Financial Disclosures

In accordance with the ACCME’s Accreditation Criteria, the American College of Surgeons must ensure that anyone in a position to control the content of this enduring material has disclosed all relevant financial relationships with any commercial interest. Therefore, it is mandatory that both the program planning committee and speakers complete disclosure forms. Members of the planning committee were required to disclose all financial relationships and speakers were required to disclose any financial relationship as it pertains to the content of the presentations. The ACCME defines a ‘commercial interest’ as “any entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients”. It does not consider providers of clinical service directly to patients to be commercial interests. The ACCME considers “relevant” financial relationships as financial transactions (in any amount) that may create a conflict of interest and occur within the 12 months preceding the time that the individual is being asked to assume a role controlling content of the educational activity. The ACCME also requires that ACS manage any reported conflict and eliminate the potential for bias during the session. The planning committee members and speakers were contacted and the conflicts listed below have been managed to our satisfaction. However, if you perceive a bias, please advise us of the circumstances on the evaluation form. The requirement for disclosure is not intended to imply any impropriety of such relationships, but simply to identify such relationships through full disclosure, and to allow the learners to form its own judgments regarding the presentation. Oakstone Publishing, LLC has assessed conflict of interest with its faculty, authors, editors, and any individuals who were in a position to control the content of this CME activity. Any identified relevant conflicts of interest were resolved for fair balance and scientific objectivity of studies utilized in this activity.


The following faculty report no relevant financial interests: Dr David G Sheldon.
Care for the Appendectomy Patient With Carcinoid

It is not uncommon to do an appendectomy and have carcinoid in the specimen. This certainly comes up in a general surgeon or a rural surgeon’s practice. If you know you are dealing with a tumor situation at the time of the appendectomy, getting all appropriate information available at that time for intraoperative decision making is of importance. The classic teaching is that if tumors are ≥ 2 cm and are of a neuroendocrine tumor variety — and I like to use the term neuroendocrine as opposed to carcinoid, which is somewhat of a dated term — then most people would recommend, in the appropriate clinical situation, a right hemicolectomy for a nodal staging would be appropriate. The teaching still holds that a tumor that is incidentally found <1 cm in size is managed with simple appendectomy, given that the other intraoperative findings do not mandate further therapy. The difference we see nowadays is what to do in the 1-cm to 2-cm category. In some respects, we are splitting hairs, and guidelines that have been published — say for the NCCN, etc — do indicate that 2 cm is a right hemicolectomy, 1 cm is nothing. There is a low but defined incidence of lymph node metastases in neuroendocrine tumors — so the appendix in the 1- to 2-cm range — 15% to 40% depending on the histologic characteristics of the tumor. Now, if a tumor is found incidentally on the pathology report, the histologic characteristics of that tumor would guide you into mandating further therapy or not. Size is certainly 1 criterion as we have discussed; histologic variant of the tumor such as a low-grade, high-grade or goblet cell variety of tumor would determine whether further therapy would be mandated. It is quite clear goblet cell tumors behave in a more aggressive fashion compared to low-grade, World Health Organization characterization type of tumors of grade 1 or 2, and they should be managed with a right hemicolectomy. Other physical factors — such as perforation of the appendix, mesoappendiceal involvement, or clinical node involvement — would also mandate further therapy. These are things in which a surgeon’s judgment must come into play. In general, a young healthy patient with poor factors on the specimen would mandate further therapy. Some things that may guide you preoperatively would be staging with a contrasted CT scan and a serum chromogranin-A level.

Goblet Cell Tumor Treatment

Most people would say a right hemicolectomy would be the right thing if they were to find a goblet cell tumor of the appendix in a neuroendocrine tumor. A goblet cell tumor is akin to something called an adenocarcinoid, which has a lot of features of adenocarcinoma. Invasive adenocarcinoma would be staged with nodal dissection in the ileocolic distribution. So, if you had a goblet carcinoid or goblet cell tumor of the appendix of 1 cm — or any size for that matter, most people would say a right hemicolectomy would be in order in the appropriate clinical situation. Once you have removed a 1-cm carcinoid without any characteristic or without any high-risk characteristic findings, a baseline-contrastcted image with cross-sectional images with CT scan would be very reasonable. If you do have a known malignancy and you were to recover that lymphadenopathy or if you had an elevated serum chromogranin-A, you have 2 pieces of information that would guide, either future imaging and surveillance, or prompt someone to do something more than just observation. There is a low but definite incidence of lymph node metatases in smaller neuroendocrine tumors.

