Table XXXXIII. Telangiectasia and reticular veins operative treatment
15 articles:
15 RCTs

Procedure	Reference	Summary
Polidocanol versus hypertonic saline	McCoy S, Evans A, Spurrier N. Sclerotherapy for leg telangiectasia. Comparative trial of Polidocanol and hypertonic saline. Dermatol Surg.1999;25:381-6	Mono-center study. 81 women with roughly matching LL telangiectasia were treated with sclerotherapy. One leg was injected with 20% saline (HS) 2% lignocaine, the other with 1% polidocanol *(POL*), with the patients blinded as to the sclerosant used for each LL. **Results at 2 months follow-up:** There was no statistically significant difference between HS and *POL* treated LL when assessed clinically or photographically. However, *POL* caused more staining and matting, and despite patients finding HS more painful at injection. Patient satisfaction at follow-up was higher with the HS treated LL
Aethoxyskerol versus Sotradecol	Goldman M P. Treatment of varicose and telangiectatic leg veins : double-blind prospective comparative trial between aethoxyskerol and sotradecol. Dermatol Surg 2002;28:52-55	Mono-center study. 129 patients were treated with either polidocanol (POL) or sodium tetradecyl sulfate (STS) to compare the efficacy and adverse sequelae of each agent. Each patient's lower limb veins or telangiectasia were divided into three categories by size (1 mm, 1–3 mm, 3–6 mm). Each lower limb was randomly treated with either 0.25%, 0.5%, or 1.5% of STS or 0.5%, 1.0%, or 3% of POL respective of size.

		Results at 4 and 16 weeks An independent, three-panel, blindly randomized photographic examination was obtained before and after treatment (4 and 16 weeks). All patients had an average of 70% clinical and photographic improvement and were 70–72% satisfied in all vein categories treated with either solution. There was no significant difference in adverse effects between each group except for a decrease in ulcerations and swelling in the POL group.
Sodium tetradecyl sulphate versus Glycerine	Leach BC, Goldman MP. Comparative trial between sodium tetradecyl sulphate and glycerine in the treatment of telangiectatic leg veins. Dermatol Surg. 2003;29:612-15	Mono-center study. 13 patients with telangiectasia were treated with either 0.25% sodium tetradecyl sulfate (STS) or 72% glycerin solution (G) **Results at 2 and 6 months** -G was comparable to STD in terms of discomfort at injection, but demonstrated decrease in bruising, swelling and postprocedural hyperpigmentation. -Besides G provided a better and more rapid clearance of telangiectasia.
Chromated glycerine versus Polidocanol Solution, and Polidocanol Foam	Kern P, Ramelet A-A, WurtscherT R, Bounameaux H, Hayoz D. Single-Blind, Randomized Study Comparing Chromated Glycerin, Polidocanol Solution, and Polidocanol Foam for Treatment of Telangiectatic Leg Veins. Dermatol Surg 2004;30:367-72	Multi-center study. 150 Patients presenting comparable area of telangiectasias and reticular lower limb veins on the lateral aspect of the thigh were randomized to receive: Group I: pure chromated glycerin (CG) Group II: polidocanol (POL) 0.25% solution Group III: POL 0.25% foam (Monfreux technique) **Results at 5 weeks** Evaluation was made by photographic assessment, patients' satisfaction score, and pain at injection sites. 147 patients could be evaluated. - CG cleared vessels significantly better than POL solution or foam

