Varicose Vein Management: Considerations for the Diagnostic Radiology Group Practice

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ABSTRACT

The purpose of this brief article is to suggest some specific considerations that diagnostic radiology groups must make prior to embarking upon a varicose veins practice component. There are many excellent sources for further information, including the Web sites and practice management components of organizations such as the Society of Interventional Radiology, American College of Phlebology, International Vein Congress, and Union Internationale Phlebologie, all of which also hold excellent meetings or sections. Major points addressed in the article will include business plans, physician and group requirements, physical space and equipment requirements, and personnel issues. Though vein practice is clearly a major undertaking, the nature of varicose venous disease is such that there is a serendipitous overlap between the skill sets of the interventional radiologists and those required of the treating phlebologist. Consequently, with the proper motivation, self-education, and ongoing training, the addition of a varicose vein practice component can be extremely gratifying and rewarding for the physician, his radiology group, and most importantly the patients whom they serve.

KEYWORDS: Varicose vein, practice management, interventionalist

Objectives: Upon completion of this article, the reader will gain an understanding of the requirements for establishment of a successful varicose vein management service by a radiology group.

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BUSINESS PLAN

Clearly the diagnostic radiology group's financial interest can only be served by a thriving vein center with a positive net cash flow. The caveat for positive net cash flow is obviously growth. The diagnostic radiology group will almost certainly institute its vein practice from "scratch" and immediate profit is not possible. Once the decision is made that vein practice treatment will be offered, a business plan and pro forma should be created

to optimize practice growth. Business plan construction is not for the uninitiated and it is clearly beneficial to have a trained professional or the help of someone better trained in this task. The group must be realistic in its growth forecast so that appropriate planning and resource allocation can be made. A basic business plan will include an executive summary with clear objectives and a description of services to be provided to allow an overview of the practice component, an analysis of the

Clinical Practice Development; Editors in Chief, Brian Funaki, M.D., Peter R. Mueller, M.D.; Guest Editors, Timothy P. Murphy, M.D., F.S.I.R., F.A.H.A., F.S.V.M.B., Gregory M. Soares, M.D. *Seminars in Interventional Radiology*, volume 22, number 1, 2005. Address for correspondence and reprint requests: Gregory M. Soares, M.D., Brown Medical School, Rhode Island Hospital, 593 Eddy Street, Providence, RI 02903. ¹Brown Medical School, Rhode Island Hospital, Providence, Rhode Island. Copyright © 2005 by Thieme Medical Publishers, Inc., 333 Seventh Avenue, New York, NY 10001, USA. Tel: +1(212) 584-4662. 0739-9529,p;2005,22,01,049,055,ftx,en;sr00289x.

demographic served, and a summary of the strategy for instituting the practice and managing it. Finally, perhaps the most important portion of the business plan will be the financial plan.¹ The financial plan will comprise a detailed description of prospective cash flow that takes into account all assumptions regarding the market and creates a break-even analysis. As the most important component of future planning for a new service line is recognition of responsibility to the patient served by the new offering, it is incumbent upon the radiology group to ensure a smooth transition from its care to others should their offering become financially unfeasible. The main goal is better patient care and this is only possible with careful future planning. Once the business plan is constructed the group will more clearly be able to decide upon the nature of its phlebology practice. In some clinical practices, such as dermatology, family medicine, or obstetrics and gynecology, management of very superficial varicose veins is purely supplemental to the primary care of treatment.² Though this type of practice is clearly a possibility, a comprehensive practice that provides the gamut of clinical care for patients presenting with varicose venous disease requires a much more significant and dedicated allotment of clinical time and space for the responsible radiologist. This type of practice is probably more realistic because patients do not generally appreciate a piecemeal approach to their care. Venous disease in particular lends itself to comprehensive management as often large problems such as axial venous reflux need to be managed in the first stage of care followed by adjunctive care for the smaller veins until treatment is complete. Once again, the nature of patient-driven health care mandates positive word of mouth only and only satisfied patients will foster success.

