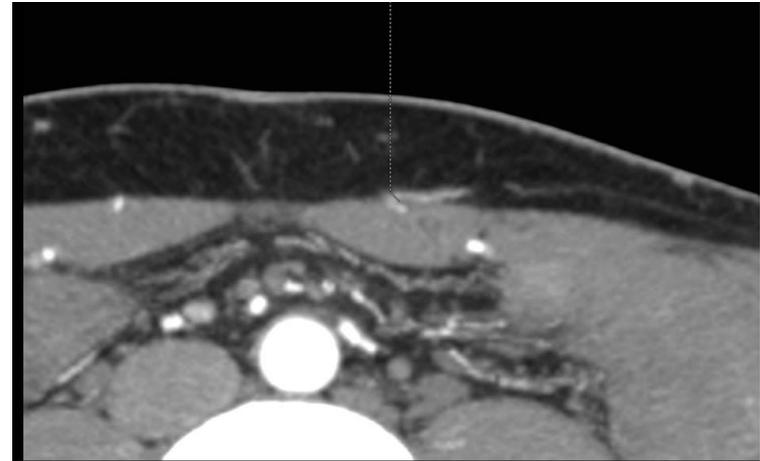
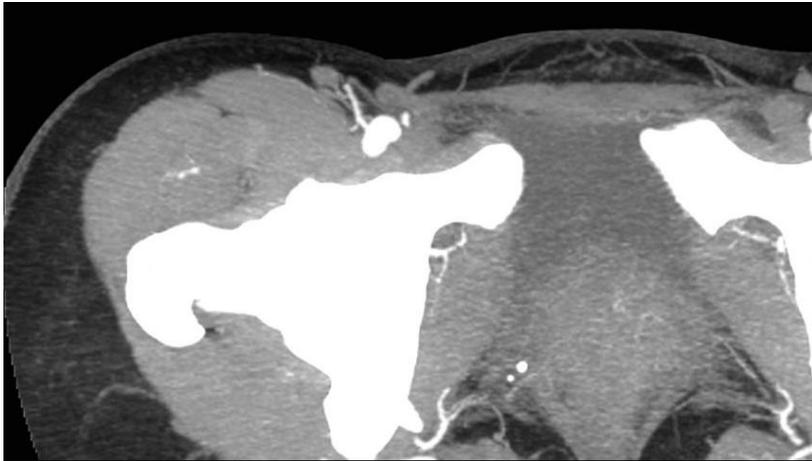
- 37 Ca mammella durante la gravidanza, nessuna familiarità, non test genetico



λ +



# Perforante SX e LN DX



# pre op evaluation

**TABLE 1  
COMPARISON OF LYMPHEDEMA (LE) STAGING AND GRADING CRITERIA:  
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2 Elevation of limb does not reduce swelling Pitting is present in early Stage II Pitting is absent in late Stage II due to tissue fibrosis 20% to 40% increase in limb volume	>10% to 30% inter-limb discrepancy in volume or circumference at point of greatest visible difference; readily apparent obscuration of anatomic architecture; obliteration of skin folds; readily apparent deviation from normal anatomic contour
3 Lymphostatic elephantiasis Pitting is absent Trophic skin changes present >40% increase in limb volume	>30% inter-limb discrepancy in volume; lymphorrhea; gross deviation from normal anatomic contour; interfering with activities of daily living
4	Progression to malignancy (ie, lymphangiosarcoma); amputation indicated; disabling
5	Death

*Data from References 1 and 57.*

Volume braccio		
Destra	Sinistra	Delta
83.88641189	101.141189	17.25478
123.9394904	157.9883227	34.04883
167.2176221	211.4915074	44.27389
195.1050955	256.9522293	61.84713
204.6592357	261.4532909	56.79406
210.35138	258.7048832	48.3535
227.1029724	281.9267516	54.82378
258.7845011	301.141189	42.35669
291.4808917	308.029724	16.54883
1503.7431	1837.687898	
-333.9447983		

→ Sinistro 24% > destro = linfedema

Mano a 8		
Destra	Sinistra	Delta
38	40	
-2		

DOLORE NRS11	0
SENSIBILITA	NESSUNA
RANGE OF MOTION	175°DX / 170° SX

Valutazione Pre operatoria	
Sig: <del>XXXXXXXXXX</del>	
Data di nascita: <del>XXXXXXXXXX</del> 39 anni	
Intervento: 26/09/2012	

Valutazione Pre-op		
Circunferenza braccio		Delta
Destra	Sinistra	
14.5	15	0.5
17.9	20.5	2.6
21.5	24	2.5
24.3	27.5	3.2
25.2	29.3	4.1
25.5	28	2.5
25.9	29	3.1
27.5	30.5	3
29.5	31	1.5
31	31.2	0.2





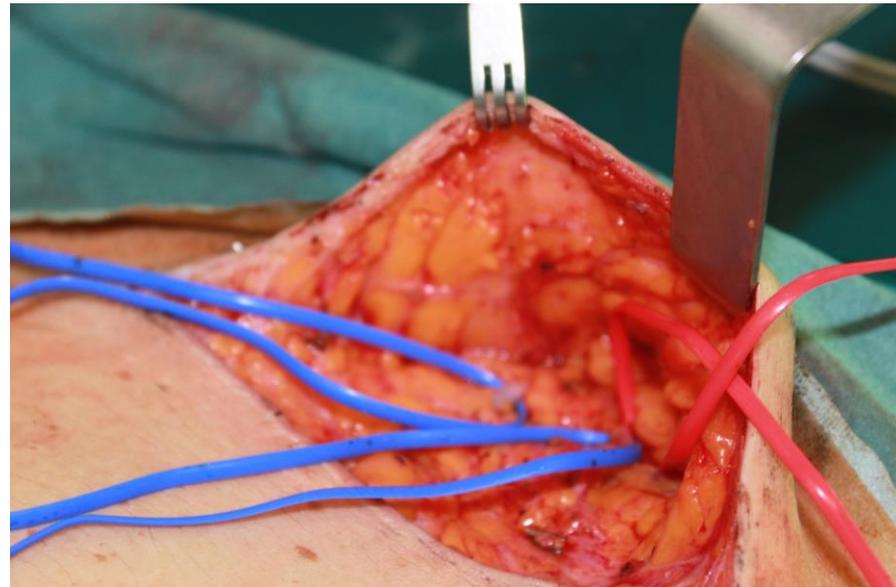
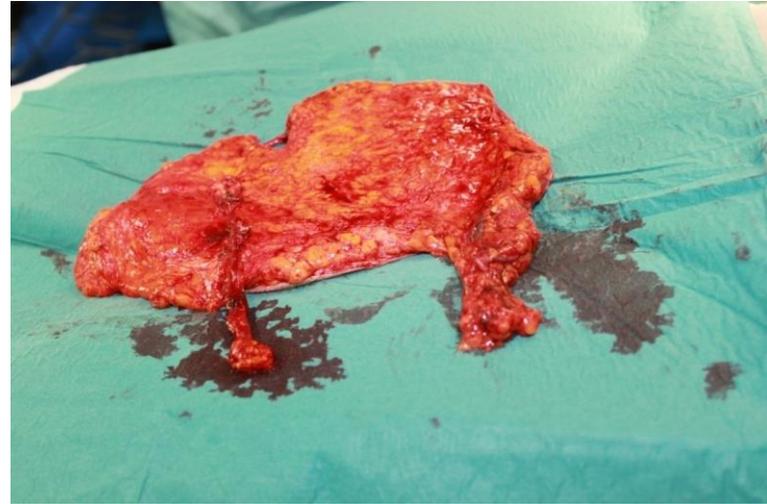
Valutazione Pre operatoria	
Sig: <del>Valutazione Pre operatoria</del>	
Data di nascita: <del>Valutazione Pre operatoria</del>	39 anni
Intervento: 26/09/2012	

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Sig: <del>Valutazione Pre operatoria</del>	
Data di nascita: <del>Valutazione Pre operatoria</del>	39 anni
Intervento: 26/09/2012	