		(P<0.002). -The patients' satisfaction score was also higher in group I, although the difference did not reach statistical significance. - CG was significantly more painful at injection sites. - Other side effects were very few, precluding any statistical comparison. - Foam was associated with more side effects (microthrombi, matting) than CG or POL solution. - Three patients treated with POL foam experienced a transient visual disturbance.
Foam and liquid polidocanol Versus Sodium tetradecyl sulfate	Rao J, Wildermore JK, Goldman MP. Double-Blind Prospective Comparative Trial between Foamed and Liquid Polidocanol and Sodium Tetradecyl Sulfate in the Treatment of Varicose and Telangiectatic Leg Veins. Dermatol Surg 2005;31:631-35 WAS LISTED by mistake in 2019 table XXI Servier	Multi-center study. Twenty patients were treated with either polidocanol (POL) or sodium tetradecyl sulfate (STS) to compare the efficacy and adverse sequelae of each agent. Each patient's lower limb veins or telangiectasia were divided into three categories by size (1 mm, 1–3 mm, 3–6 mm). Each lower limb was randomly treated with either 0.25%, 0.5%, or 1.5% of STS or 0.5%, 1.0%, or 3% of POL respective of size. **Results at 12 weeks** **-** An independent, three-panel, blindly randomized photographic examination was obtained before and after treatment. - An average 83% improvement was noted for all vein sizes in all subjects with both POL and STS after a single treatment. - Patients were satisfied with treatment, regardless of the sclerosing agent used or the vein size treated. -There was no statistically significant difference in adverse effects between each group.
Compression after sclerotherapy for telangiectasias	Kern P, Ramelet AA, Wütschert R, Hayoz D. Compression after sclerotherapy for telangiectasias and reticular leg veins: a randomized controlled study. J Vasc Surg 2007;45:1212-6.	Multi-center study. One hundred consecutive, female patients presenting primary telangiectasias and reticular veins on the lateral aspect of the thigh. All patients underwent a clinical examination and color-flow duplex imaging of their veins. They were devoid of reflux lasting more than 1

		second in the deep veins, saphenous trunk, saphenous junction, saphenous tributaries or perforating veins. They were randomized to wear medical compression stockings (23 to 32 mm Hg) daily for 3 weeks or no such treatment following a single session of standardized liquid sclerotherapy. Outcome was assessed by patient satisfaction analysis and quantitative evaluation of photographs taken from the lateral aspect of the thigh before and again at 52 days on the average after sclerotherapy by two blinded expert reviewers. Patients completed a quality of life questionnaire (SF-36) before treatment and again at the control. **Results at 52 days (average)** . Patient satisfaction with the outcome of treatment was similar in the two groups. . Objective assessment of clinical vessel disappearance revealed a benefit of wearing stockings. P0 .026) . The interobserver agreement was very high. . Compression was well tolerated with a low rate of discomfort claims (mean 17.5%). . Micro-thrombi were rarely observed in either group, but still less prevalent in the compression group. .The rate of pigmentation and matting was low and did not differ significantly between the two groups.
Polidocanol versus sodium tetradecyl sulphate versus isotonic saline	Rabe E, Schkliphake D, Otto J, Breu FX, Pannier F. Sclerotherapy of telangiectases and reticular veins: a double-blind, randomized, comparative clinical trial of polidocanol, sodium tetradecyl sulphate and isotonic saline (EASI study). Phlebology 2010;25:124-131	Multi-center study. 316 patients presenting telangiectasias or reticular veins Veins selected for injection were clearly visible telangiectasias or reticular veins in a predefined treatment area (10/10 cm.) Group I: 160 patients presenting telangiectasias were randomly assigned to 0.5% polidocanol (POL) or sodium tetradecyl sulphate (STS)1% or isotonic saline (placebo) Group II : 156 patients presenting reticular veins received 1% POL, or 1% STS or placebo **Results**

		- POL demonstrated at 12 weeks a statistically significant superiority versus placebo (P =0.0001) for the primary criterion :improvement of veins. - Significantly more patients were satisfied with POL at 12 or 26 weeks (84%, 88%) compared to STS (64%, 63%°.P = 0.0001, and placebo (14%, 11%. P = 0.0001).
Pure Chromated Glycerin versus Chromated Glycerin with 1% Lidocaine and Epinephrine	Kern P, Ramelet A-A, Wurtscher TR, MazzolaI L. A Double-Blind, Randomized Study Comparing Pure Chromated Glycerin with Chromated Glycerin with 1% Lidocaine and Epinephrine for Sclerotherapy of Telangiectasias and Reticular Veins. Dermatol Surg 2011;37:1590-94	Multi-center study. 110 Patients presenting with telangiectasias and reticular lower limb veins on the lateral aspect of the thigh (C_{1A} or S, EP, AS, P N or R) were randomized to receive pure chromated glycerin (CG) or CG mixed with one-third lidocaine- epinephrine 1% (CGX) treatment. - Lower limb photographs were taken before and after treatment and analyzed by blinded expert reviewers for efficacy assessment (visual vein disappearance). - Patients' pain and satisfaction were assessed using visual analogue scales. **Results at 5 weeks** 102 randomized patients could be evaluated. - Patients' pain scores were significantly higher when pure CG was used than with CGX (P<0.001). - Patient satisfaction with treatment outcome was similar in the two groups. - Objective visual assessment of vessel disappearance revealed no significant difference between the two agents. P = 0.07.
Polidocanol versus Hypertonic Saline	Peterson JD, Goldman MP, Weiss RA, Duffy DM, Fabi SG, Weiss MA, Guiha I. Treatment of Reticular And Telangiectatic Leg Veins: Double-Blind, Prospective Comparative Trial of Polidocanol and Hypertonic Saline. Dermatol Surg 2012;38:1322-30	Multi-center study. 63 patients presenting telangiectasias or reticular of the LL or were randomized to receive treatment. Each patients' veins were categorized (telangiectasias <1 mm and reticular veins 1–3 mm) Group I: Telangiectasias were treated with polidocanol (POL) 0.5% or 11.7% hypersaline solution (HS). Group II: Reticular veins with POL 1% or 23.4% HS. An independent, blinded physician determined efficacy and adverse events. Subject satisfaction questionnaires were administered, and global clinical improvement

