



## Net-based information on varicose vein treatments: a tangled web

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### Abstract

**Aims** 30–40% of individuals will be affected by varicose veins during their lifetime. Many will contemplate treatment and will access the (Inter)net for information. The aim of this study is to determine whether New Zealand-based websites are an accurate source of information for the public.

**Methods** Inclusion criteria were New Zealand based websites that contained information on varicose vein treatments. These websites were identified using the search-engines *Google* and *Yahoo*. The first 60 websites from each were evaluated and subdivided into 4 groups based on web-site ownership: (1) Vein clinic/hospital; (2) Appearance medicine; (3) Online stores; (4) Health editorials; and (5) Medical resources.

**Results** 46 of the 120 websites satisfied the inclusion criteria. 18 websites (39%) explained what varicose veins were. Information about treatment options was most comprehensive in the “Vein clinic/hospital” group. The “Appearance medicine” group mostly contained information on outpatient interventional therapies. “Health editorial” sites had lifestyle modification options. All the online herbal/health stores mentioned herbal treatment options.

**Conclusion** Few websites fully informed patients about treatment options while some simply advertised non-evidence based treatments. This study suggests that the Internet is not a reliable source of information and does not accurately inform patients about varicose veins and the treatment options.

The Internet offers a wealth of information and misinformation about health and disease. Once diagnosed with a disorder, many patients will consult the Internet for knowledge and advice about treatment options.<sup>1</sup>

Varicose veins affect 30–40% of individuals at some point in their lives.<sup>2,3</sup> A proportion of patients seek treatment for aesthetic reasons while a substantial group of patients seek treatment for non-cosmetic reasons. These include; symptomatic relief, treatment of complications or concerns about the perceived health risks of varicose veins.<sup>3</sup>

Symptoms of varicose veins may include: aching, itching, fatigue and swelling. Complications of varicose veins include superficial thrombophlebitis, skin changes of chronic venous insufficiency and venous ulceration.<sup>3,4</sup>

A substantial group of asymptomatic patients seek treatment for the perceived risks if varicose veins are left untreated. These fears include the risk of bleeding, ulcers and deep vein thrombosis. The fears are frequently unwarranted and the most appropriate management of these patients is often reassurance.<sup>3</sup>

Currently there are an expanding number of treatment options available to patients with varicose veins.<sup>3-5</sup> To make an informed decision regarding varicose vein treatment, patients need to be informed about suitable treatment options.

Information regarding the treatment of varicose veins on the internet will come from websites from many different countries. New Zealand-based patients will probably seek treatment in New Zealand and may search New Zealand-based websites to find out what treatment options are available locally.

The aim of the study was to determine whether New Zealand-based websites are an accurate source of information for New Zealand patients contemplating varicose vein treatment.

## Methods

**Study design**—Using two different Internet search-engines (*Google* and *Yahoo*), an Internet search of the term “varicose veins”, limited to New Zealand-based websites was conducted on 11 February 2009.

The Google search was conducted at 8pm and yielded 12,700 hits, while the Yahoo search was conducted at 8:20pm and yielded 86,000 hits.

The first 60 websites on the Google search were recorded before the same search was performed with Yahoo. The first 60 hits on Yahoo were also recorded before the websites were evaluated. For the purposes of this study varicose veins were defined as dilated, palpable, veins of the superficial venous system in the lower limbs.

**Inclusion criteria**—New Zealand based websites with information on varicose vein treatments.

**Exclusion criteria**—Redirecting portals to non-NZ based sites or repeats of websites already evaluated were excluded. Discussion boards and directory sites were also excluded.

Website content was assessed on the following:

- Explanation of pathophysiology of varicose veins in terms of valvular incompetence.
- Explanation of treatment options.
- Website ownership was recorded and subdivided into groups.

## Results

Of the 120 search-hits, 46 websites met the inclusion criteria and were explored. The websites were classified into 5 distinct website ownership groups as follows:

- (1) “Vein clinic/hospital” contained websites from vein clinics and private hospitals;
- (2) “Appearance medicine” contained websites from appearance medicine clinics;
- (3) “Online stores” contained websites from online herbal/health stores;
- (4) “Health editorial” were editorials on health and disease; and
- (5) “Medical resources” were websites aimed at health professionals (i.e. clinical guidelines and journal articles).

Of the 4 groups, the “Online stores” group and the “Appearance medicine” group had the lowest percentages of websites that explained varicose vein disease (25% and 27.3% respectively).

44.4% of medical resources websites, 55.5% of vein clinics and 60% of health editorials explained that varicose veins were results of valvular incompetence.