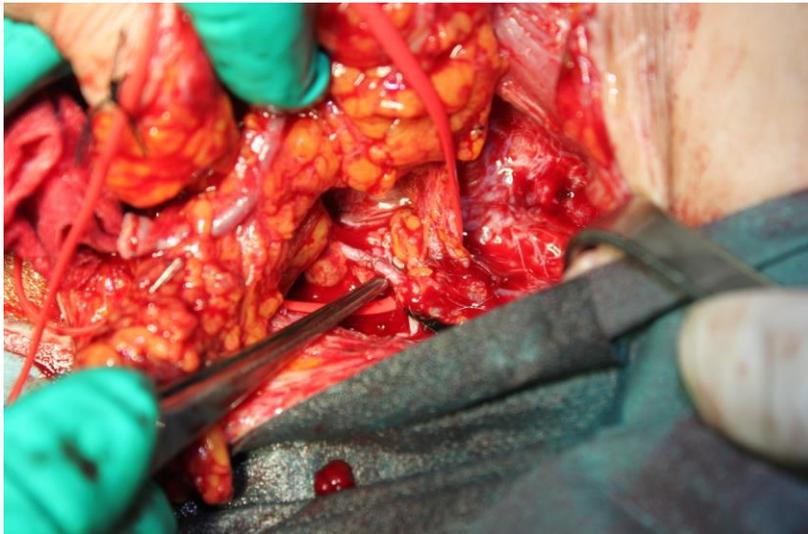
Valutazione Pre-op		Circunferenza braccio	
Destra	Sinistra	Delta	
14.5	15	0.5	
17.9	20.5	2.6	←
21.5	24	2.5	←
24.3	27.5	3.2	←
25.2	29.3	4.1	←
25.5	28	2.5	←
25.9	29	3.1	←
27.5	30.5	3	←
29.5	31	1.5	
31	31.2	0.2	

Valutazione Pre-op		Circunferenza braccio		Delta
Destra	Sinistra	Delta		
14.5	15	0.5		
17.9	20.5	2.6	←	
21.5	24	2.5	←	
24.3	27.5	3.2	←	
25.2	29.3	4.1	←	
25.5	28	2.5	←	
25.9	29	3.1	←	
27.5	30.5	3	←	
29.5	31	1.5		
31	31.2	0.2		

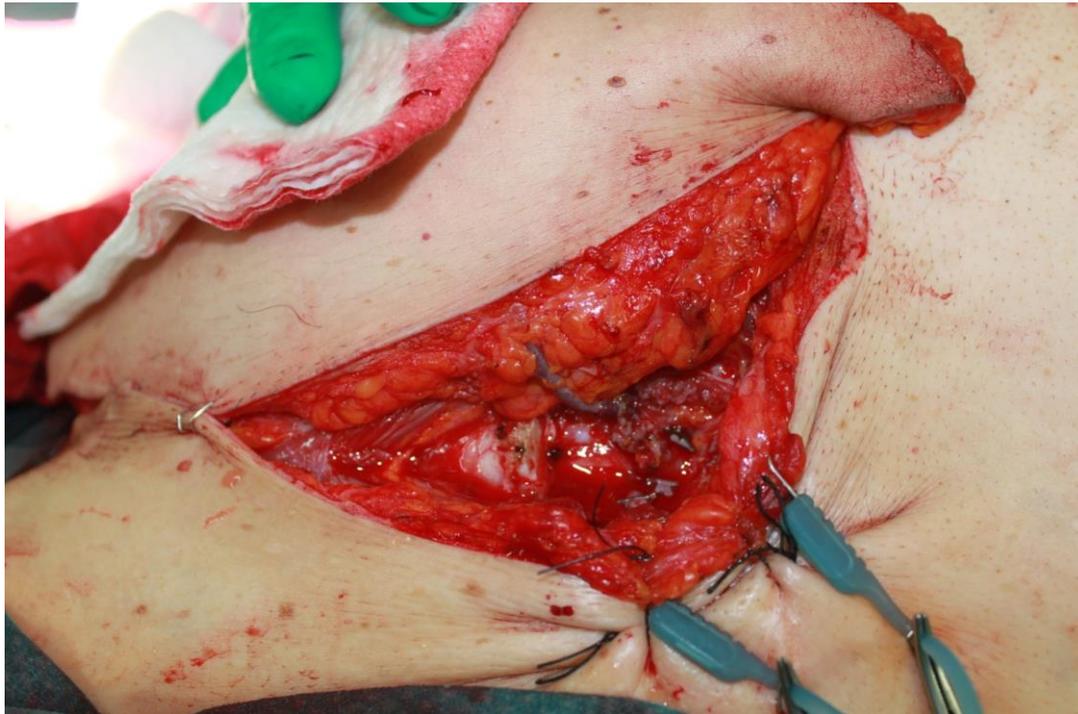




## DIEP anastomizzato sul serrato + LN ( SCIP) al peduncolo del dorsale



# Extra vena epigastrica superficiale alla IMV.





# Valutazione alla dimissione.....peggiorata

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3 Lymphostatic elephantiasis Pitting is absent Toxic skin changes present >40% increase in limb volume	>30% inter-limb discrepancy in volume; lymphorrhea; gross deviation from normal anatomic contour; interfering with activities of daily living
4	Progression to malignancy (ie, lymphangiosarcoma); amputation indicated; disabling
5	Death

*Data from References 1 and 57.*

Volume braccio		
Destra	Sinistra	Delta
85.8641189	106.873673	21.00955
117.6093418	171.1666667	53.55732
158.6794055	233.35138	74.67197
193.5552017	281.962845	88.40764
201.4426752	282.9012739	81.4586
195.0902335	274.3598726	79.26964
208.0159236	314.2717622	106.2558
248.9840764	362.8184713	113.8344
291.5169851	368.1794055	76.66242
1451.773885	2033.066879	
-581.2929936		

Sinistro 40% > destro = linfedema

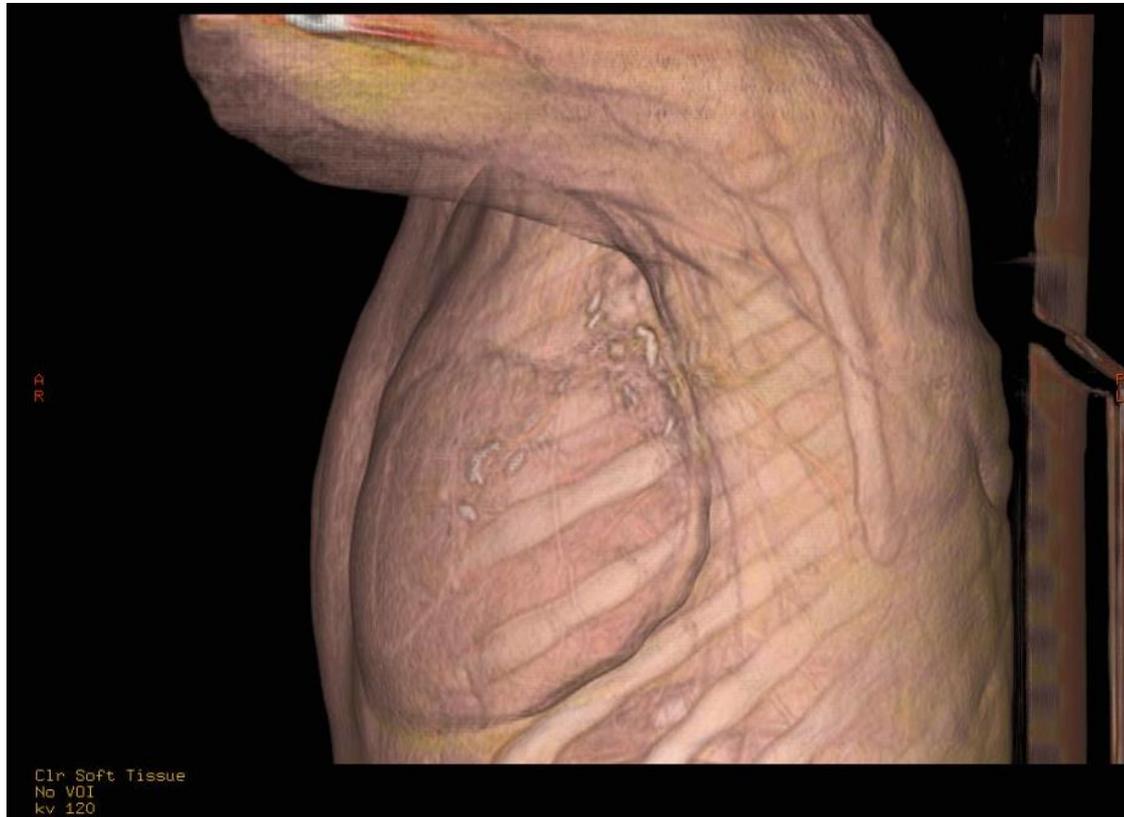
Mano a 8		
Destra	Sinistra	Delta
40	40.5	
-0.5		