		assessments performed. All patients completed four visits at 0, 1, 4, and 12 weeks. **Results up to 12 weeks** **-** Patients reported significantly greater pain during treatment with HS than POL. P < 0.001. - There were no significant differences in physician-assessed improvement of reticular leg veins or telangiectasias; patient or physician-assessed overall improvement; or physician-assessed phlebitis, pigmentation, edema, or matting in either of the three practices or the entire cohort. -Two subjects developed ulcerations with HS. No ulcerations or allergic reactions developed after POL injections.
Nd:YAG long pulse laser combined with microfoam polidocanol versus microfoam polidocanol	Moreno-Moraga J, Smarandache A, Pascu ML, Royo J, Trelles MA. 1064 nm Nd:YAG long pulse laser after polidocanol microfoam injection dramatically improves the result of leg vein treatment: A randomized controlled trial on 517 legs with a three-year follow-up. Phlebology 2014;29:658–666	Multi-center study. 320 women (520 LL) presenting venulectasia were classified Class I (red vessels of less than 0.5mm in diameter), Class II (red blue venulectasias of 0.5 to 1.5mm in diameter) Class III (blue reticular veins measuring between 1.5 and 4mm in diameter). Most patients presented several of these types of lesions. 79 legs were treated with Polidocanol and 517 treated with Polidocanol+ Laser. Photographs were taken preoperatively and after treatment, as well patient self-assessments. **Results at 3 months, 2-3-year.** Polidocanol. + Laser is much more effective than polidocanol microfoam in clearing venulectasias with a diameter under 4mm. P< 0.001 After three years, clearing percentages of 89% (Class I veins), 94% (Class II veins) and 95% (Class III veins) are observed, in comparison to 15%, 18% and 17%, respectively when only polidocanol was applied. No unexpected adverse effects were found and 86% of patients stated they were satisfied.

Foam sclerotherapy versus Nd YAG laser	Parlar B, Blazek C, Cazzaniga S, NaldI L, Kloetgen HW, Borradorl L, Buettiker U. Treatment of lower extremity telangiectasias in women by foam sclerotherapy vs. Nd YAG laser: a prospective, comparative, randomized, open-label trial. JEADV 2015;29,549-54	Multi-center study. Fifty-six female patients with primary telangiectasias and reticular veins (C1A or S, Ep, AS1, PN) were randomized. One lower extremity was randomly assigned to get treatment with the multiple synchronized long-pulsed Nd:YAG laser, while the other received foam sclerotherapy with polidocanol 0.5%. The patients were treated in two sessions at intervals of 6 weeks. - Two investigators assessed blindly at the end of the study the photographs for clearing of the vessels using a six-point scale from 1 (no change) to 6 (100% cleared). - Patients reported about pain sensation and outcome satisfaction. **Results at 6 weeks and 6 months.** - According to the handling dermatologist, at the last follow-up, there was an improvement of 30–40% with a median of 3 and a good improvement of 50–70% with a median of 4 after laser treatment and sclerotherapy respectively. - In contrast, according to the blinded investigators, there was a median of 5 with a very good improvement of >70% after both therapies. - Improvement was achieved more quickly by sclerotherapy, although at the last follow-up visit there was no difference in clearance between the two groups as assessed by the blinded experts. P = 0.84. - The degree of patient's satisfaction was very good and similar with both therapeutic approaches. - There was a significant difference. P =0.003. regarding pain perception between the types of therapy. Laser was felt more painful than sclerotherapy.
Polidocanol 0.22% +70% glucose Versus	Bertanha M, Jaldin RG, Moura G, Pimenta REF, De Oliveira Mariúba JM, Filho CEPL, Alcantara GP et al.	104 patients with reticular veins in the lower limb Group I (n=50): Sclerotherapy with polidocanol 0.22% +70%glucose Group II (n=54): Sclerotherapy with 75%glucose