The “Vein clinic/hospital” group was the most comprehensive of all the ownership groups. 77% of these websites mentioned at least one form of sclerotherapy, 88.9% mentioned a catheter access procedure for ablation of varicose veins [endovascular laser ablation (EVLT) or radiofrequency occlusion therapy (VNUS closure)], 33.3% mentioned ambulatory phlebectomy, 22.2% mentioned transluminated powered phlebectomy and 88.9% mentioned various vein surgery (Table 1).

**Table 1. Website ownership and content of treatment options**

| Variables                                      | Vein Clinic/hospital | Appearance medicine | Health editorials | Medical resources | Online stores | Total      |
|--|----------------------|---------------------|-------------------|-------------------|---------------|------------|
| <b>No. of websites</b>                         | <b>9</b>             | <b>11</b>           | <b>5</b>          | <b>9</b>          | <b>12</b>     | <b>46</b>  |
| Lifestyle                                      | 0 (0%)               | 0 (0%)              | 3 (60%)           | 2 (22%)           | 2 (16.7%)     | 7 (15.2%)  |
| Compression Stockings                          | 7 (77.7%)            | 1 (9%)              | 3 (60%)           | 5 (55.5%)         | 3 (25%)       | 19 (41.3%) |
| Sclerotherapy                                  | 1 (11.1%)            | 0 (0%)              | 2 (40%)           | 1 (11%)           | 3 (25%)       | 7 (15.2%)  |
| Sclerotherapy with/without ultrasound          | 5 (55.5%)            | 4 (36.4%)           | 1 (20%)           | 4 (44%)           | 0 (0%)        | 14 (30.4%) |
| Ultrasound guided sclerotherapy (USGS)         | 1 (11.1%)            | 4 (36.4%)           | 0 (0%)            | 0 (0%)            | 1 (8.3%)      | 6 (13.0%)  |
| Endovenous laser ablation (EVLT)               | 7 (77.7%)            | 6 (54.5%)           | 1 (20%)           | 2 (22%)           | 1 (8.3%)      | 17 (37.0%) |
| VNUS closure/ Radiofrequency occlusion therapy | 1 (11%)              | 1 (9%)              | 0 (0%)            | 0 (0%)            | 1 (8.3%)      | 4 (8.7%)   |
| Ambulatory phlebectomy/mini-stab avulsion      | 3 (33.3%)            | 1 (9%)              | 0 (0%)            | 3 (33.3%)         | 1 (8.3%)      | 8 (17.4%)  |
| Transluminated powered phlebectomy             | 2 (22.2%)            | 0 (0%)              | 0 (0%)            | 1 (11%)           | 0 (0%)        | 3 (6.5%)   |
| Vein surgery                                   | 6 (66.6%)            | 2 (18.1%)           | 2 (40%)           | 2 (22%)           | 1 (8.3%)      | 11 (23.9%) |
| Ligation and stripping                         | 2 (22.2%)            | 0 (0%)              | 1 (20%)           | 5 (55.5%)         | 1 (8.3%)      | 9 (19.6%)  |
| Herbal supplementation (Table 2)               | 0 (0%)               | 0 (0%)              | 0 (0%)            | 0 (0%)            | 12 (100%)     | 12 (26.1%) |

The “Appearance medicine” group mainly had information on interventional therapies that could be done in an outpatient setting. 72.7 % of these websites offered sclerotherapy with ultrasound guidance as an option “for deeper veins”, or as an adjunct to sclerotherapy treatments.

Health editorial and the medical resources ownership groups had similar coverage regarding the treatment range. Health editorial was the group that had the highest reporting of lifestyle modifications for the treatment of varicose veins.

Over half of the websites in these groups mentioned compression stockings and sclerotherapy (with or without ultrasound guidance). See Table 1.

All the online herbal/health stores mentioned herbal treatment options (Table 2) and some referred to other (more conventional) treatment options for varicose veins. No other website ownership groups stated herbal treatments as an option for varicose vein therapy.

Of the herbal treatments mentioned, horse chestnut seed extract (witch chestnut extract/HCSE) was the treatment most often promoted (83% on herbal online websites). Bioflavonoids were promoted by 50% of the online websites.

