Outpatient Interventional Oncology: Primum Non Nocere

Top tips for treating patients and avoiding complications in the outpatient setting.

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Office-based interventional oncology (IO) is an exciting practice setting that offers a number of benefits compared with hospital-based IO, including a more comfortable environment and greater convenience for patients. The outpatient setting allows for services to be patient focused with faster patient check-in, less paperwork, and efficient postprocedural management/discharge, resulting in greater patient satisfaction. Physician benefits include a better work-life balance through more manageable hours, without call or weekend obligations. Although many IO procedures in an office-based lab (OBL) may seem mundane, such as biopsy or venous access, the interventional oncologist can also perform many procedures that are historically performed in the hospital, such as liver-directed therapy, vertebral augmentation, or even foreign body retrieval. However, one must always remember, primum non nocere—first do no harm. Complications are inevitable, so measures should be taken to avoid problems and have a plan when they do occur.

BACKUP

Office-based IOs should consider obtaining privileges at their nearest hospital. If there is a contract with a preexisting radiology group, exclusive contractual stipulations may require obtaining privileges in an ancillary specialty, such as surgery. If a complication were to occur that needed a higher level of care, patients can be directly admitted or request admission to a hospitalist and you can manage the complication yourself if appropriate. This provides peace of mind that the patient will be accepted to a trusted hospital and the interventional oncologist can work in that facility if necessary. The hospitalist will also appreciate that the patient is not "dumped" on him/her if the treating interventionalist is involved in the patient's care.

THRESHOLD

Have a low threshold for calling an ambulance. It is easy to forget you are not in a hospital setting when all your previous experience including residency, fellowship, and previous jobs were predominantly in a hospital-based setting. You do not and likely will never have the same resources available to you that are accessible in a hospital (eg, anesthesia, critical care, pharmacy, a plethora of specialists).

In the same vein, not all complications require hospital-level care, which can seem counterintuitive. For example, a patient who develops a pneumothorax requiring a chest tube after lung biopsy can be discharged home with a Heimlich valve and return the following day for further tube management. However, management decisions should also consider the presence of strong family support, emergent management in a hospital setting in case of decompensation, and ensuring that the patient is asymptomatic with the tube in situ.[1]

Another consideration for the OBL setting should be the types of procedures that can be safely performed and insurance reimbursement. An interventional oncologist will certainly perform many biopsies, port placements/removals, paracenteses, and thoracenteses. However, more sophisticated procedures are also fairly common, such as tunneled pleural/peritoneal drain placements, nerve blocks and neurolysis for pain management, and intrathecal chemotherapy injections. In addition, more advanced procedures, such as tumor ablation, yttrium-90 radioembolization, chemoembolization, vertebral augmentation, and foreign body retrievals are

standard interventions. Also take into consideration the potential complications and the probability of a worst-case scenario—would it be possible to get the patient to a hospital quickly enough if necessary? For example, we have performed several intracardiac catheter retrievals caused by fractured ports in the OBL setting with protocols in place to manage arrhythmia, and the probability of a refractory malignant arrhythmia is low. However, we would be reluctant to treat a patient with superior vena cava syndrome, keeping in mind the relatively unusual complication of rapid cardiac tamponade, a condition that could not be easily reversed in an outpatient setting.

SUPPORT STAFF

Your support staff are the face and voice of your practice, so choose them wisely. Having personable staff who are always available to answer questions as well as allay patient and family fears is indispensable. There is incredible value in having a well-organized resource nurse and recovery nurses who understand the procedures an interventional oncologist performs and the complications that can arise. We rely heavily on our resource nurse to schedule procedures in appropriate time slots. For example, we only perform lung biopsies in the morning and never more than three per day (preferably no more than two) in case there is a complication. These procedures are never scheduled on a Friday or the day before a holiday. Similarly, we perform arterial access cases in the morning in the event that radial access is not achievable and the femoral closure device fails, requiring prolonged bed rest. Although these steps may be an overabundance of caution, we require two chest radiographs on all patients undergoing lung biopsy before discharge to monitor for pneumothorax. We keep all patients who have undergone renal and liver biopsies for at least 2 to 4 hours afterward to monitor for bleeding, and we insist on having the results of appropriate laboratory testing within the past month.

Many of our industry partners are eager to help physicians establish their OBL and have dedicated OBL assistance teams. These teams will assist with ensuring the OBL meets appropriate standards and is up to date on best practices and may provide assistance with reimbursement. As helpful as that may be, the best way to build trust with industry is establishing a relationship based on understanding the risks and benefits of introducing products and the impact on your facility.

Support not only comes from the people you work with but also the equipment you have at your disposal. An interventional oncologist may have limited space but should be able to maximize the area that is available. For example, we have a single procedure room

Figure 1. Combined angiography/CT suite.

with a combined fluoroscopy/angiography and CT suite (Figure 1). We are able to perform all of our procedures in this single room. This layout confers the added benefit that we can always perform CT rapidly if necessary instead of relying on cone-beam CT, which does not have the resolution or speed compared with CT. As the practice grows, there is an additional room that could be converted into a procedure room large enough for ultrasound and a C-arm fluoroscopy unit.