Cytoreductive Surgery Mainstay of Therapy for Diffuse Peritoneal Adenomucinosis

I would say it is not uncommon for a general surgeon to encounter pseudomyxoma peritonei. It is also somewhat of an antiquated term, although it is still in current use. A lot of people talk about diffuse peritoneal adenomucinosis (DPAM), and we talk about DPAM in terms of low-grade and high-grade.
Probably when people mention pseudomyxoma peritonei, they are talking about low-grade DPAM, whereas high-grade DPAMs are carcinomatosis from invasive mucinous adenocarcinomas from a variety of sources — most commonly appendix, ovary, colon, or gastric cancers. Pseudomyxoma peritonei typically presents with change of bowel habits and an increased abdominal girth and sometimes presents a diagnostic quandary. A middle-aged female presents with a lot of findings on cross-sectional imaging that demonstrate ascites, mucinous deposits throughout the peritoneal cavity, probably a tumor burden in the greater omentum. Trying to sort out from where the tumor arose sometimes can become a diagnostic challenge. Statistically, the appendix is one of the most common sites of origin. And, obviously, if you have a male who presents in a similar fashion, ovarian cancer is taken out of the mix, but certainly ovarian cancer is a diagnostic consideration in women. If a patient is a suitable candidate for aggressive surgery, which is the mainstay of therapy, then a cytoreductive surgery is in order.

**Data Suggests HIPEC has a Role in Select Patients**

Most people would favor such terms as a low-grade and a high-grade variety of DPAM or mucinous carcinomatosis. The nomenclature is influx, but when you are talking about pseudomyxoma peritonei, you are talking about a low-grade mucinous neoplasm of the peritoneal cavity. And when you talk about carcinomatosis from a mucinous producing tumor, you are talking a high-grade peritoneal surface malignancy of the peritoneal cavity.

**Survival Outcomes:** Pseudomyxoma peritonei or low-grade DPAMs with aggressive cytoreductive surgery can live for many years, and usually multiple procedures are the rule. But patients ultimately succumb to this disease, even though there is no invasive process, mostly due to bowel obstructive process and unresectability. High-grade carcinomatosis from a mucinous neoplasm certainly carries all the features of invasive cancer where patients can succumb in a much quicker rate, but aggressive surgical therapy is the mainstay of treatment.

**HIPEC:** HIPEC is somewhat controversial, even in 2016. There are good data to suggest that heated intraperitoneal chemotherapy (HIPEC) has a role to play in carefully selected patients with carcinomatosis. One of the primary indications for HIPEC is low-grade DPAM. Heated intraperitoneal chemotherapy at the time of cytoreductive surgery provides an additive adjuvant type of therapy that seems to have a role in disease-free, progression-free survival in some people who practice HIPEC a lot in overall survival, but this has not been proven in any statistically measurable way. Carcinomatosis with high-grade tumor must be managed with systemic therapy in some manner, but oftentimes HIPEC is an adjunct to management of carcinomatosis.

**Systemic Therapy Dependent on Tumor Origin**

Systemic therapy is dependent on the origin of the tumor. For ovarian cancer, standard management would include 6 cycles of carboplatin and Taxol, whereas gastric cancer might include 4 to 6 cycles of some other type of regimen, classically ECF. There is certainly a moving target on adjuvant and salvage therapies with chemotherapy these days. Colorectal cancer is one of the diagnostic challenges. If you do not know where the tumor is coming from, we usually default to a gastrointestinal origin, and systemic therapy with oxaliplatin-based therapies, such as FOLFOX or FOLFIRI, is usually prescribed.