DOLORE NRS11	0
SENSIBILITA	NORMALE
RANGE OF MOTION	174°DX / 165° SX

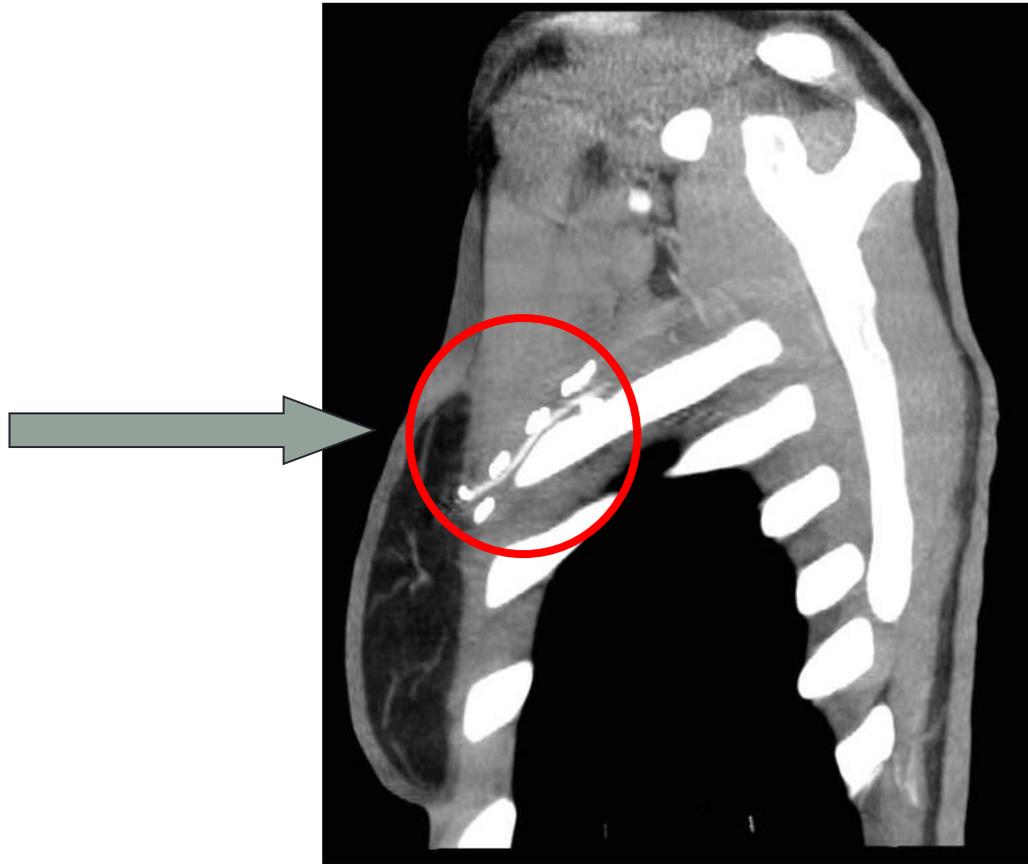
Valutazione in Dimissione 03/10/2012	
Sig:	[REDACTED]
Data di nascita:	[REDACTED] 39 anni
Intervento:	26/09/2012

Circonferenza braccio		
Destra	Sinistra	Delta
15	15.5	0.5
17.8	21	3.2
20.6	25.3	4.7
24	28.8	4.8
25.3	30.7	5.4
25	28.9	3.9
24.5	29.8	5.3
26.6	33	6.4
29.3	34.5	5.2
31.2	33.5	2.3









# 1 settimana dopo la dimissione

Volume braccio			
Destra	Sinistra		Delta
82.67940552	104.8481953		22.16879
110.3864119	160.2643312		49.87792
143.2866242	219.7717622		76.48514
175.2452229	255.9755839		80.73036
196.6762208	261.4087049		64.73248
192.7643312	251.4946921		58.73036
204.029724	273.7112527		69.68153
243.5955414	308.029724		64.43418
272.5042463	308.029724		35.52548
1377.572187	1835.504246		
-457.9320594			

Sinistro 33% > destro = linfedema

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4	Progression to malignancy (ie, lymphangiosarcoma); amputation indicated; disabling
5	Death



Mano a 8	
Destra	Sinistra
40	40
0	

<b>Valutazione Follow up 12/10/2012</b>	
Sig: <del>XXXXXXXXXX</del>	
Data di nascita: <del>XXXXXXXXXX</del>	39 anni
Intervento: 26/09/2012	

DOLORE NRS11	3 al Braccio/ 1 al lembo / 2 Alla pancia
SENSIBILITA	NORMALE
RANGE OF MOTION	168°DX / 120° SX

Valutazione Pre-op			
Circunferenza braccio			Delta
Destra	Sinistra		
15	15.9		0.9
17.2	20.3		3.1
20	24.5		4.5
22.4	28		5.6
24.5	28.7		4.2
25.2	28.6		3.4
24	27.6		3.6
26.6	31		4.4
28.7	31.2		2.5
29.8	31		1.2



# 1 mese di follow up

Volume braccio			
Destra	Sinistra		Delta
76.53927813	72.74309979		-3.79618
118.6637473	107.7271762		-10.9366
155.4869958	161.6507431		6.163747
197.2863588	215.5254777		18.23912
229.3325372	249.7080679		20.37553
243.8627919	254.1666667		10.30387
258.8906582	256.8832272		-2.00743
306.9599257	275.3121019		-31.6478
346.4371019	286.6242038		-59.8129
1626.499469	1605.028662		
21.47080679		← A	

u → Sinistro 21% > destro = linfedema

Mano a 8			
Destra	Sinistra		
	38		39
			-1

DOLORE NRS11	Assente
SENSIBILITA	Normale
RANGE OF MOTION	Normale

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4	Progression to malignancy (ie, lymphangiosarcoma); amputation indicated; disabling
5	Death

Data from References 1 and 57.



# 3 mesi di follow up .... peggiorata

Volume braccio			
Destra	Sinistra		Delta
82.78980892	95.56794055		12.77813
109.6825902	151.6942675		42.01168
124.8630573	184.2261146		59.36306
148.1220807	195.0902335		46.96815
182.7717622	218.7643312		35.99257
198.2494692	265.2940552		67.04459
194.3057325	289.5		95.19427
212.1953291	288.5392781		76.34395
260.7048832	281.888535		21.18365
1301.489384	1682.025478		
-380.5360934			

Sinistro 29% > destro = linfedema

Mano a 8		
Destra	Sinistra	
38	39	
-1		

DOLORE NRS11	Assente
SENSIBILITA	Normale
RANGE OF MOTION	Normale

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Data from References 1 and 57.