CLINIC

Although some patients do not require a preprocedure visit, more complex procedures should begin in the clinic with a full consultation. This scenario provides time to discuss the patient's history, perform a physical exam, review imaging with the patient, discuss risks and benefits, set expectations, and create a plan with the patient's input. The patient will then have additional time to make a fully informed decision prior to undergoing the planned procedure. It also allows the interventionalist to see the patient in his or her usual state of health. For example, the patient's Eastern Cooperative Oncology Group performance status can be assessed before chemo- or radioembolization, which helps in the final analysis of ensuring a safe procedure. Seeing a patient preprocedure and providing your own and the team's contact information develops a trusting bond with the patient that generally promises a smoother and more comfortable experience.

As part of the spectrum of care, the postprocedural follow-up clinical visit allows the interventionalist to hear the patient's experience, provide guidance for potential future treatment, and order appropriate laboratory testing and imaging. Throughout this process, the referring physician is informed of your plan and

Figure 2. Distal radial artery access.

Figure 3. Patient positioning for distal radial artery access.

outcomes. Both the patient and the referring physician will appreciate the continuity of care.[2]

It is important to note that when treating a large rural or international population, it is not feasible to have the patient travel great distances or over a long period of time to see you. Therefore, a phone consultation is not unreasonable, especially if you know and trust the referring physician and already have the appropriate imaging and laboratory results to review. Online virtual consultations can be extremely valuable in this setting, and we will likely see this service grow significantly in the future.

DELEGATE RESPONSIBILITY

Consider delegating responsibilities such as sedation to an anesthetist. In our practice, we have a certified registered nurse anesthetist (CRNA) who delivers various levels of anesthesia from moderate sedation to total intravenous anesthesia with propofol. Moreover, the anesthetist is employed by an outside anesthesia group and as such does his/her own separate billing. A CRNA can bill a QZ code, essentially taking an order from a physician for anesthesia monitoring during a procedure. The CRNA is able to deliver and monitor the most appropriate level of sedation based on the procedure performed. Delegating these responsibilities allows you to focus on what is important: performing a safe procedure.[3] Less complex procedures can be safely performed with local anesthesia alone or moderate sedation, monitored by the nurse and interventionalist.

TECHNIQUES

Make it a point to learn techniques that can make your practice more efficient and safer. For example, we prefer distal radial artery access in appropriately selected patients for liver-directed therapies (Figures 2–4). From distal radial artery access, one can still work from the patient's right side and, with time, can perform procedures as quickly as from a femoral artery access with fewer complications, including decreased bleeding risk, and with greater patient comfort and quicker recovery. There is no need to rely on bed rest, which can free up a recovery room that can be used to work up the next patient.[4]

As another example, we perform blood patches on all of our patients undergoing lung biopsy regardless of whether they have a pneumothorax at the conclusion of the procedure. From our experience, fewer patients with pneumothoraces require chest tube placement with this approach.[5] Another benefit of a blood patch is that it adds no additional expense to the procedure.

SUMMARY

Ultimately, performing IO in an outpatient setting is a rewarding experience but requires innovative approaches to patient flow and embracing a new mind-set:

- Obtain or retain staff privileges at a nearby hospital to admit/transfer a patient.
- Choose procedures wisely to minimize major complications and lower the threshold for obtaining hospital-based help.

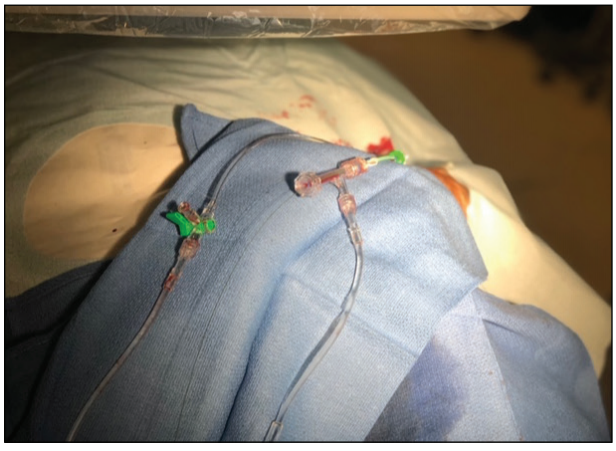

Figure 4. Operator view for distal radial artery access.

- Best practice entails seeing the majority of patients in clinic prior to a major intervention and following these patients in association with the referring medical oncologist, surgeon, radiation oncologist, or primary care physician.
- Delegate responsibilities and consider using a full-time CRNA when the practice volume warrants this improvement in efficiency.
- Employ an experienced IO nurse for scheduling and coordination.
- Nurture your team so they understand and are invested in your practice—they will be the backbone of a safe and vibrant environment.

Above all, do what is right for the patient and hold yourself to the highest standards of patient care. ■

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