**Follow-Up:** Follow-up is mandated by any surgeon that would be intervening in this type of process, and it needs to be very closely followed. Recurrences are the rule. Early intervention for recurrences typically provides better outcomes than delayed symptomatic recurrences. I would say cross-sectional imaging at 3 to 6 months for the life of the patient for DPAM would be the rule.
**Tumor Markers:** Tumor markers are typically not helpful. If you were to find an elevated CEA preoperatively and that CEA level normalized after some intervention, then it is probably useful in terms of recurrence, but I would not obviate the need for cross-sectional imaging in that situation.

**Skin Malignancies Compared**

In terms of skin malignancies, Merkel cell tumors and invasive malignant melanoma are certainly the 2 tumors we worry about the most. Unfortunately, these tumors can also affect young people, so there is a tremendous amount of disease burden. Melanoma is one of the most rapidly increasing tumors in terms of incidence. Melanomas and Merkel cells are both epidermal skin cancers, meaning that their cells of origin arise from the epidermis of the skin. Aside from that, there is not a tremendous amount of similarities other than the management. Melanoma cells arise in the dermoeidermal junction, and the melanocytes in the basal layer of the epidermis. Typically, though not always, these are pigmented lesions. Certainly when we think of skin cancer in the lay press, we are thinking about melanoma. Merkel cells, however, are quite rare, probably <2,000 to 3,000 of these in a year in the United States. They arise from a different type of cell — progenitor cells believed to be a touch receptor Merkel cell in the epidermis, a very specialized, neuroendocrine type of cell. Similarly to melanoma, they are related to total UV radiation burden in one’s lifetime. Merkel cells are usually very, very aggressive. Multi-modality therapy is the rule, and aggressive surgical therapy is the rule.

**Margin Rules of Melanoma**

There has been a trend over the last decade or so toward less is adequate for some types of procedures in melanoma, especially in cosmetically sensitive areas such as the face, ears, etc. Melanomas can arise on any epidermal or mucosal area of the body. In general, surgical oncology studies over the past 30 years, have given us a lot of great statistics about how to manage melanomas. So, the board answer for melanoma management in cosmetically easy to deal with areas such as the back, trunk, limbs, etc, would be a 1-cm margin for a Breslow tumor T1 stage or 1 mm or less, 1- to 2-cm margins for a Breslow stage T2 or thickness of 1 to 2 mm, and 2-cm margins for anything larger than that. A lot of this has to do with the presentation, the size of the initial lesion, the area of the body that the lesion is on, and how the lesion was excised initially, but those are good guideline rules.

**Staging Criteria for Melanoma**

Staging refers to the extent of cancer. In anyone that presents with melanoma, histologic and physical characteristics of the melanoma will guide further therapy. When there is a new presentation of melanoma, a surgeon typically sees a lesion that has already been excised, so they cannot actually see the melanoma but rather a scar. In a perfect world, all melanomas would be excised with either a punch biopsy of the thickest part of the melanoma, which is sometimes hard to discern, or a narrow margin and excision of the whole melanoma so that accurate depth can be ascertained. The Breslow’s thickness, in general <1 mm with no poor features or clinical stage 1A, would not mandate further therapy, whereas anything thicker than that would likely require some sort of formal staging. It is easy to remember that anything >1 mm needs to be staged. The histologic characteristics of the melanoma are very important in terms of accurate prognosis and whether further intervention would be necessary. The things that come to mind are ulceration, mitotic rate, and some other minor things that we take in to account such as lymphovascular invasion, vertical growth phase, or some type of melanoma. In general, if you have a thick tumor or an ulcerated tumor or a tumor associated with a high mitotic index,
further staging would be indicated. If a patient who has a thin melanoma is clinically node positive in a draining basin — for instance, if a patient had a melanoma of her thigh and she had lymphadenopathy in the draining groin basin — that would prompt further intervention as well. The characteristics of the patient would guide what you do next.

**Ulceration:** Ulceration is a microscopic diagnosis and depends on a good dermatopathologist’s review of the epidermal interface of the tumor with the surrounding normal epidermis. So, while many melanomas are crusted and/or bleeding, that does not necessarily imply ulceration as we talk about in staging. Ulceration is a microscopic finding that a dermatopathologist renders.