# 1 anno di follow up

Volume braccio		
Destra	Sinistra	Delta
89.67622081	84.26220807	-5.41401
118.0732484	118.3386412	0.265393
154.5647558	176.5392781	21.97452
191.1889597	241.0828025	49.89384
203.052017	254.2197452	51.16773
199.0711253	223.7526539	24.68153
219.7717622	241.2685775	21.49682
277.388535	281.873673	4.485138
301.141189	286.6242038	-14.517
1476.539278	1626.08811	
-149.5488323		

→ Sinistro 10% > destro = linfedema localizzato staging 1

Mano a 8	
Destra	Sinistra
39	39
0	

DOLORE NRS11	Assente
SENSIBILITA	Normale
RANGE OF MOTION	Normale

**TABLE 1  
COMPARISON OF LYMPHEDEMA (LE) STAGING AND GRADING CRITERIA:  
NATIONAL CANCER INSTITUTE (NCI) AND INTERNATIONAL SOCIETY  
OF LYMPHOLOGY (ISL)**

ISL Staging	NCI Toxicity (CTCAE v3.0) Edema: Limb
0 Latent or subclinical LE No evidence of swelling Exists prior to overt edema	Normal
1 Pitting Elevation of limb reduces swelling <20% increase in limb volume	5% to 10% inter-limb discrepancy in volume or circumference at point of greatest visible difference; swelling or obscuration of anatomic architecture on close inspection; pitting edema
2 Elevation of limb does not reduce swelling Pitting is present in early Stage II Pitting is absent in late Stage II due to tissue fibrosis 20% to 40% increase in limb volume	>10% to 30% inter-limb discrepancy in volume or circumference at point of greatest visible difference; readily apparent obscuration of anatomic architecture; obliteration of skin folds; readily apparent deviation from normal anatomic contour
3 Lymphostatic elephantiasis Pitting is absent Trophic skin changes present >40% increase in limb volume	>30% inter-limb discrepancy in volume; lymphorrhea; gross deviation from normal anatomic contour; interfering with activities of daily living
4	Progression to malignancy (ie, lymphangiosarcoma); amputation indicated; disabling
5	Death

*Data from References 1 and 57.*

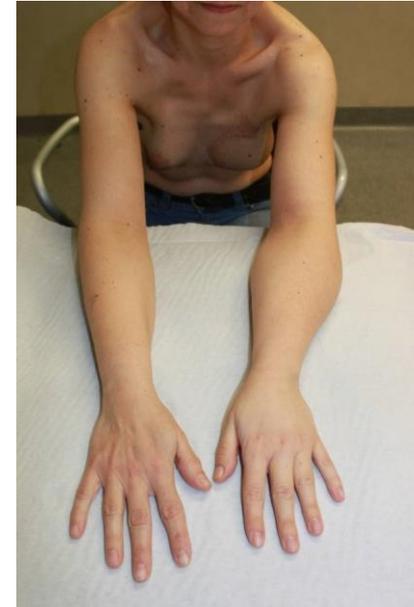


12/2012.....10/2013





# Resultato ad 1 anno: dopo la perdita di 6 kg.



<b>Valutazione Follow up 10/10/2013</b>	
Sig: ██████████	
Data di nascita:	██████████ 39 anni
Intervento: 26/09/2012	

<b>Valutazione</b>			
Circunferenza braccio			
Destra	Sinistra		Delta
15	15		0
18.5	17.5		-1
20	21		1
24	26		2
25	29		4
25.5	27.5		2
24.5	25.5		1
28	29.5		1.5
31	30		-1
30.5	30		-0.5



# RMN dopo RM sinistra con DIEP

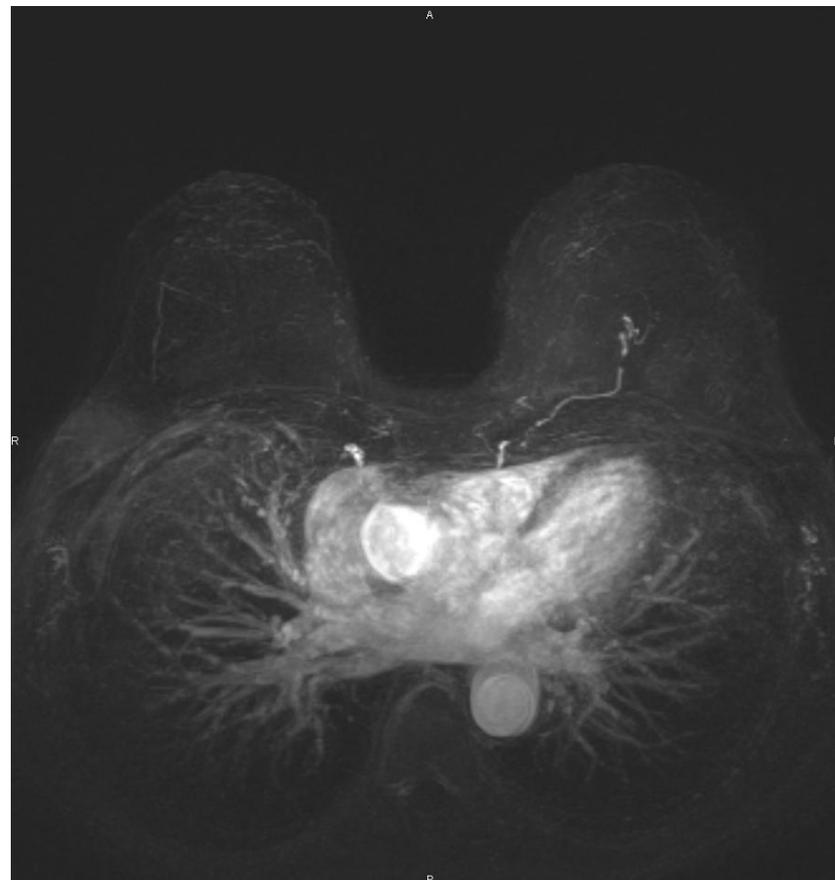
Dobbiamo valutare obiettivamente ( formula matematica del tronco di cono) la **differenza volumetrica** fra un arto e l'altro

Dobbiamo considerare il **BMI** e peso della paziente

Deve **proseguire con FKT** per oltre 1 anno dopo l'intervento

**Vorremo vedere un cambiamento dei linfatici**

I risultati del trapianto di LN solo lenti, dopo almeno 1 anno, non prevedibili, **dipendenti dalla determinazione della paziente** nel seguire con le FKT per almeno 2 anni.

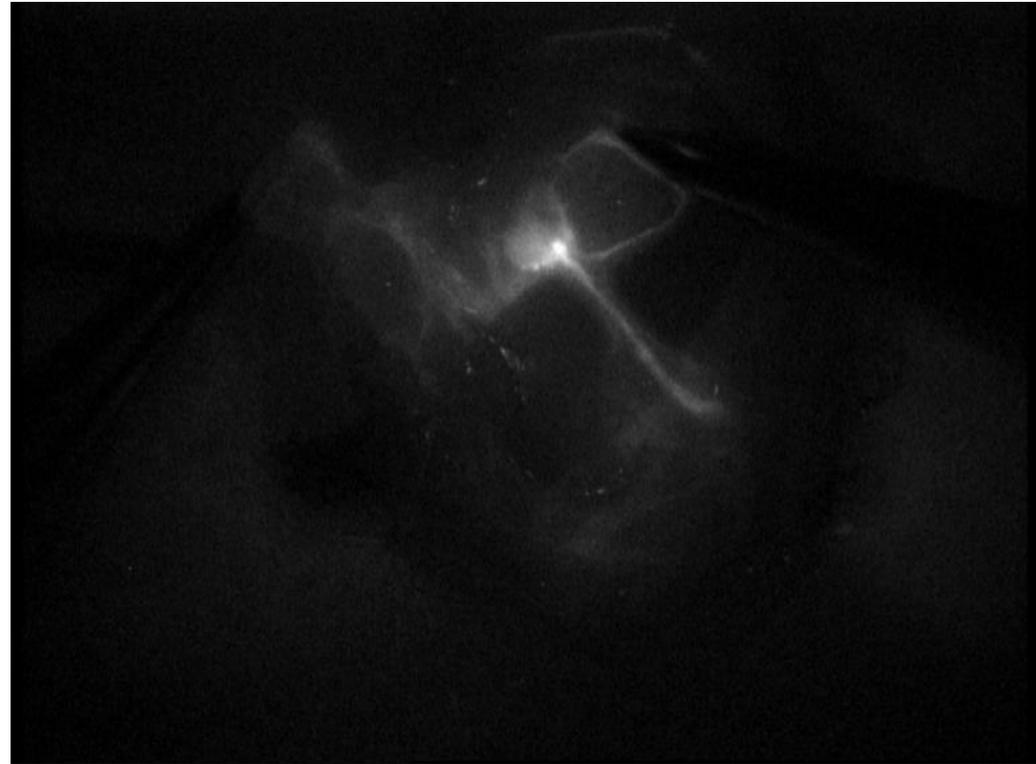
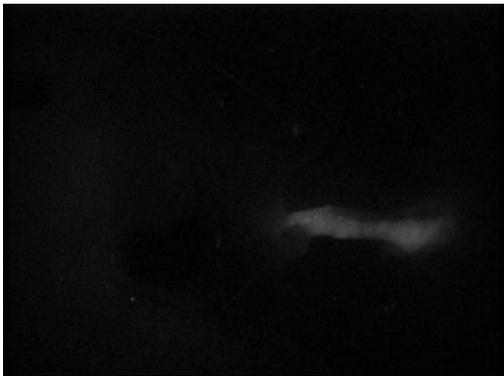
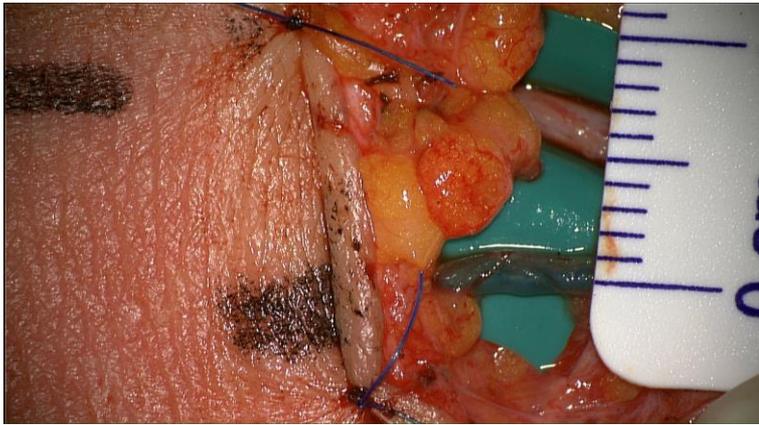


