



Team-Based Surgical Scheduling for Improved Patient Access in a High-Volume, Tertiary Head and Neck Cancer Center

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ABSTRACT

Background. Delays in care can lead to inferior survival outcomes in head and neck cancer and other cancers. In the case of malignancies for which surgery is the preferred primary treatment modality, challenges in surgical scheduling can present a major hurdle to initiating definitive therapy in a timely fashion. It is critical to maintain efficient use of operating room resources. Traditionally, surgery is scheduled with the surgeon who initially saw the patient in consultation, and timing of surgery is tightly linked to the availability and operating room block time of the individual surgeon.

Methods. Scheduling of oncologic head and neck surgery was transitioned from a surgeon-specific method to a team-based approach wherein a patient in need of oncologic head and neck surgery is scheduled with the next-available surgeon with appropriate expertise.

Results. Despite substantial growth of our practice, transition to a team-based scheduling approach allowed us to maintain high utilization of operating room block time. Patient and surgeon satisfaction remain high with this new system.

Conclusions. A team-based surgical scheduling approach can help optimize operating room utilization and minimize delays in cancer care, potentially leading to improved oncologic outcomes.

It has been well established that delays in care can lead to inferior clinical outcomes in patients with head and neck cancer and other malignancies.^{1–5} For oral, salivary, and other cancers where surgery is the preferred primary treatment modality, surgical scheduling can thus have a profound impact on oncologic outcomes. Although patient factors such as comorbid health conditions may affect the ability to schedule surgery in a timely fashion, limitations in operating room (OR) and surgeon availability are often the most significant hurdles. OR availability is limited at a given hospital owing to the need for physical space and staffing of key technician and nursing roles in addition to surgeons.

In most healthcare centers, a patient is scheduled with the initial surgeon who provided consultation, unless the patient decides to seek another opinion or is referred to another surgeon with more appropriate expertise. The onus thus falls on the individual surgeon to schedule surgery for all patients seen within a timely fashion. Since the referral of new patients with cancer can ebb and flow, this type of system can lead to intermittent bottlenecks in scheduling. The more senior surgeons in a given practice may also receive more referrals, leading to underutilized OR block time for the newer surgeons in the practice. Although OR block time can be shared among a team of surgeons, there is a finite amount of time during which individual surgeons are available.

To address these challenges in our high-volume, tertiary head and neck cancer center, we have moved to a team-scheduling approach for all head and neck oncologic surgery. Herein, we describe the logistical details, advantages, and limitations of this scheduling approach.

METHODS

Review of operating room utilization and other clinical care metrics pertaining to our head and neck surgical oncology patients for the purposes of research was approved by the institutional review board at Emory University School of Medicine (IRB number 00002258, Winship Cancer Institute). Block time utilization data and patient satisfaction data are routinely collected by our operating room and clinic administrative staff, respectively. The authors (N.C.S., M.J.R., M.E.D.) requested retrospective data on block time utilization from May 2015 (1 year prior to the transition) to June 2021 (5 years after the transition). We also collected third-party Press Ganey patient satisfaction surveys from 2019 to 2021 (years 3–5 following the transition). Detailed demographic data (age, sex, race/ethnicity) were not recorded for this study.

Scheduling Flow

The scheduling flow for our new system is summarized in Fig. 1. Patients with suspected head and neck cancer who need additional testing and workup are scheduled to see a head and neck surgeon in consultation. All patients with a new diagnosis of head and neck cancer and completed workup are first seen in our Multidisciplinary Clinic (MDC) by an oncologic surgeon, radiation oncologist, and medical oncologist, in addition to speech therapy, nutrition, social work, and dental providers as indicated. For many of our patients with oral, salivary, and other cancers, surgery is recommended as the initial and primary treatment modality. A surgical worksheet is then submitted detailing the nature of the surgery, urgency, medical visits, or clearances needed before general anesthesia, and equipment needed.

Upon receipt of the surgical scheduling worksheet for a malignant tumor, our scheduling team reviews calendars of all surgeons and schedules the patient into the next available surgical date. The patient is then contacted and offered that date and associated surgeon. If the patient accepts,

surgery is scheduled and an appointment with the new surgeon is made on same day as the preoperative anesthesia appointment. If a patient prefers the initial consulting surgeon, they are scheduled for the next available appointment with that surgeon with offers to move up if earlier dates become available. In this way, patients are given the option to reassign themselves to a new surgeon in order to expedite their oncologic surgery. As a result of this system, OR utilization is efficient and any delay is uniform across the program, rather than variable for different surgeons. It also retains patient autonomy to ultimately decide upon their surgeon.