**Sentinel Lymph Node Biopsy Provides Useful Survival Information**

I like to think of sentinel lymph node biopsy as a really expensive and invasive chest x-ray. It is not a therapeutic procedure; it is purely a staging procedure. In the clinically node-negative patient with the appropriate characteristics of the melanoma, a sentinel lymph node biopsy can be a powerful predictor of survival, and this has been proven in multiple clinical trials. But a sentinel lymph node biopsy is not indicated in thin melanomas with no poor features or thick melanomas that are either clinically node positive or that would be otherwise treated in an aggressive manner. Again, it is just a staging procedure. Your classic role in melanoma would be a T1 or T2 tumor that is clinically node negative with ulceration or a high mitotic rate or if multiple nodal basins were involved. You want to know which basins you need to survey closely, and sentinel lymph node biopsy can provide useful information in that regard.

**Caveats:** Techniques of sentinel lymph node biopsy have been fairly mainstream for a couple of decades at this point. I would say as long as someone is facile in the use of radionuclide scintigraphy, and vital dye injection, then it is a fairly simple, straightforward technique. If you have a melanoma in the mid-back, for instance, one has to be cognizant of multiple draining nodal basins that may be at risk. So, when you do your scintigraphy, you have to make sure that you survey both axillae, the high supraclavicular regions, and both groins because people’s anatomy can be variable. I find the injection of the vital dye in addition to radionuclide is often very helpful and reassuring when you are looking for a sentinel node, especially in the obese patient.

**Inject Previously Excised Melanomas at Scar Sites**

**Case:** You are dealing with a patient where the lesion has been removed, but, based upon histology and clinical appearance of the patient, you feel that you need to a sentinel lymph node biopsy. Do you inject at the site of removal or somewhere else?

**Recommendations:** Oftentimes it is not optimum, but it is the situation that you must deal with, so wide excisions of obviously malignant lesions upfront — without performing sentinel lymph node biopsy at the time of the primary therapeutic intervention — can make things somewhat difficult. This is why most people who deal with melanoma on a regular basis would prefer either a narrow-margin biopsy, a shaved biopsy, or a punch biopsy — probably in that order. I think the validity of sentinel lymph node biopsy in the previously excised melanoma is pretty good if you have a truncal or an extremity melanoma, whereas cosmetically difficult areas where you have disrupted a lot of potential lymphatic drainage — especially in head and neck cases — can make finding a sentinel node or the validity of the sentinel node somewhat suspect, but I do not know of any prospective data in this regard. So, if you are presented with a scar from a previously excised melanoma, injecting a vital dye and radionuclide at the scar is acceptable.
Therapies for Management of Melanoma Constantly Changing

Even since I began writing the questions for SESAP 16, the management of melanoma has changed fairly dramatically and will continue to do so. And the alphabet soup of monoclonal or targeted therapies or checkpoint inhibitor therapies has proven very useful in giving hope to some melanoma patients. In broad strokes, I would say everyone with advanced melanoma, meaning metastatic melanoma or node positive or recurrent melanoma, probably ought to have 2 things — a multidisciplinary management team and to have their tumors checked for certain genetic abnormalities, most notably the BRAFV600 gene abnormalities, which have some very novel therapies. When we were writing SESAP 16, the only approved adjuvant therapy for metastatic melanoma, and I stressed the word adjuvant, was interferon alpha. IPI: Since that time, though, ipilimumab (IPI) has been approved as an adjuvant therapy based on similar improvements in disease-free survival compared to interferon over the less of a toxicity profile. But I have to stress that we do not know the long-term survival data at this point for IPI. Other Novel Therapies: The other novel therapies are the targeted therapies for the BRAF mutations. Patients who have advanced melanoma should have a BRAF gene assay. If they are a wild type for the BRAF or if they are a mutated, a therapy is available. The others we talk about are vemurafenib and dabrafenib, and these are mostly confined to the advanced metastatic setting at this point. The BRAF inhibitors have a very high response rate, but the response is typically not durable, and recurrences down the line are more the rule than the exception. Again, long-term disease-free survivals are improved, but overall survival has yet to be seen. Culmination therapies are the rule now, and I suspect in the next couple of years we will have a lot more information in the adjuvant setting with checkpoint inhibitors or BRAF inhibitors.

