



Treatment of bone perforators

A.-A. Ramelet, Bern (Switzerland)

No potential conflict of interest

Bone perforators

2006 - 2015: 32 patients, 35 legs

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Crebassa V. (Montpellier)

D'Alotto C., Buero G. (Buenos Aires)

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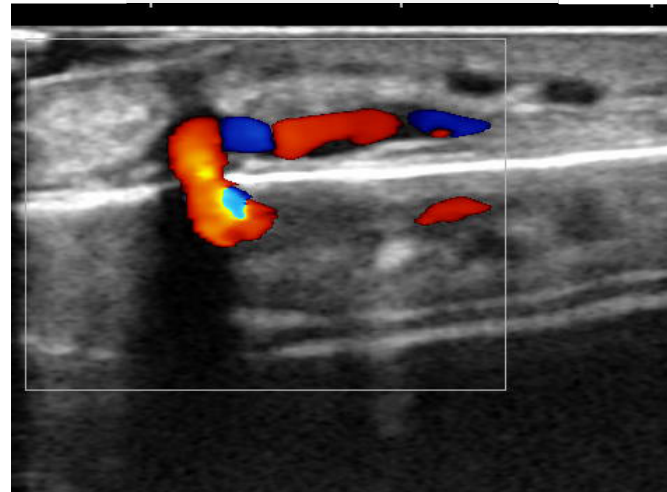
Pacheco K-G. (Madureira, Br)

Pros N. (Toulouse)

Soulié D. (Melun)

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(Coll. Dr J.-L Gillet)



(Coll. Dr Pros)

Anomalous intraosseous venous drainage

First author	Year	N	Sex	
Schobinger & Weinstein	1962	1	M66	T
Boutin	1997	2	M5 – F1	T
Diaz-Candiamo	1999	1	M	Fibula
Peh	2000	1	M	T
Jung	2009	3	M – F2	T
Mirault	2010	1	M	T
Kwee	2013	1	M	T
Ramelet et al.	2015	32	M19 - F13	T
Hernandez	2015	1	M84	T
Dermesropian	2015	1	M35	T
Moraes	2016	1	M23	T
Spinedi	2017	1	-	T
Rabin	2018	1	F76	T
Rezaie	2018	1	M67	T

N = 48

December 2018

Table I – 35 cases of bone perforators of the tibia

	Contributors initials	Patient initials	Sex	Age	Year	Family history	CEAP	Trauma	Tibia Side	Duplex	RX	Treatment	Follow-up (y)	Remarks
1	AB	JZ	M	79	2013	+	C2s	+	R	B P	-	OP	1	Relapse
2	AB	LGB	F	64	2013	+	C2a	-	L	B P	-	Sclero	0.5	
3	AB	MI	F	63	2013	+	C2s	-	R	B P + GSV	-	Sclero	0.8	Partial recanalisation
4	Cr	DN	F	47	2013	+	C2s	-	R	B P	+	Sclero	0.5	
5a	Cr	IR	F	59	2013	+	C2s	-	R	B P	+	Sclero	1	
5b	Cr	IR					C2s	-	L	BP	+	Sclero	1	
6	Cr	LH	F	79	2014	+	C4As	-	L	B P	+	Sclero	< 1	
7	Cr	VN	F	32	2010	+	C2s	-	L	B P	-	Sclero	4	
8	Cr	LCH	F	79	2014	+	C2s	-	L	B P, + GSV	+	Sclero	< 1	
9a	Gi	RG	M	64	2011	-	C2s	-	R	B P, + GSV	-	Sclero	3	
9b		RG					C2a	-	L	B P	-	Sclero	<1	
10	Gi	RJ	M	53	2012	-	C2s	-	L	B P	-	Sclero	2	
11	Gi	GPR	M	53	2001/13	-	C2s	-	L	BP	+	ES	11	Failure AP
12	Gi	SR	F	59	2007	+	C2s	-	R	B P	+	ES	6	Previous op 2 GSV
13	GrM	HV	F	36	2013	-	C2s	-	R	B P	-	ES	0.5	3 sessions ES
14	SK	DB	F	38	2013	+	C2s	-	L	B P+SSV+TPV	-	Op	0.1	
15	SK	CB	F	46	2015	+	C2s	-	R	B P + TPV	-	-	-	To be operated
16	Me	AM	F	71	2005	-	C2s	+	R	B P	-	ES (1)	1	
17	Me	BS	M	52	2014	+	C2a	+	R	B P	-	-	-	Previous op 2 GSV
18	Me	KK	M	45	2014	-	C2s	-	R	BP	-	Sclero	-	
19a	Mo	AF	F	54	2013	-	C2s	-	R	B P	-	ES	< 1	Pain
19b		AF					C2s	-	L	B P	-	ES	< 1	
20	Ob	HF	M	34	2006	-	C2,3,4As	+	R	B P, TPV	CT	Op	4	Exercise induced oedema
21	Pa	CMSO	F	59	2014	+	C2s	-	R	BP, GVS	-	Op	0.5	
22	Pr	AR	M	72	2014	+	C6s	-	L	BP, deep veins reflux	-	-	0.5	PTS
23	Pa	SB	F	68	2014	+	C2s	-	R	B P + GSV	-	Op	< 1	
24	Ram	RT	M	60	2004	+	C5s	+	L	B P	+	Op/sclero	9	Several sessions
25	Ram	ZM	M	46	2013	+	C4As	+	R	B P	+	Op/sclero	1	
26	Ram	GB	M	68	2014	+	C4Bs	-	L	B P	+	-	-	
27	Ram	LJC	F	74	2014	+	C2s	-	R	B P	+	-	-	
28	Ras	ZIB	F	52	2014		C2a		R	B P	-	-		
29	Ras	PAG	M	45	2014		C2a		L	B P	-	-		
30	Ras	RIA	F	87	2015		C4Aa	-	R	B P	-	-	-	
31	Ras	RA	F	33	2015	-	C2s	-	R	4 BP	-	-	-	4 BP !
32	Sgu	PZ	M	51	2014	+	C4As	-	L	B P	+	Sclero	0.5	

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Quite heterogeneous collective

Results : anecdotic

Treatment

Asymptomatic – ignored (frequent?). → ?