THREE PILLARS OF SUCCESSFUL PRACTICE

As noted previously, the highest level of group resource allocation is necessary for the service line when it is planned as a comprehensive approach to treating varicose veins. The remainder of this discussion will assume that the radiology group practice assumes a comprehensive approach to varicose venous management. Clearly, more limited resource demands can be achieved if the type of service line provided is limited. There are three major areas or pillars on which the successful practice will be built. These include marketing and administrative issues, personnel and infrastructure issues, and finally space and equipment issues.

Administration and Marketing

There is an overlap between the requisites for each of the above-described pillars. Clerical, administrative, and

marketing staff and planning is an absolute necessity to the successful planning of a varicose vein practice. The changing nature of diagnostic imaging has created a large demand. There is so much competition among radiology groups that many should have some experience with marketing. However, a very focused marketing plan is necessary for the development of successful vein practice. This is largely because varicose vein management differs from diagnostic radiology in the actual "end user" of the service provided. Although diagnostic radiologists generally provide their service to other physicians, the varicose vein practice provides this service almost solely to the lay public or its actual patients. Consequently, direct marketing to the public is important. The technique by which the public is made aware of a group's service line offering are many and varied. Some of the approaches utilized by the diagnostic radiology group to draw in referrers can be modified and used for the vein practice. Traditional approaches such as informative lunches and dinners serve well for attracting referrers from well-defined sources such as dermatologists, obstetricians and gynecologists, and family practitioners. However, because most vein pathology is such that "people need to only look at their legs to know that they have some sort of vein disease,"³ attaining the goal of a self-referred patient base through public awareness is imperative. In its planning the group must become very aware of its demographic so that marketing can be tailored to the specific situation. Marketing companies can be extremely helpful in this regard. As an example, in our region of the Northeast we have a roughly 1 million patient catchment area, which is served by no less than six full-service diagnostic radiology practices and three large vascular specialty practices. Though marketing to referrers is useful for competing with these groups, the only way to obtain self-referrals for venous disease from patients is to directly market to these patients. Examples of direct marketing to patients include educational seminars at women's groups, print or radio mass media advertising, and screening programs. Additionally, one approach that has been very successful for our group has been to provide informative segments for local television or radio affiliates. The immense exposure provided by these mass media cannot be overstated. Informational brochures should be placed in the diagnostic radiology offices as well as strategically placed in pediatrician and obstetrician and gynecologist offices who refer to the diagnostic radiology component of the group. Most important, the beginning vein practice can never forget the necessity of positive word of mouth. This is clearly the largest component of practice growth. Superb patient care, long-term results, and follow-up are the most important advertising tools. The success of any marketing program must be tracked to confirm effective and ineffective approaches and to eliminate unnecessary resource allocation.

The administrative and clerical staff required for successful management of a vein practice varies slightly from that already present in most large radiology groups. The nature of a growing vein practice will mandate that a large portion of the physician provider's time is spent administratively. Therefore, a well-trained and efficient clerical administrative staff who is available for the delegation of tasks to lighten the provider's burden is an absolute necessity. Many of these staff members will be easy transplants from the staff already present within the radiology group, including transcriptionists who can record and deliver consultations and procedure reports; reception staff who are imperative for patient processing, phone contact, and scheduling; and a billing staff. Seamless patient flow from the entrance and reception area through final follow-up planning, document processing, and discharge can only be achieved with a carefully orchestrated office team effort. Again, the value of an enhanced patient experience will pay large dividends in practice growth. The billing staff is second in importance only to the practitioner. Though many diagnostic radiology groups have access to expert coding and billing services, the nature of varicose venous disease demands specific expertise in current procedural terminology and supervision and interpretation reporting. Many large and very successful diagnostic radiology groups will have only limited experience with submission for evaluation and management services. These services will generate significant revenue and, more importantly, will generate ancillary studies as well as future consultations.⁴ Therefore, the billing staff takes on huge responsibility for the success of the practice and correspondence with third-party payers. Obviously at the beginning, the interaction between the practice and third-party payers involves the operating physician. However, the key to successful continued interaction and insurance participation is a thorough exploration of local reimbursement by the group's coding and insuring specialists. This ensures that participating plans understand the group's offering and reimburse them appropriately. The presence of this dedicated and adept staff for the submission of appropriately documented billing codes and the confirmation of appropriate documentation and submission again cannot be overstated. There are coding courses available for acquiring these skills. As with all components of the practice vigilant monitoring of coding, submission and reimbursement practices are absolutely necessary.