Advanced Melanoma: Melanoma is a very common disease, and thankfully most often we see it in the stage 1 or the in situ setting. We do very, very well with surgery alone. For the first 20 years of my career, we did not have a lot of therapies useful for advanced melanoma. Response rates were very low, and survival rates overall were very low for advanced or recurrent melanomas. If surgery could be applied judiciously to manage all known regional or local or distant disease, then an appreciable survival rate was attainable, but in the advanced setting — for instance lung visceral brain metastases — the survival rates were very low, <5% at five years. There is new hope, and my impression is that we are having people live longer and longer with advanced relapsed melanoma.

Addressing Merkel Carcinomas

Margins for Merkel cell tumors are somewhat of a moving target these days as we see more and more lesions that have been dealt in other disciplines. For instance, Mohs surgeons are removing Merkel cell carcinomas. The traditional management of a known Merkel cell is wide excision. The margins typically applied for a Merkel cell tumor have been in the 3- to 4-cm range, as opposed to the 1- to 2-cm range for melanomas. I think most people would be comfortable with a 2- to 3-cm margin in Merkel cells as long as that was a margin-negative excision, and most people would apply sentinel and lymph node biopsy in the clinically node-negative situation as well. There has been a lot written about Merkel cells recently, and, unfortunately, none of it is what we would term high quality data. They are mostly institutional, retrospective, databased reviews, but there are pretty good SEER database data that seem to indicate that multidisciplinary therapy with the use of radiation is useful in Merkel cell. This is one of the few tumors that I know of where radiation can actually improve overall survival.

Drug Therapy: I believe systemic cytotoxic chemotherapy would be the mainstay. I am not aware of any hard and fast data to suggest other types of therapies used in small cell tumors or immunotherapy-based regimens that would be used for Merkel cell.

Outcomes: Stage for stage, outcomes for Merkel cell are worse than melanoma. I would say on the spectrum of skin cancer lesions you would rather not have, the order is basal cells, squamous cell
carcinoma, melanoma or Merkel cell — you would probably rather have a basal cell than a Merkel cell. The outcomes are definitely worse, recurrences are very common, and distant metastases — lymphatic and vascular and visceral — are quite common.

**Large Soft-Tissue Tumors Can Be Difficult to Manage**

**Case:** A patient presents with a 5-cm mass on the anterior thigh. What happens in your diagnostic work-up? **Recommendations:** This is sometimes a conundrum for surgeons that manage soft-tissue tumors. The vast majority of extremity tumors that are very symptomatic need to be dealt with in an oncologic fashion. The exception to that is lipomatous tumors, which can have a spectrum of behavior. There is a new term *atypical lipoma or low-grade liposarcoma* that typically presents with larger tumors — those >10 cm in size or so — and a kind of bland monotonous cell structure. They have a tendency to recur locally but not distantly. Most people that have been treating sarcomas for the last couple of decades were trained to do radical compartmental resections for soft-tissue tumors. For instance, if you had a tumor of the extensor compartment of the thigh and intimate involvement with the femoral nerve, femoral artery, and femoral vein, it would require radical resections with reconstructions.

We now know that is probably overkill for these atypical lipomas or low-grade liposarcomas. So, narrow-margin excision to negative margins would be acceptable, especially since a lot of your patients would present at an advanced age and would probably wind up in a nursing home if you ended up doing these radical resections. If anyone complains of a mass that is either growing, has symptoms, or has characteristics on physical examination that may lead you to a suspicion of a malignant process, then cross-sectional imaging would be the rule.

Classic training is for a core needle biopsy — either image guided or physical exam guided — in an area that would be included with any potential incision would be the rule. I would think most people would get an MRI before charging into a potentially complex, multi-compartment resection, and certainly consultation with someone who deals with these on a regular basis would be worthwhile.

Not necessarily every 5-cm tumor of the thigh needs to go to the cancer center of choice, but I do think proper planning, precautions, and knowing what you may be dealing with will lead to better outcomes.

**Cross-Sectional Imaging Helpful on Monotonous Tumors**

Cross-sectional imaging can typically help with low-grade liposarcoma excision. If you have a very bland monotonous tumor without any septations, vascular areas, or suggestion of complexed lesions — which may imply differentiation or a tumor that harbors a higher-grade component — and a core needle biopsy showing a bland fatty tumor, it is reasonable to approach that tumor with a narrow-margin excision. The pitfall is that it is typically difficult to get adequate diagnosis for fatty tumors using a core needle biopsy. Certainly FNA would probably be inadequate, so this is where surgical judgment comes in.