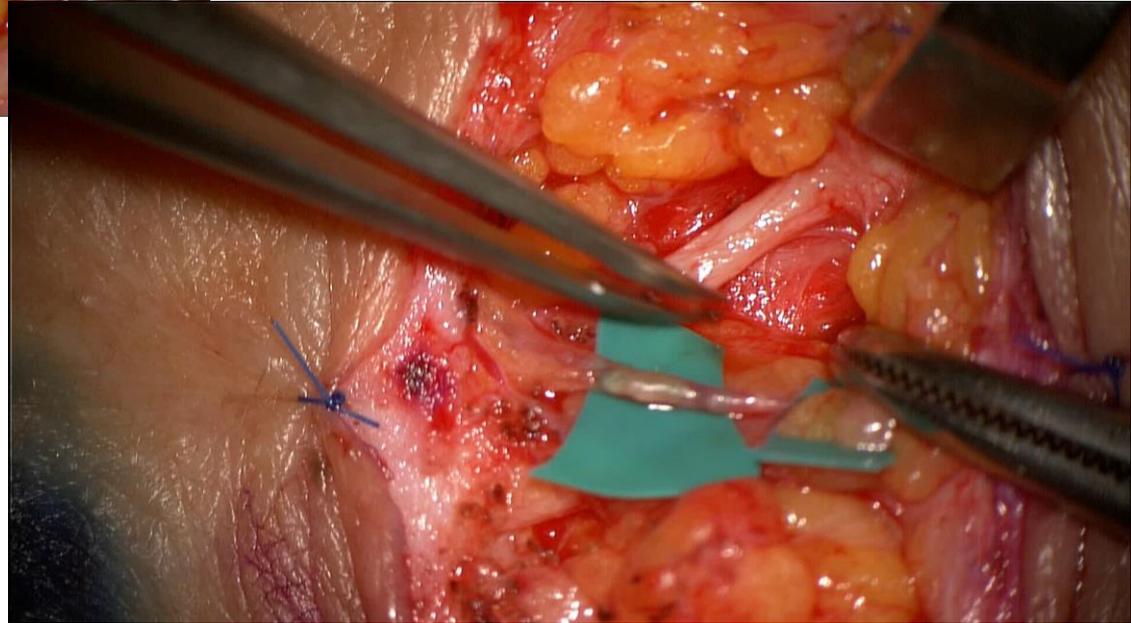
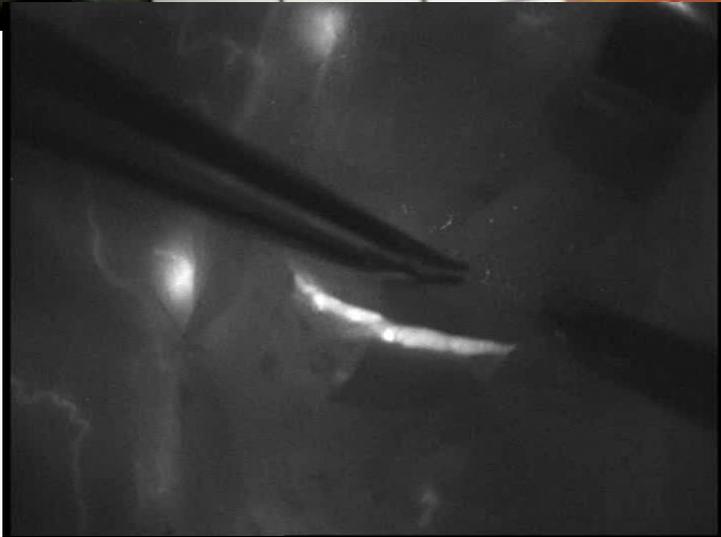
# Linfatici normali e peristalsi spontanea

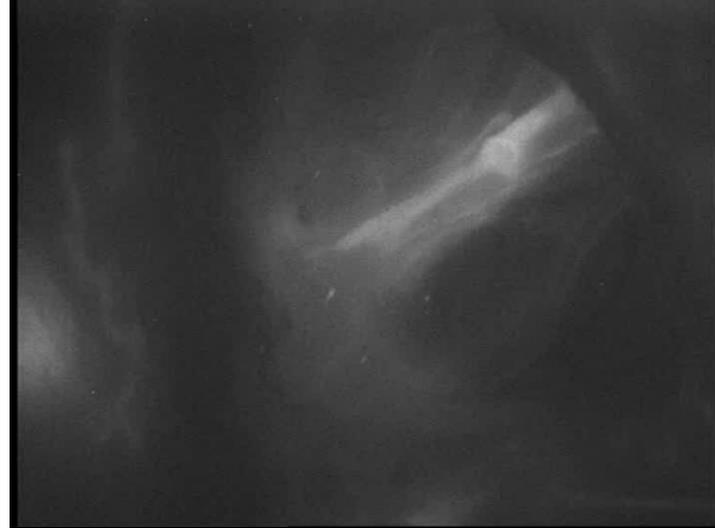
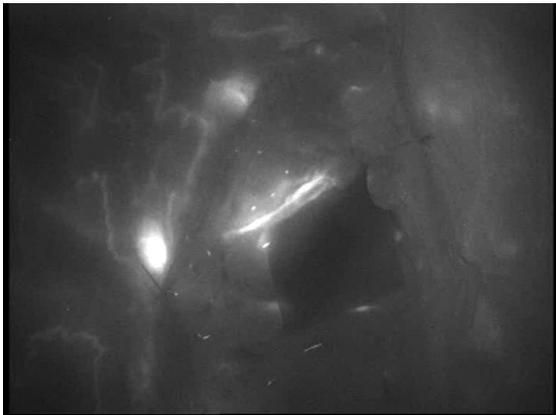