Personnel

Once an appropriate business plan has been formulated and the administrative infrastructure required for a vein practice is in place, then appropriate personnel must be gathered. These personnel can be divided into the office aids and physician staff. The administrative staff was discussed in the prior section, as was the need for a

marketing staff. The office and clerical staff will include a clinical component as well as a clerical component. The clinical component will be made up of physician extenders such as physician assistants and nurse practitioners or well-trained registered nurses. In most states, the physician assistants or nurse practitioners can markedly improve efficiency by performing a wide range of non-procedural and procedural responsibilities.⁵ Often this will allow the accomplishment of multiple tasks at once. These physician extenders can obviously obtain histories and physicals, perform follow-up examinations postprocedure (especially established visits), and perform telephone follow-up as needed. They also can be very helpful as first assistants or "scrub assistants" for various vein ablation procedures. Depending on the physician extenders' training and information, they can also gain experience and familiarity with many techniques such as injection compression sclerotherapy or ambulatory phlebectomy. Finally, depending on the group's allocation of time for this portion of the practice, the physician extenders can serve double duty as clinician extenders for the interventional radiology portion of the practice as well as the vein service.⁶ The physician extender will in all likelihood share responsibility for room turnover and patient preparation with a clinical office aide. This office aide may be instrumental in assisting with smooth patient flow.

Though the utilization of the medical office aide or assistant for patient flow is optional, depending on the practice's ability to provide this level of assistance, an ultrasound technologist is absolutely required. If the diagnostic radiology group does not employ a registered vascular ultrasound technologist or does not have a sonographer who is well trained in vascular studies, then one should be high on the list of priorities for resource allocation and new hires. Unfortunately, many well-trained ultrasonographers will be incapable of the type of venous mapping required for this portion of the practice, though they are adept at ruling out deep venous thrombosis. Additional training from the physician who spearheads the vein portion of the practice will almost certainly be necessary. This raises the other point that the phlebologist or physician leading the section must become thoroughly familiar with venous duplex examinations and their performance. If the physician and technologist are learning together, there are many excellent courses that they can attend as a team. The duplex ultrasound portion of the practice as it is applied to the evaluation of superficial insufficiency patients is probably the most important diagnostic component of the practice and certainly is the reason why radiology groups are poised to be players on this field.

Finally, and most importantly, the success of the group will be almost totally dependent on the motivation, skill, and enthusiasm of the physician staff. As noted in other sections of this issue, the ideal clinical

caregiver exemplifies the recognized physician attributes of availability, affability, and ability, in that order. Assuming there is a high degree of self-motivation, the contemporary interventional radiologist is at a distinct advantage as a phlebologist for many reasons. Though the diagnostic radiologist in most practices will be well suited to evaluate the deep venous system, a full understanding and knowledge of superficial deep venous anatomy is required prior to embarking upon this practice. The practice of managing superficial venous insufficiency is not possible without this skill set and accurate diagnosis can only be obtained with these fundamentals. The interventional radiologist will have other advantages in addition to his or her diagnostic imaging acumen. She or he will have facility with image-guided therapies such as ultrasound for access as well as the tactile skill required for wire and catheter manipulation. The interventional radiologist is also at a distinct advantage to manage the broad spectrum of vascular disease patients as he or she has been trained as a vascular specialist. The phlebologist is fully responsible for the patient's workup and periprocedural and postprocedural care, and the contemporary interventional radiologist will play this role without difficulty. A requisite for the physician component of the vein practice is the provision of necessary time and resources by the group to allow him to provide complete clinical care. As the American College of Radiology (ACR) has acknowledged the clinical imperative for interventional radiology, radiology groups often are aware of the required level of resource allocation. Finally, the interventionalist's skills as a vascular imager come into play in creating the ideal phlebologist. The radiologist is uniquely poised to provide interpretation of magnetic resonance angiograms and computed tomographic angiographic studies, unlike any other phlebologist. This allows diagnosis and management of even the most complex and venous disease. A large benefit provided to the radiologist's group by this complement of skill sets and abilities is the fact that the phlebology practice, in almost all cases, will generate ancillary ultrasound or other cross-sectional examinations for the group. Consequently, the interventional radiologist "is ideally suited for this disease because [he or she] has the extra keys to accurately diagnose the problem and provide comprehensive treatment. The ever-expanding gamut of disease processes managed by the minimally invasive image-guided therapists is clearly exemplified by varicose venous pathology."⁴