The condition of the patient, the patient’s predilection for preservation of mobility — a lot of these things need to be talked about. When you are talking about potentially removing nerves and blood vessels and major morbid procedures, that kind of bumps it up to someone that deals with these things on a regular basis. So, if you were presented with a 5-cm subcutaneous mass that does not seem to involve the fascia of the compartment of the thigh, is not growing rapidly, does not have a lot of symptoms, and looks fairly bland on imaging, I would approach that as an atypical lipomatous tumor and with narrow-margin excision. The other end of the spectrum would be something that is deep to the fascia, rapidly growing, maybe fixed to visceral structures causing symptoms, and core needle biopsy is suspicious for atypical lymphocytes with mitotic rates. That needs to be approached in a much different manner.
Focus on First Operation for Liposarcoma in the Retroperitoneum

It is common for liposarcoma in the retroperitoneum to be big, but this is not always the case. They had to start off small at some point. It seems we get CT scans for almost anything these days, and the asymptomatic incidental lesion in the retroperitoneum is not an uncommon finding. Further diagnostic work-up in consultation with someone that deals with these things on a regular basis might not be a bad idea because liposarcomas of the retroperitoneum are very difficult problems. Like extremity sarcoma, local recurrence seems to be more of an issue as opposed to systemic recurrence, and large operations, multi-visceral, multi-organ resections seem to be in play at some point if the patient has recurrent liposarcoma. In sarcoma management, the first operation is the best operation to cure the patient, so it needs to be planned appropriately. There is a lot of discussion about adjuvant therapies in the retroperitoneal liposarcomas. For people that run in those circles, there are a lot of opinions about how to manage them as well. They can be quite large at presentation.

Does Biopsy Change Management?

If you have a very large fatty tumor with atypical components and an MRI or a good-quality CT scan shows that you have a tumor that is phenotypically behaving in an aggressive manner, then a biopsy does not really change management. It may help if your institution is of the camp that preoperative radiation for de novo presentation liposarcomas is useful. There is some controversy in this regard. The proponents of radiation as an adjuvant in resection retroperitoneal liposarcomas claim that the radiation dose — while large and over a broad field — typically is delivered to the tumor, not to the viscera, and allows for narrow-margin excisions, organ sparing potential, and decreased recurrence rates. There has never been any demonstrated survival advantage to large radiation fields for liposarcoma; however, I know a lot of people that prefer to accept the fact that a lot of retroperitoneal sarcomas are going to recur at some point and do the initial resection, follow them very closely, and intervene if and when a recurrence occurs, and then use radiation at that time. There has never been any prospective data that I know of that definitively answers this question, but I do know that an ongoing RTOG study is accruing well and we should have any answer in this regard in the near future.

Dermatofibrosarcoma Protuberans Often Occur in Cosmetically Difficult Areas

A dermatofibrosarcoma protuberan (DFSP) is a sarcoma. It can be a locally aggressive fibrosarcoma of the skin, and it is not uncommon to run into these if you have a broad practice in melanoma and sarcoma. DFSPs are typically solid, fibrous tumors that have difficult management properties in that they send out little tentacles of tumor unbeknownst to the person excising the lesion. Wide resection at an initial operation is going to be the best chance for management. It is not uncommon for a primary care doctor, dermatologist, or general surgeon to remove a lump or a bump or something in the clinic using a narrow-margin excision, and it turns out to be a dermatofibrosarcoma protuberans. Re-resection would be indicated in that situation. They are somewhat difficult to deal with because they tend to occur in cosmetically difficult areas — head and neck comes to mind — and enlarged excisions require large reconstructions.

Management of Cutaneous Lymphoma

A cutaneous lymphoma is an uncommon problem for a surgeon to see, but one might run into a patient with a chronic small lump or a rash or something that just will not go away, so a skin biopsy is performed. The skin biopsy could harbor a cutaneous lymphoma. The vast majority of cutaneous
lymphomas are T-cell lymphomas, and most are managed as indolent tumors and do not require aggressive therapy. I would say probably one-third or less are B-cell lymphomas. These would probably require management from a multidisciplinary standpoint, and a referral to an oncologist would be the right thing to do. In most cases, complete excision of the visible lesion is not indicated. The surgeon’s role would typically be in a diagnostic manner.