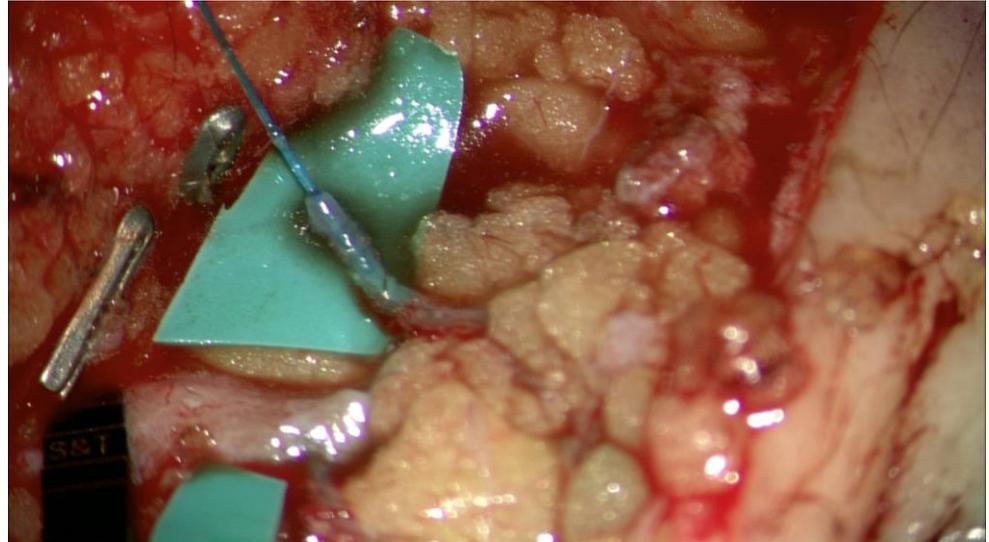
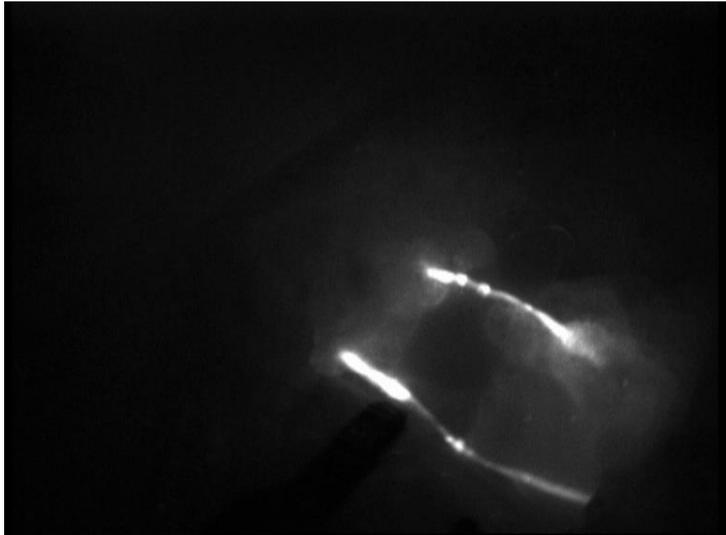


# Lympho Venous Anastomosis

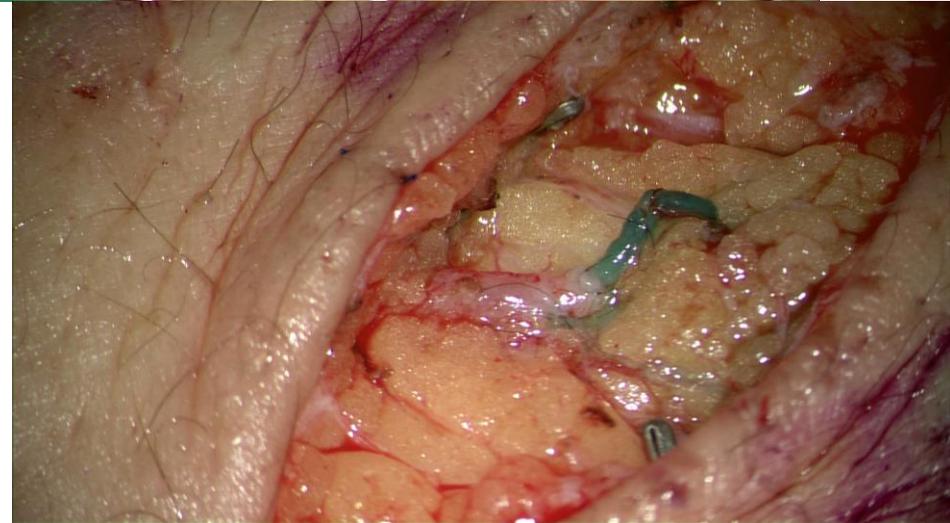






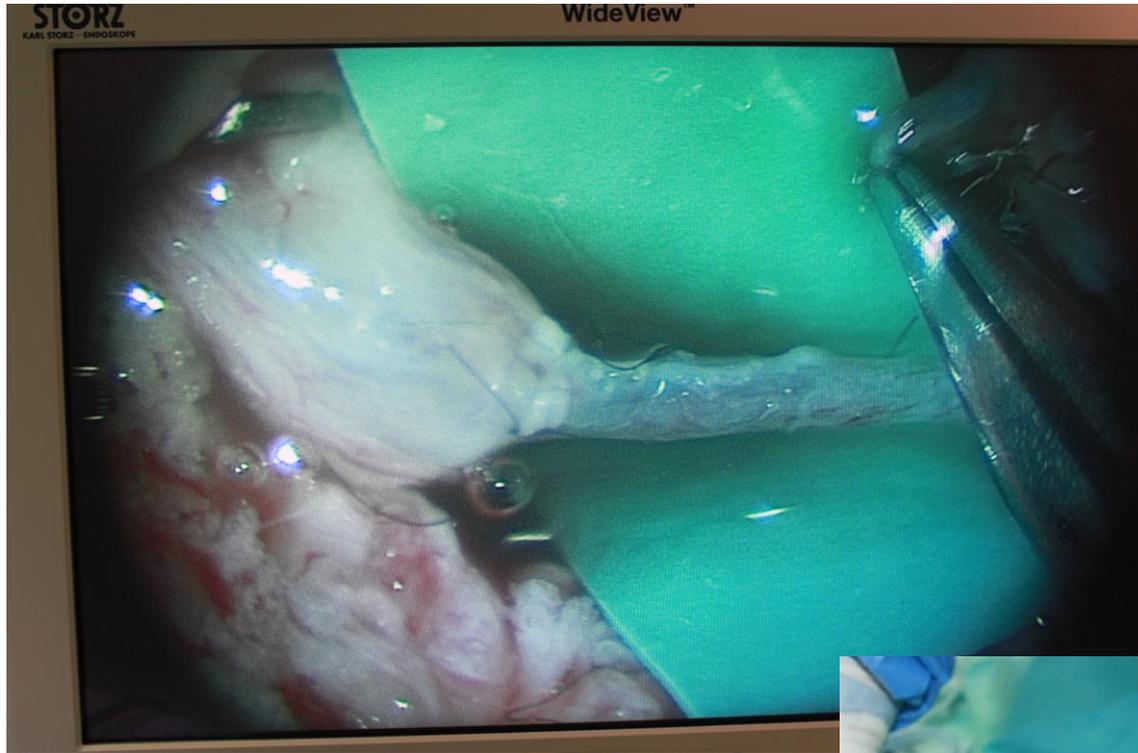


Long Replay 1 / 1 - 00:07.0 / 00:46

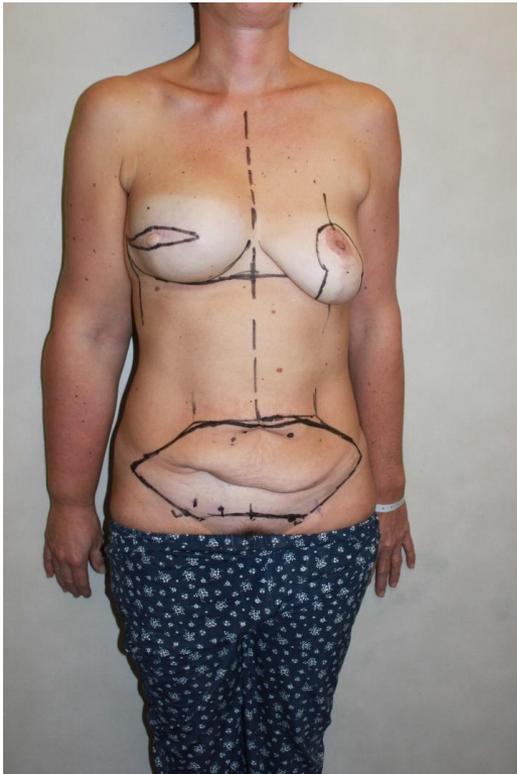


# Patient N.S





# Rimozione di protesi e ricostruzione con diep + In



# Risultato precoce a 3 mesi con miglioramento soggettivo precoce



# Patient L.B

Valutazione pre Intervento			
17/11/15			
B.L			
Valutazione			
Circunferenza braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
19	15,8	3,2	
22,8	1	21,8	
25,7	20	5,7	
29	22,5	6,5	
31	24	7	
31,4	24	7,4	
31	24	7	
30	24,5	5,5	
32	26,5	5,5	
32	28	4	
31,5	28,5	3	
31	29	2	
Volume braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
139,4946921	28,28450106		
187,5042463	44,69214437		
238,5127389	143,9755839		
286,7303609	172,2133758		
310,0169851	183,4394904		
310,0169851	183,4394904		
296,2845011	187,2876858		
306,1571125	207,1921444		
326,1146497	236,544586		
321,0456476	254,1666667		
311,0138004	263,2430998		
3032,89172	1904,478769	59%	
1128,412951			