One important caveat to the above discussion of physician attributes is the personal attributes of the responsible individual for the vein practice. Though being an excellent clinician and intelligent physician is paramount, the physician responsible for the vein practice must also possess an entrepreneurial spirit, a full understanding of current procedural terminology coding and billing procedures, and a sincere interest in becom-

ing familiar with managing third-party billing issues. The physician should be willing and prepared to network with referrers and market to the lay public. As with other new modalities often the eager interventional radiologist will expend much of his or her personal time in establishing the vein practice. The rewards of this extra time are well worth it for the individual and the group; however, the provision of dedicated administrative or clinical time by the group is a worthwhile manpower investment.

Space

The importance of the dedicated clinical office space has been well described in previous articles of this issue. The dedicated space should be planned well and considered early in the development of a vein practice. Though the interventionalist may begin a varicose vein management practice by seeing patients in the interventional radiology hospital suite, this rapidly becomes unsatisfactory and the physician's diagnostic radiology group is wise to quickly establish an outpatient facility. The facility's location must allow easy traffic access and must be clearly visible. It should be positioned so that the demographic most attractive to this section of the practice finds it convenient and obvious. An excellent option is consolidation of the clinical portion of the diagnostic radiology group. Certain days the vein practice occupies the clinical space and certain days the hospital component of the interventionalist radiology section sees patients in this space. The patient populations should be segregated to the highest degree possible as they are very different types of patients. Every effort to avoid the "hospital emergency room" appearance of this suite should be sought. This is important because the most effective promotion is word of mouth and a pleasant experience for varicose vein patients is invaluable. Obviously this consideration applies to patient scheduling if the space is to serve alternatively as the interventionalist radiology outpatient office space. Patients with peripheral vascular disease should not share the waiting area with patients who are presenting for the management of largely elective varicose venous disease. The possibility and likelihood of rapid growth of the phlebology practice, especially in underserved markets, must be kept in mind and a contingency should be in place to allow expansion or contraction of the practice as needed. There are many varicose vein practitioners who suggest strongly that a minimum of 1500 square feet with at least three examination rooms, one of which can be used as a major procedural room, should be sought.⁷ The physical layout of the office space depends largely on the group, but space should be provided to allow for comfortable patient reception and waiting, smooth transition to patient examination and photography, treatment room, non-sterile storage areas, records, and washrooms, as well as a

space for sterile equipment if ambulatory phlebectomy is a portion of the practice. Obviously, all evaluations will involve duplex ultrasonography at some point and dedicated ultrasound-guided therapy rooms are a must.