75% glucose	Sclerotherapy for Reticular Veins in the Lower Limbs A Triple-Blind Randomized Clinical Trial. JAMA Dermatology 2017;27:E1-E7	**Results at 7 and 60 days.** Ninety-three women completed the study. Results in group I was significantly better compared to group II in eliminating reticular veins from the treated area (95.17% vs 85.40%. P < 0.001. No serious adverse events occurred in either group. Pigmentation was the most common minor adverse event, with a 3.53% treated-vein pigmentation length for group I and 7.09% for group II, with no significant difference between the 2 groups (*P* = 0.09).
C1 sclerotherapy with or without micronized purified flavonoid fraction	Bogachev VY, Boldin BV, Lobanov VN.. Benefits of micronized purified flavonoid fraction as adjuvant therapy on inflammatory response after sclerotherapy. Int angiology 2018 ; 37 (1) : 71-8 DOI10.23736/SO392-9590. 17.03868-8.	Sixty women C1 Group I (30): Sclerotherapy alone Group II (30): Sclerotherapy + micronized purified flavonoid fraction (MPFF) 1000mg daily Sclerotherapy STS 2% and POL 0.5% **Outcome at 10 days** -Measurement of inflammatory markers (VEGF and cytokines) Prescription of MPFF prior to sclerotherapy and the post-operative period (group II) reduced all markers of inflammation and endothelial dysfunction compared to group I.
Compression versus Sclerotherapy	Schul MW, Eaton T, Erdman B. Compression versus sclerotherapy for patients with isolated refluxing reticular veins and telangiectasia: a randomized trial comparing quality-of-life outcomes. Phlebology 2011;26(4):148-56	Fifty-eight consecutive female patients presenting telangiectasia or refluxing reticular veins and venous dysfunction score ≥4 were randomized to either sclerotherapy (N =29) or thigh high 20 – 30 mmHg compression stockings (N =29). Following a trial of compression, subjects in the compression arm were eligible to crossover to the sclerotherapy arm. **Results up to 12 months** Patient-reported Quality of Life data were acquired using a modified Aberdeen Varicose Vein Questionnaire

		in five stages, initial severity (T_0), following compression trial (T_1), after reticular vein sclerotherapy (T_2), approximately three months after sclerotherapy for telangiectasia (T_3) and the 12-month mark (T_4). For patients in the compression arm, four key symptoms including aching, pain, leg cramps and restlessness were significantly reduced.
Foam sclerotherapy versus Nd YAG laser	Ianosi G, Ianosi S, Calbuenau-Popescu MX, Tutunaru C, Caliina D, Neaoge D. Comparative study in leg telangiectasias treatment with Nd:G laser and sclerotherapy. Experimental and Therapeutic Medicine 2019;17: 1106-1112,	Mono center study. Two-hundred-eighty-five (550 LL) female patients with primary telangiectasias and reticular veins (C1A or S, Ep, AS1, PN) One leg was treated with either LAS, POL or HS. The other leg received, randomly, one other of these treatments. At the end there were 190 legs treated with each method. Exclusion criteria, associated varices, DVT, PTS **Results at 60 and 120 days** At the last visit there were 169 legs in the POL group, 154 in HS group and 165 in LAS group. Telangiectasias under 1 mm, the LAS treatment determined a healing rate (telangiectasias disappearance) of 14.72 times higher than HS ($P<0.001$), while the POL treatment produced a healing rate of 11.32 times higher than HS ($P<0.001$). Conclusion Nd:YAG laser is recommended in treating small telangiectasias (under 1 mm diameter) while sclerotherapy with polidocanol is more efficient as long as telangiectasias diameter is growing.

Abbreviations

DVT=deep venous thrombosis; HS group=; hypertonic: 20% saline/2% lignocaine, *LAS= laser group,* Nd:YAG laser with a wavelength of 1064 nm ; *LL=lower limb; POL= polidocanol 0.5% ;PTS= postthrombotic syndrome; STS= sodium tetradecyl sulfate; VEGF= vascular endothelium growth factor*