Subspecialty Expertise

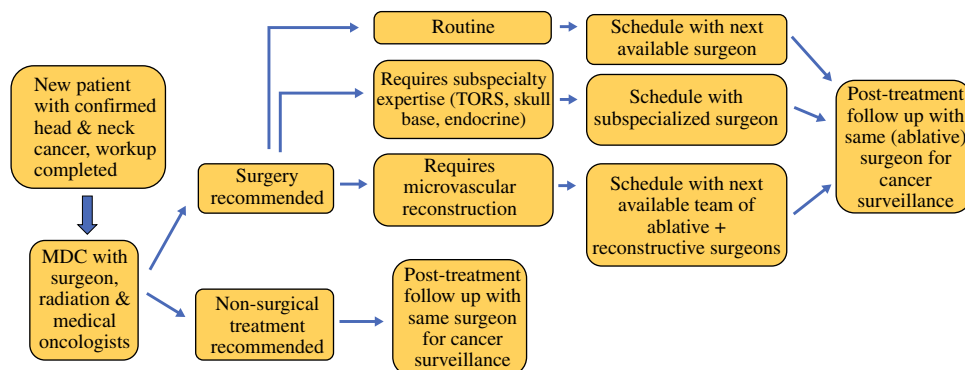
Our team currently includes ten head and neck oncologic surgeons, some with subspecialty expertise in transoral robotic surgery (TORS), skull base surgery, endocrine (thyroid/parathyroid) surgery, and microvascular reconstruction. Scheduling for each surgeon is prioritized within their areas of expertise where applicable. By scheduling cases that do not require subspecialty expertise with the next available surgeon, each subspecialty-trained surgeon is able to perform a higher proportion of surgeries requiring their specific skillset (TORS, skull base, etc.).

Tumors requiring resection and microvascular reconstruction are scheduled with two surgeons, one who performs the ablative portion of the operation and another who performs the reconstruction. Each microvascular surgeon performs two microvascular free flaps per week; another day is reserved for shorter cases.

Canceled or Postponed Surgeries

Despite our best efforts to optimize utilization of OR block time, cancellations related to delay in obtaining medical clearances, other patient factors, and unforeseen circumstances do occur. In the event of a cancellation, patients scheduled for surgery at a later date are offered the opportunity to be moved to an earlier date. Alternatively,

FIG. 1 Schema of overall scheduling flow. MDC multidisciplinary clinic



the patient may keep their current schedule if there is a preference for the current surgical team or date. Owing to the morbidity associated with large, growing tumors in the oral cavity and other anatomic subsites of the head and neck, patients are often eager to have surgery as soon as possible.

RESULTS

In the interval since this new system was adopted and streamlined, several improvements have resulted. Despite substantial growth of our practice and the addition of more surgeons to the team, we have maintained high (70–80%) utilization of assigned surgical block time (Fig. 1). Canceled cases were usually replaced, such that actual use of block time was on par with scheduled cases (Fig. 2). The new scheduling system has also allowed us to optimize utilization of subspecialty expertise, with our surgeons possessing transoral robotic, skull base, and endocrine expertise performing a greater proportion of surgical cases that fall within their subspecialty skillsets.

We have been careful to avoid coercing our patients to accept this system by giving them the option to reassign themselves to a new surgeon versus staying with the initial consulting surgeon. Anecdotally, however, our patient care coordinators report that the majority of our patients do opt for a different surgeon when it allows for a reduced waiting period, citing tumor pain and concerns about tumor progression as their major concerns. Patient satisfaction, as measured by third-party surveys, has remained high after this change was made, with consistent ratings of 83–89% of patients selecting the top score when asked if they are

satisfied with their surgeon during the past 3 years. However, these data are limited to patient satisfaction with individual surgeons, rather than the surgical team or system as a whole.

Although we have not performed quantitative surveys to measure surgeon satisfaction before and after the transition, all ten surgeons have expressed their satisfaction with the system, including the proportion of scheduled cases that fall within individual areas of expertise.