Necessity of treatment

- **+/- : Symptoms**
- **+++ : Trophic changes**
- **+ : Evolutivity**

Treatment - Compression

As bone perforators and varicosities are mostly located in areas where curvature radius is high,

compression therapy by stockings are probably not an appropriate treatment option,

even with additional eccentric compression

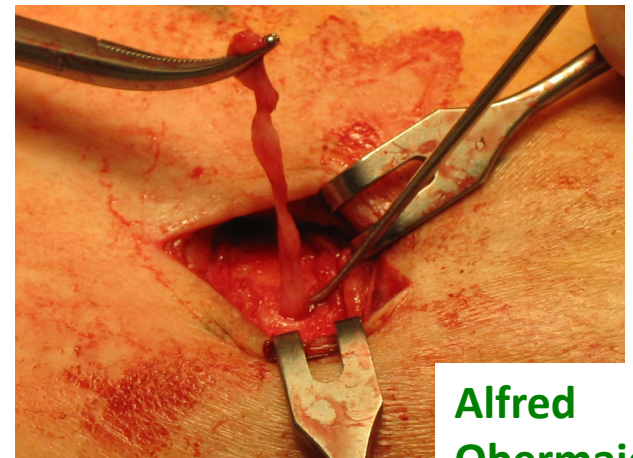
Treatment - Phlebectomy

- **Phlebectomy of varicosities**
+/- sclerotherapy



Treatment - Surgery

- Meticulous dissection of the varicosities may demonstrate the bone perforator
- This foramen, with a potential bleeding, may be occluded by tamponade with a peroperatively removed varicose vein or by wax
- TTT of saphenous veins if associated



Alfred
Obermaier

Treatment - Sclerotherapy

- Fear of a potential risk of deep venous thrombosis
- No compression effect on the bone perforator
- Risk to inject into the bone ?
- **Intraosseous injection of sclerosant agents : well tolerated and safe: 38 consecutive patients suffering from aneurysmal bone cysts have been successfully treated with percutaneous sclerotherapy with polidocanol**

Brosjo 2013

- Sclerotherapy and ultra guided sclerotherapy
- Either with polidocanol or sodium tetradecyl sulphate (STS), as a solution or foam (0.5 – 1.0% polidocanol)
- Ethylic alcohol (Peh 2000)
- In our experience, quite effective and well tolerated (21/35 of our patients)

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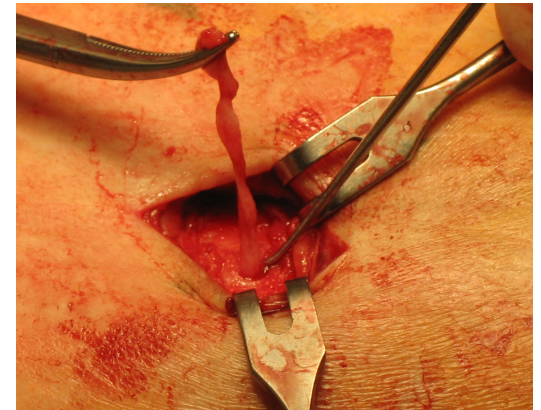
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Treatment - Complications

Rarely reported:

- Severe pain after echosclerotherapy in one 54 years old female patient
- Pain after injection of Ethylic alcohol (Peh 2000)
- Important intra-operative haemorrhage in some patients : tamponade of the bone perforator with wax, or using a previously removed varicose vein
- Treatment failure reported in 3 patients



Alfred Obermaier

Treatment - Results

- To be interpreted with caution
- Several sessions may be necessary to achieve good results after the different modalities of sclerotherapy and/or surgery
- Follow-up is short in the majority of cases
- One of our patients was operated twice, years before developing a leg ulcer, two different surgeons dissecting the perforator down to the bone foramen and occluding the orifice with glue...

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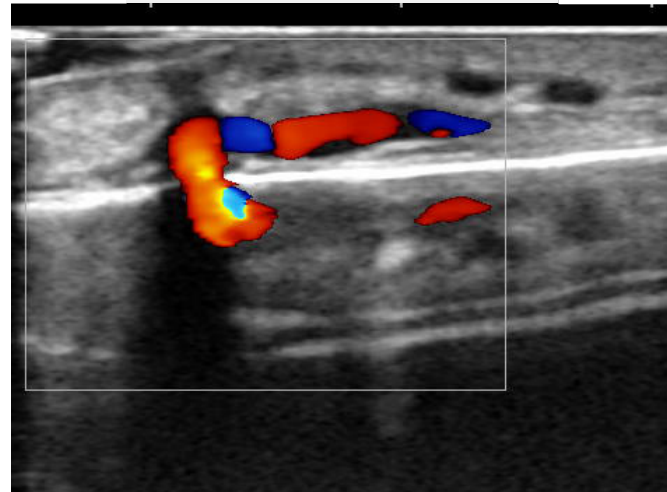
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