Management Different for Acute Radiation Enteritis

The distinction between acute radiation enteritis and chronic radiation enteritis is an enormous one, and management can be very, very different. Acute radiation enteritis from ongoing radiotherapy — typically in say rectal cancer management or esophageal cancer management — in a neoadjuvant or a postoperative adjuvant setting is usually a self-limited thing, essentially toxicity from the therapy itself. **Classic Case:** The classic chronic radiation enteritis presentation is women who had hysterectomies in the 1960s and ‘70s and had cobalt radiation as an adjuvant therapy. Now, they are plagued with horrible chronic radiation enteritis, and it takes a surgeon of great skill to deal with these in a surgical manner. These are very difficult and dangerous cases with which to deal. Surgical bypass must be in the quiver of someone tackling these complex problems, and surgical judgment is of paramount importance in dealing with these operations. If not approached with appropriate temerity, then fistulas, obstructions, sepsis, and quality of life are all in play here. One must consider that sometimes surgical bypass is the only safe thing to do. Inadvertent enterotomies or even enterotomies that are made to create new anastomoses are sometimes very difficult to heal in the chronically radiated bowel. And these patients can also be quite sick, so approaching them cautiously is the rule.

**Decreased Incidence:** Chronic radiation enteritis is less of a problem these days. I am not sure what the denominator is there, but with newer radiation techniques, even in my brief career, I have seen a dramatic decrease in the chronic radiation population. The classic chronic radiation population is the gynecologic cancers from several decades ago or the seminomas from several decades ago. People survived those diseases, and now they have a problem years later. Newer intensively modulated radiotherapy techniques and computer simulations — those directed at tumor volumes and not the adjacent viscera — are leading to a lower occurrence of chronic radiation enteritis.

Good Surgical Management Paramount for Dermoids/Desmoids

*Dermoid* is a term used for many different things, and I think what we are talking about is a fibrous tumor or aggressive fibromatosis tumor of the connective tissues. Most people say dermoids are not cancer but that they behave as such. A dermoid is a regeneration or an over population of an area of scar or regeneration that has gone out of bounds and created a soft-tissue tumor-like phenomenon.

Tumors are typically seen or can be seen quite commonly in patients that harbor a familial adenomas polyposis (APC) gene problems, and they frequently get desmoid tumors. Desmoid tumors are also seen more commonly in younger women, particularly women of childbearing age, and they behave in a locally aggressive fashion similar to dermatofibrosarcoma protubers. Wide excisions with healthy margins are the mainstay of therapy, although there are some new adjuvant type of therapies that we see for both tumors that potentially will play a role, but surgery is the main actor here. I am not aware of a relationship with keloid patients to patients who develop desmoid tumors, but I guess my thoughts are that they are along the same lines of why people develop these problems. Desmoids in and of themselves are pretty rare, whereas keloids are quite common.

**Medical Management:** Medical management is second best to good surgical management. Desmoids can frequently come back in an area that is very difficult to deal with — the mesentery of the bowels is one that comes to mind. If you have a central desmoid tumor that is recurrent along the distribution of
the superior mesenteric artery, then resection sometimes is just not possible. Adjuvant therapies, molecular-based therapies, and medical therapies have all been tried with some success and play a role in things like tamoxifen, COX-2 inhibitors, cytotoxic chemotherapy, in the appropriate setting CK inhibitors or imatinib, and even radiation therapy may play a role in lesions that cannot be resected or lesions that are aggressively recurrent.