**Table 2. Herbal treatments offered by online herbal stores**

| Herbal treatments           | No. of websites (total = 12) |
|-----------------------------|------------------------------|
| Horse chestnut seed extract | 10                           |
| Flavonoids/bioflavonoids    | 6                            |
| Vitamin C                   | 4                            |
| Calenulu cream              | 3                            |
| Ginkgo biloba               | 3                            |
| Vitamin E                   | 3                            |
| Butcher's broom             | 2                            |
| Gotu kola                   | 2                            |
| Good health leg zone        | 1                            |
| Grape seed                  | 1                            |
| Herbal mixture              | 1                            |
| Hormone replacement         | 1                            |
| Hydroxyethylrutoside        | 1                            |
| Rutin                       | 1                            |
| Vein and Skin tonic         | 1                            |

One website mentioned the potential harm and benefits of compression stocking. However, the website focused mainly on the potential harm of compression stockings. The website went on to compare compression stocking to other treatment options and rated interventional therapy to be greatly superior.

## Discussion

The Internet offers an overabundance of unregulated information and misinformation. The results of the study reflect this and the unregulated provision of varicose vein treatments in New Zealand. There has been no previous research about New Zealand-based websites on varicose veins but there are 3 published reports about internet-based information on varicose veins.<sup>6-8</sup> These studies were from other countries but the findings were similar to our own.

Some websites adequately informed patients about treatment options while others simply advertised non-evidence based treatments. The coverage of treatment modalities was most comprehensive and least comprehensive in the "Vein clinic/hospital" group and "Online" group respectively. Of the herbal treatment covered by online store websites, horse chestnut seed extract was promoted the most.

Current evidence suggests that appropriate compression stockings can be effectively used to treat the symptoms of varicose veins in selected patients. For many individuals with varicose veins, treatment with lifestyle modification, compression

stockings and reassurance may be sufficient.<sup>9</sup> This was frequently not reflected in the content of the websites evaluated. Less than 15% of websites commented on lifestyle modification and only 41% mentioned compression stockings as treatment option.

There are some limitations to our study. The number of websites evaluated was only 120 websites of the 98,700 identified sites using Google and Yahoo. However, for practical reasons we do not consider this to be a major limitation, since most patients would be more likely to visit the websites that appeared at the start of the search list.

The second limitation was that the authors did not attempt to quantify the educational value of each website. Previous studies have used numerical scoring systems, however these scoring systems were highly subjective.<sup>6,7</sup>

A European study used 4 internet search engines to identify a sample of 41 internet documents on varicose veins. A weighed scoring system was used to evaluate the educational quality of each document based on: disease summary; treatment options; and complications.

This study suggested that information given by non-profit organisations were more reliable than information from private medical groups.<sup>7</sup> A more recent study found that over half of the websites failed to mention the main treatment options while most websites failed to mention potential complications of treatment.<sup>8</sup>

Sclerotherapy is an established treatment option for varicose veins in carefully selected patients.<sup>3-5,9</sup> It has been suggested that treatment outcome is significantly improved by using ultrasound guidance.<sup>3-5,9</sup> Despite this published evidence, many websites offer sclerotherapy without ultra sound guidance. Others websites mentioned ultrasound guidance for “deeper veins” while a minority (5 websites) offered ultrasound guidance for all sclerotherapy procedures.

Endovenous laser treatment (EVLT) and radiofrequency ablation (VNUS) are effective catheter procedures for the treatment of varicose veins. EVLT has good evidence of medium-term success in vein closure. The reported recurrence rate is less than 7% at 2-year follow-up.<sup>5,10</sup> VNUS uses high frequency alternating current to obliterate varicose veins. This procedure may have fewer side effects than other endovenous ablation techniques and has a 5-year outcome comparable to conventional surgery.<sup>10,11</sup>

The current evidence does not favour the use of transluminal powered phlebectomy to treat varicose veins.<sup>12</sup> Although the published data suggests that this expensive treatment is no better than conventional phlebectomy some websites still contained this treatment option.

Horsechestnut seed extract (HCSE) is herbal supplement that was promoted the most in the “Online” group. HCSE can be taken orally to treat varicose veins and venous ulcers.<sup>13</sup> There are claims that horsechestnut seed extract can be used as an alternative to compression stockings.

A meta-analysis using both randomized controlled trials (RCTs) and large-scale observational studies showed that HCSE was effective and safe at treating the symptoms of varicose veins. There is no evidence that HCSE significantly improves the healing of venous ulcers.<sup>14</sup>

The sample of websites in this study did not adequately educate patients about the treatment of varicose veins in a clear and concise manner. Information on the internet was often confusing with numerous names for similar procedure. Overall our study has found that with regard to New Zealand websites the internet is not a reliable source of information and does not fully inform patients about varicose veins and all the treatment options.

Although the internet is unregulated, we believe health professionals who publish on the internet are bound by the same ethical considerations as when they advise patients face to face. New Zealand patients have a right to be informed about the full range of treatment options available to them.<sup>15</sup>

**Competing interests:** None.

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