Disposables

There are a large number of disposable items that will be utilized in the evaluation and management of varicose vein patients. The majority of groups will benefit financially by performing vein treatment on a purely outpatient basis. The entire gamut of management options for superficial venous disease can safely be managed in an outpatient fashion. Hospital-based approaches are possible; however, the nature of varicose venous disease makes this less attractive. The large number of cosmetic procedures that are partially, poorly, or unreimbursed by third-party payers as well as the nature of professional component versus global reimbursement makes outpatient management much more attractive in most markets.³ The disposable items present in most ultrasonography suites are sufficient for the examination portion of the patient's initial workup. This includes either paper or cloth gowns and ultrasonography equipment such as gel and ultrasound probe covers. The initial examination determines how extensive the patient's care will be. Assuming a patient manifests the entire spectrum of varicose venous disease from axial or truncal refluxing veins to very small superficial spider or telangiectatic veins, the patient's care will progress from a large vein to small vein progression, as suggested by many authorities.^{7,8} The interventional portion of the varicose vein practice must be well stocked and must include an emergency kit. As only local anesthesia is used in the management of varicose venous disease in most outpatient settings, the kit should be similar to that used for iodinated contrast material in most diagnostic radiology practices. The caregivers involved with the patient's management should be well trained in providing basic cardiac life support and possibly advanced cardiac life support. Most procedures will require a prepared prepacked sterile tray with various components depending on the nature of the procedure. It may be more economical to obtain prepacked sterile trays depending on the volume of patients treated. Beginning with the management of the largest axially refluxing veins and working to the more superficial telangiectasias, the following equipment is necessary. Endovenous ablation of large or axially refluxing veins is currently achieved with laser or radiofrequency energy. The kits for ablation of these types of veins are largely self-contained and include access needles, guide wires, energy source delivery sheaths, and thermal energy delivery fibers for radiofrequency probes. Though these kits may be utilized for multiple accesses on the same patient at the same setting, they are generally one-patient-use devices and will

account for the bulk of the per-procedure disposable cost. Many devices vary in price and prices are often negotiable depending on volume. Compression dressings or stockings are required for all types of varicose vein management and familiarity with compression techniques and various types of compression stockings is mandatory. Some groups find that buying a large assortment of compression stockings and devices and selling them at a modest markup is appreciated by their patients and provides a small but steady stream of additional revenue. A full knowledge of the degree and type of compression supplied by different stockings is mandatory. After treating the large refluxing truncal veins, smaller tributary or reticular varicose veins are managed with local approaches such as ambulatory phlebectomy, local ultrasound-guided foam sclerotherapy, and local injection sclerotherapy techniques utilizing various types of transillumination and magnification.⁷⁻⁹ Because interventional radiologists already possess significant familiarity with vascular access, catheterization, and embolization of blood vessels, many practices restrict their practice to this approach for management of medium- and small-sized veins. In fact, the interventional radiologists imaging familiarity makes him or her the ideal physician to provide ultrasound-guided adjunctive measures such as foam sclerotherapy for refluxing perforator veins. This approach to medium- and small-sized veins entails disposable equipment including various-sized access needles, syringes, valves or stopcocks for mixing solutions with air to create foam, cotton swabs for injection site compression, and alcohol or Hibiclens for skin preparation. The enthusiastic interventionalist will need expertise with various sclerosing agents and their utilization. Many interventional radiologists have vast experience with liquid embolic agents such as ethanol, sodium tetradecyl sulfate, and acrylic glues. However, a full knowledge of venous sclerosants and their concentrations must be obtained to perform proficient venous sclerotherapy. Many of these techniques, in addition to utilizing image guidance with ultrasonography, will utilize transillumination and magnification devices. These devices are discussed in the nondisposable section that follows. Finally, management of medium and small varicose veins entails slightly different compression techniques from those employed for large veins. Expertise with varying types of compression materials cannot be overstated in its importance. Most interventionalists are very comfortable with venous access and catheter-based techniques. They are often also comfortable with minor surgical procedures utilized for various venous access device or port placements. This makes them well equipped to learn ambulatory phlebectomy or stab avulsion techniques. This is an excellent additional skill set for effective adjunctive management of medium- and small-sized varicose veins.⁹ The disposable equipment required for this portion of the care

for varicose veins includes an array of minor surgical instruments such as ophthalmological or "beaver" blades and 18-gauge puncture needles. Nondisposable surgical equipment includes Halsted or mosquito hemostats and phlebectomy hooks of various sizes and types. The varicose vein management practice that is able to provide large vein treatment with some form of catheter-based ablation technique, medium vein treatment with image-guided foam sclerotherapy or phlebectomy, and small vein treatment with injection sclerotherapy and compression will find little cause to refer varicose vein patients elsewhere. One final modality that deserves mention is the utilization of superficial photocoagulation lasers. These lasers are best for only the smallest superficial telangiectatic or spider veins; however, these devices do provide some flexibility and may allow for further aesthetic treatment procedures depending on the practice's inclination.¹⁰