Be Aware of Genetics of Colon Cancer

The way we learn about diseases, specifically cancer, and how we treat diseases now and in the future is certainly going to have a lot to do with our exploding knowledge base of the genetics of our human bodies, cancer in particular. Colon cancer is a very common problem with which general surgeons deal and the genetics of colon cancer are certainly something of which surgeons should be aware, but these do not frequently come into play in terms of the primary management of colorectal cancers. In broad strokes, there are 3 typical pathways cancer in the colon develops. One is the classic adenoma carcinoma sequence, and this is your APC, p53 genetic abnormalities we all learn about. APC genes are abnormal in almost every colon cancer and in almost every colon polyp and are very early in this pathway. P53 genes are abnormal in a variety of cancers and specifically colon cancer. Almost all colon cancers of this sporadic variety have abnormalities of the p53 gene. This in and of itself is not very useful, as no therapies centered around cell cycle rest from the p53 standpoint have ever been utilized. Newer things on the forefront are K-RAS mutations and therapies associated with K-RAS mutations that a surgeon should know about. If you have abnormalities of the endothelial growth factor pathway, then usually adjuvant therapies are not useful. If you have an intact pathway, meaning the KRAS mutation is the wild type, or you do not have a mutation, then certain therapies may be available in a metastatic setting but there are no typical adjuvant therapies for a general surgeon.

Useful Information in Prognosis of Color Cancer

In 2016, some things you want to know about every invasive colon cancer on a pathology report include the histologic characteristics of the tumor, the number of lymph nodes removed en bloc with the tumor for accurate staging, and the presence or absence of microsatellite instability, BRAF mutation, and KRAS mutations. These things are useful in the multidisciplinary management of colon cancer. The only other thing I would add is the presence or absence of some of these genetic abnormalities in colon cancer provides useful information for the oncologist and the patient in terms of recurrence. Something not quite understood about genetic abnormalities is that the presence of microsatellite instability in a sporadic colon cancer actually confers a survival advantage compared to someone that does not have microsatellite instability. The presence or absence of KRAS mutations and BRAF mutations provides other novel treatment pathways in advanced colon cancers. This is all useful information for prognosis and potentially for treatment.

Is Multidisciplinary Care Total Care?

It was recently said that “multidisciplinary planning and evaluation is not equal to 3 consultations in one day.” As a surgeon at a multidisciplinary center, this is something I am very interested in along with a lot of other people that provide complex cancer care. This is something really hard to measure. In an era of governmental oversight of physician practices and quality metrics, I suspect we will see a whole lot more in this regard, but the concept is the same. How do you provide value to a patient? One thing we deal with in our rural state, where patients may literally drive 400 or 500 miles for care, is total
integration of necessary treatments — diagnostic evaluations, interventions, and planning to provide a value-oriented service for the patient. Some of the barriers we have are physician driven — referral patterns, different institutional electronic record utilization, and insurance payers driving people one way or the other. But when we are able to do it, we typically do it well. Knowing as much as we can about a patient ahead of time through good communication between the referring provider and the referee, I guess, is critical. In Montana, which I am sure is much different than say a big city like Milwaukee, I might get a CT scan or an MRI or an operative report from some small hospital 300 miles away with a phone call or text asking me to help with a problem. If I know the patient has an esophageal tumor or a rectal tumor that is going to need sophisticated staging and work-up, I can usually arrange for all of those appointments and all of the appropriate interventions to be done on the same visit, so the patient comes to Kalispell and leaves the same day or the next day with a diagnosis, a treatment plan, and a disposition. From having worked in big cities, I have often noticed this can be very, very difficult to accomplish. Typically, you will have a diagnosis and then a talk about the diagnosis, then a referral to a doctor, then a referral to another doctor, and then another MRI or a CT scan, and it becomes a long litany of interactions that possibly could have been handled in a better way. I think as we get better at measuring quality and value-added services, we will get more of a handle on this type of thing, but like you say 3 H&Ps and consultations in a day does not equal in and of itself quality care. I think the foundations of multidisciplinary care seen in successful cancer centers are good communication, a team that works well together and understands a prioritization of care, and a patient-first attitude.

Changes in Care: The way physicians are paid and/or incentivized to do and complete work is a little bit counterintuitive to value in 2016. As we see payment models and ways of delivering care change over the next coming years, I think we will see a lot more interesting ways of taking care of patients. Patients are so much savvier these days. They come in with Google printouts of their problems and ask about this study and that study and this disease treatment, so I think getting information to and from patient to physician, as a 2-way street, is going to be a much more interesting way to handle complex diseases.