TDC	DX	SX	R%
Mano	45	56	-20%
	74	35	111%
	63	38	66%
	73	27	170%
	40	36	11%

Valutazione pre Intervento			
17/11/15			
B.L			
Valutazione			
Circunferenza braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
19	15,8	3,2	
22,8	1	21,8	
25,7	20	5,7	
29	22,5	6,5	
31	24	7	
31,4	24	7,4	
31	24	7	
30	24,5	5,5	
32	26,5	5,5	
32	28	4	
31,5	28,5	3	
31	29	2	
Volume braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
139,4946921	28,284501		
187,5042463	44,692144		
238,5127389	143,97558		
286,7303609	172,21337		
310,0169851	183,4394904		
310,0169851	183,4394904		
296,2845011	187,2876858		
306,1571125	207,1921444		
326,1146497	236,544586		
321,0456476	254,1666667		
311,0138004	263,2430998		
3032,89172	1904,478769		
1128,412951			

Valutazione pre Intervento			
11/03/2016			
Valutazione			
Circunferenza braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
17	16	1	
21	17,7	3,3	
24,5	20	4,5	
27,9	23	4,9	
30,1	25	5,1	
31	25	6	
30	25,3	4,7	
30,5	25,5	5	
31,5	27,5	4	
31,5	28,5	3	
32	29,5	2,5	
32	30	2	
Volume braccio			
DESTRA (L) <sup>dominante</sup>	SINISTRA (N)	DELTA	
115,3927813	90,49787686		
165,1539278	113,3004246		
218,918259	147,4522293		
267,962845	183,5456476		
297,2515924	199,044586		
296,2845011	201,4426752		
291,4278132	205,4660297		
306,0774947	223,7526539		
316,0031847	249,7080679		
321,0456476	267,8609342		
326,1146497	281,873673		
2921,632696	2163,944798	35%	
757,6878981			

TDC	DX	SX	R%
Mano	50	49	2,04%
	56	32	75,00%
	55	33	66,67%
	65	29	124,14%
	37	33	12,12%



# Paziente T.B



# risultati preliminari T.B

Valutazione pre ICG			
09/04/2015			
Bigarani Tania			
Valutazione			
Circunferenza braccio			
DESTRA (L) <small>DOMINANTE</small>	SINISTRA (N)	DELTA	
17,4	16	1,4	
19	17,4	1,6	
21,4	19,2	2,2	
23,5	21,8	1,7	
25,3	23,4	1,9	
25,2	24,7	0,5	
22,9	23,4	-0,5	
24	23,6	0,4	
25,4	25,1	0,3	
26	26,5	-0,5	
26,6	27,2	-0,6	
27	27,6	-0,6	

Volume braccio			
DESTRA (L) <small>DOMINANTE</small>	SINISTRA (N)		
105,5583864	88,87048832		
130,1019108	106,7388535		
160,6273885	134,0169851		
189,6910828	162,7303609		
203,0456476	184,2494692		
184,3450106	184,2494692		
175,1602972	175,8768577		
194,3481953	188,888535		
210,3566879	212,0392781		
220,2929936	229,6061571		
228,7430998	239,0997877		
2002,270701	1906,366242		5%
95,9044586			

Valutazione pre ICG			
11/01/2016			
Bigarani Tania 7 mesi			
Valutazione			
Circunferenza braccio			
DESTRA (L) <small>DOMINANTE</small>	SINISTRA (N)	DELTA	
15,5	15,5	0	
18	17	1	
20	18,5	1,5	
22	21	1	
23	22,5	0,5	
23	23	0	
21,5	22	-0,5	
23,5	23	0,5	
24,5	24,5	0	
25	25	0	
26,5	25,5	1	
27,5	27	0,5	

Volume braccio			
DESTRA (L) <small>DOMINANTE</small>	SINISTRA (N)		
89,51698514	84,15605096		
115,07431	100,3980892		
140,552017	124,3895966		
161,2526539	150,7165605		
168,4713376	164,8354565		
157,7229299	161,2526539		
161,3322718	161,2526539		
183,4660297	179,6974522		
195,0902335	195,0902335		
211,2261146	203,052017		
232,1921444	219,5063694		
1815,897028	1744,347134		4%
71,54989384			



# Domande aperte!

Quali saranno i risultati a distanza delle ALV?

Quanto e' importante l'apertura cicatriziale in sede della precedente cicatrice?

Quanto e' importante la fkt pre e postoperatoria?

Possiamo semplificare che le LVA agiscono sul sistema superficiale e che i trapianti di LN sul circolo profondo?

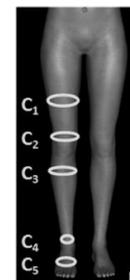


# Are we using the best assessment tools?

## Lower Extremity Lymphedema Index

*A Simple Method for Severity Evaluation of Lower Extremity Lymphedema* →

*Takumi Yamamoto, MD, Nana Matsuda, MD, Takeshi Todokoro, MD, Hidehiko Yoshimatsu, MD, Mitsunaga Narushima, MD, Makoto Mihara, MD, Gentaro Uchida, MD, and Isao Koshima, MD*



LEL index

$$= \sum_{k=1}^5 c_k^2 / \text{BMI}$$

## Arm Volumetry Versus Upper Extremity Lymphedema Index

*Validity of Upper Extremity Lymphedema Index for Body-Type Corrected Arm Volume Evaluation* →

*Nana Yamamoto, MD, Takumi Yamamoto, MD, Nobuko Hayashi, MD, Akitatsu Hayashi, MD, Takuya Iida, MD, and Isao Koshima, MD*

Lymphology 46 (2013) 64-74

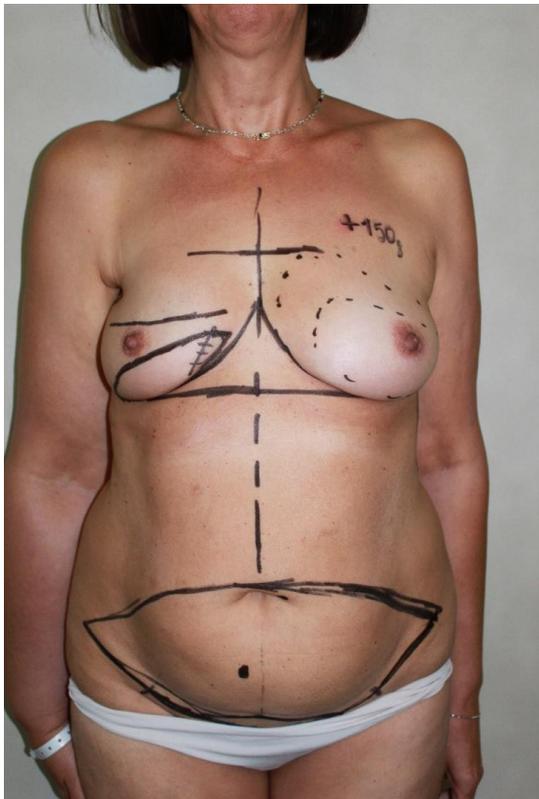
**A NOVEL, VALIDATED METHOD TO QUANTIFY BREAST CANCER-RELATED LYMPHEDEMA (BCRL) FOLLOWING BILATERAL BREAST SURGERY**

C.L. Miller, M.C. Specht, N. Horick, M.N. Skolny, L.S. Jammallo, J. O'Toole, A.G. Taghian

→  $WAC = (A2*W1) / (W2*A1) - 1$  where A1 is pre-operative and A2 is post-operative at-risk arm volume, and W1, W2 are the patient's weight corresponding to these time points.