Nondisposables

The largest capital outlays outside of the provision of clinical space will be for nondisposable items necessary in the varicose vein practice. The major asset allocation will be that for high-quality ultrasonography units capable of duplex and color flow imaging. Fortunately, most busy diagnostic groups will be able to outfit their practices with units already in their possession. One excellent approach is to utilize a depreciated but still serviceable unit for this less diverse type of ultrasound imaging as opposed to selling the unit at a loss. Most practices find that having one unit early in the practice development is sufficient. However, as the volume increases, having more than one unit allows movement of patients more easily. The practice will also require exam tables for patient treatment and evaluation; automated or mechanical models should be considered both for patient and physician comfort. Foot pedal controls make for rapid adjustment of patient position, which is often needed during the evaluation and treatment of varicose veins. Other items necessary for the treatment of varicose venous disease will include magnification and focused light sources in addition to excellent ambient illumination. Cold light fiber-optic transilluminators such as the Vein-Light or Sirius light function very well for this purpose. We have found that these devices are absolutely imperative for the management of medium- and small-sized veins. Magnification with magnifying loops for magnifying lenses is absolutely necessary for the management of spider veins as they are often quite diminutive. Finally, thermal energy sources are required for endovenous ablation of larger veins. All thermal energy ablation devices work by inciting inflammatory reaction at the level of the vein intima, which results in occlusion or ablation of the treated segment.¹¹ The decision to use radiofrequency versus laser or both for

this type of large vein ablation is beyond the scope of this article; however, it should be understood that both can be employed safely and effectively by the trained interventionalist and both are excellent options for managing refluxing vein segments. The practice is wise to invest in a digital photography system of some sort. Though it is a small practice expense, it pays large dividends by allowing patients and physicians to document pre- and posttreatment appearances. This is valuable for both insurance submission as well as to allow patients and physicians to confirm the necessity or effectiveness of treatment. It is important to understand that the cost of all of these items is rapidly recovered in a very short time with only modest success. More important, the combined costs of all of the above-described items are very low relative to the normal capital expenditures incurred for establishing a new practice component in most diagnostic radiology groups.

CONCLUSION

In summary, radiology practice has become much more complicated. Major factors driving practice patterns include competition among radiology groups as well as competition from nonradiology clinicians performing imaging studies. The comparatively flat growth in the relative value of high-end imaging studies versus the increased volume, cost, and utilization of such studies provides impetus to offer innovative service lines.¹² Previously unrecognized or unrealized returns can be provided by diversification of a radiology group's holdings. Such diversification defines intelligent personal portfolios and similarly defines intelligent radiology group investments. One possible route to this diversification is expansion of the clinical component of a diagnostic radiology group's service lines. Varicose vein management is clearly a service line that allows manifestation of the clinical imperative for interventional radiology recognized by the ACR with resolution 41. This practice component is ripe for involvement of interventional radiologists. Though dermatological and surgical subspecialists have previously described the necessary steps for the development of phlebological or vein practices from their perspective, the considerations important to radiology groups embarking upon such an endeavor have not been previously succinctly expressed. The requisites for developing a vein treatment program are either inherent in many radiology groups or easily acquired by them, and the benefits of such a practice center run by a radiology group include improved patient care, decreased overall societal costs, and increased financial rewards for the practicing group. Varicose vein management provides an exciting opportunity for the expansion of interventional component of many practices. Success depends on appropriate business planning, clinical and administrative personnel allocation,

and obtaining the appropriate physical infrastructure for a successful practice. The preceding article has described these requisites and hopefully will provide for successful development of a phlebological practice by many diagnostic radiology practices.

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