30/7/2014 mastectomia destra e ricostruzione con diep + trapianto di In.  
Linfedema da molto anni...medico----nessuna fkt ne' prima ne' dopo

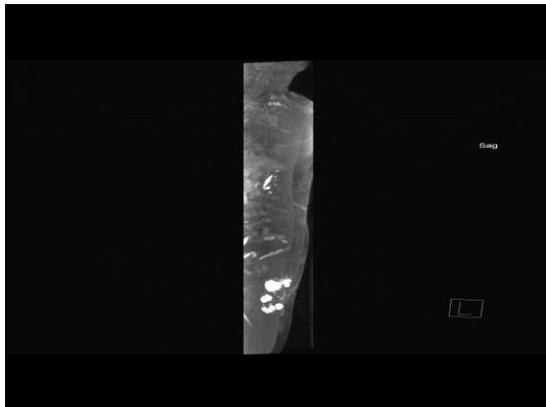


# Pz C.D.S – risultato a 12 mesi

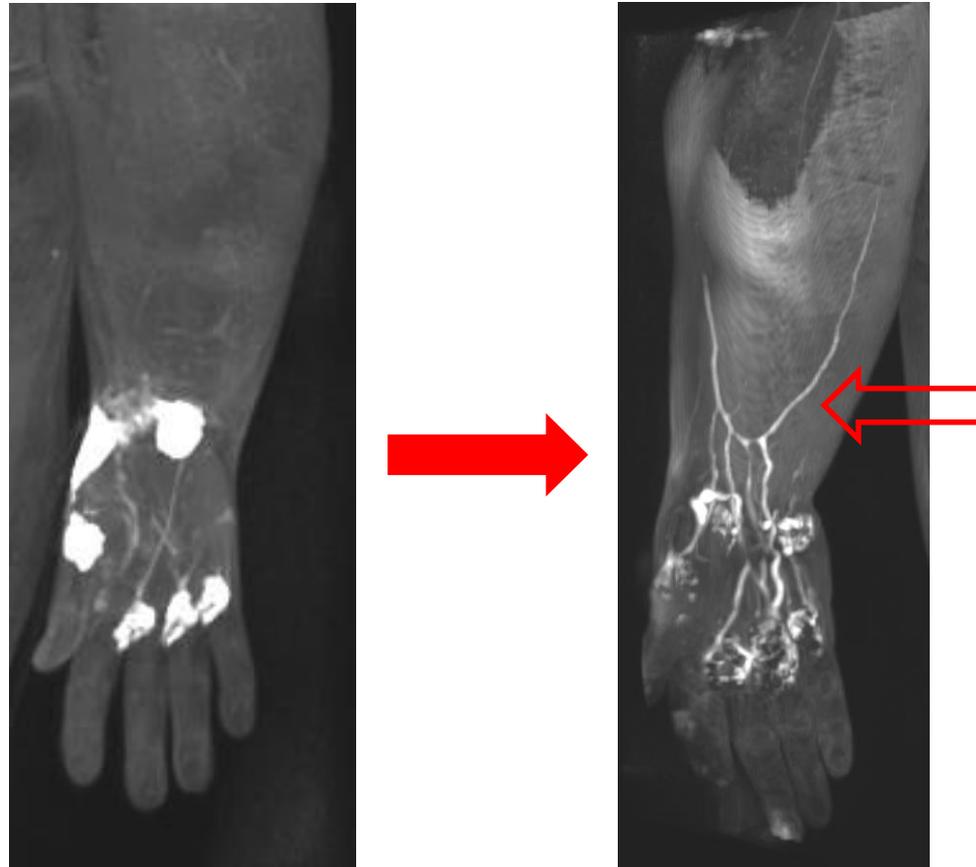
VALUTAZIONE PRE OPERATORIA			
23/06/2014			
C.D.S			
<b>Valutazione</b>			
Circunferenza braccio			
DESTRA (L) <sup>DOMINANTE</sup>	SINISTRA (N)	DELTA	
21,5	15	6,5	
24,5	16,5	8	
28,8	19	9,8	
28,8	22	6,8	
32,5	23,5	9	
34	24,5	9,5	
35,5	25	10,5	
33	25,5	7,5	
33,5	29	4,5	
36,5	33	3,5	
37,5	35	2,5	
36,5	35,5	1	
36	35	1	
<b>Volume braccio</b>			
DESTRA (L) <sup>DOMINANTE</sup>	SINISTRA (N)	Delta	
168,7101911	79,06050955	-89,6497	
226,6762208	100,5042463	-126,172	
264,1528662	134,0764331	-130,076	
299,5424628	164,888535	-134,654	
352,1496815	183,4660297	-168,684	
384,633758	195,0902335	-189,544	
373,7526539	203,052017	-170,701	
352,096603	236,8099788	-115,287	
390,366242	306,4755839	-83,8907	
436,0138004	368,2590234	-67,7548	
436,0138004	395,7271762	-40,2866	
418,4978769	395,7271762	-22,7707	
4102,606157	2763,136943		
1339,469214		48%	

VALUTAZIONE 6 MESI POST OP			
29/01/2016			
De Santis Cristina			
<b>Valutazione</b>			
Circunferenza braccio			
DESTRA (L) <sup>DOMINANTE</sup>	SINISTRA (N)	DELTA	
21,5	15,5	6	
27	16	11	
30,5	18,5	12	
33	21	12	
35,6	22,5	13,1	
36,5	24,5	12	
36,5	24,5	12	
35	25,5	9,5	
35,5	28,2	7,3	
36,9	30,5	6,4	
36,5	32	4,5	
36	33	3	
36,2	33	3,2	
<b>Volume braccio</b>			
DESTRA (L) <sup>DOMINANTE</sup>	SINISTRA (N)	Delta	
188,0838641	79,007431	-109,076	
263,5615711	94,93099788	-168,631	
321,2048832	124,3895966	-196,815	
374,8577495	150,7165605	-224,141	
413,9076433	175,9819533	-237,926	
424,2834395	191,1624204	-233,121	
407,0859873	199,0711253	-208,015	
395,7271762	229,7866242	-165,941	
417,3895966	274,4787686	-142,911	
428,9501062	311,066879	-117,883	
418,4978769	336,4118896	-82,086	
415,0360934	346,8152866	-68,2208	
4468,585987	2513,819533		
1954,766454		78%	

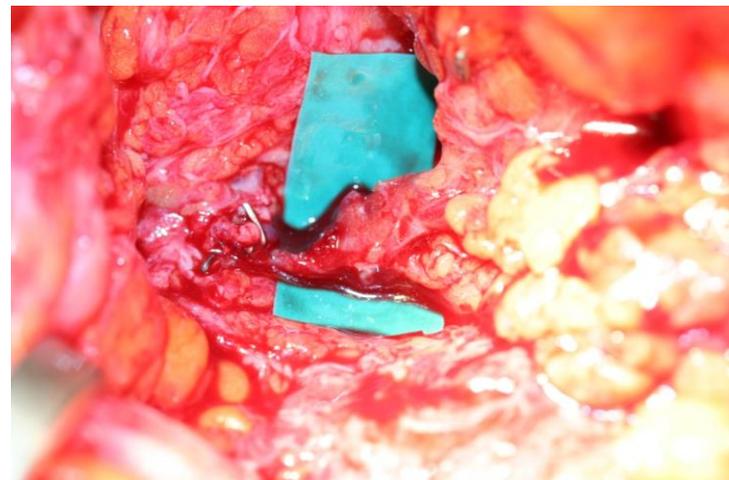




# Pz C.D.S – risultato a 14 mesi



# Should we start with the Barcelona Cocktail from the first surgery?



# Thank you very much