DISCUSSION

Scheduling remains one of the most significant challenges in oncologic care delivery. OR utilization, a critical component of care delivery, is a limited resource that must be used efficiently to ensure appropriate timing of surgical treatment. The other critical resource is the surgeon's time. In an era when physician burnout is widespread, it is unreasonable to expect surgeons to continually operate outside of their block time in order to meet patient expectations and overarching treatment goals. Furthermore, as head and neck oncologic surgery becomes increasingly subspecialized, it is critical to make sure that the appropriate surgeons are available to perform more complex cases in a timely manner. Meanwhile, patients are increasingly seeking a concierge experience. This creates, in essence, a Gordian knot of patient care delivery. Very simply, OR resources are limited; surgeon time is limited; and patients are seeking a more refined experience. Our model cuts the proverbial knot by replacing the doctor–patient relationship with a team–patient relationship. In doing so, we have created a patient-centric environment

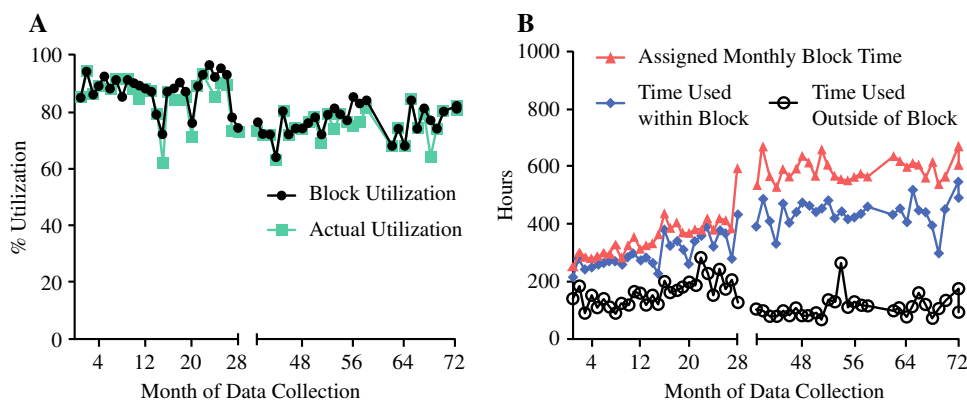


FIG. 2 Utilization of assigned surgical block time remained high after transitioning to a group scheduling system. The new system was first adopted at month 12, and additional surgeons and assigned block time were added at month 28. Data were not collected during months 28–41, and months 59–61 were impacted by the SARS-CoV-2 pandemic. **A** Operating room (OR) depicted as percent utilization of assigned block time with scheduled cases (black) and actual cases (green). Canceled cases were usually replaced before the day of

surgery, resulting in actual utilization on par with scheduled utilization. **B** OR utilization depicted as number of hours available (red) and used within (blue) and outside of (black) assigned block time. Addition of surgeons and block time at month 28, in addition to the group scheduling system, allowed us to decrease the number of cases performed at less predictable times outside of the assigned block

that respects the limits of the surgeon but still prioritizes the patients' oncology needs. This has resulted in improved OR utilization and a program-based wait time that is not limited by individual surgeon availability. It has also allowed for a case distribution algorithm that allows subspecialized surgeons to be available for complex cases in a timelier fashion.

As surgical utilization increases with our aging population, surgical scheduling systems must be streamlined to provide ethical allocation of this resource.⁶ Further, efficient use of surgical block time can improve the overall quality of care in a given hospital.⁷ Prior studies in the literature have used modeling techniques to devise ways of maximizing the use of surgical block time.^{8–12} These studies consider surgeon and patient preference, cost, and other factors in scheduling of elective surgery.^{8,10,13,14} To our knowledge, a group scheduling system devised to optimize OR block time utilization and facilitate access to surgery for patients with cancer has not been previously described. However, in one prior study utilizing patient surveys, the majority of respondents indicated interest in the option of having surgery performed by a different surgeon if it resulted in less waiting time.¹⁵ Anecdotally, we have found this to be the case in our patients with head and neck cancer as well.

Despite the described benefits, there are limitations to this new system. Although patient satisfaction as measured by third-party surveys remains high, some patients have reported feeling as if they are on an “assembly line.” This can often be overcome by patient education that stresses the team–patient relationship and by creating meaningful points of contact for the patients and their families. In our program, this role is served by the patient care coordinator and advance practice providers assigned to the operating surgeon. We have also noted that the scheduling became more fluid when we reached a critical number of surgeons, and we acknowledge that this system may not work as well for departments with smaller numbers of ablative and reconstructive surgeons. A third limitation is related to variations in opinion on how certain patients with head and neck cancer should be treated. The surgeon who initially evaluates a patient may have a different surgical plan versus the surgeon who ultimately performs the surgery, which can lead to confusion for the patient. The system can lend itself to conflicting opinions, and the team needs to have open lines of communication to make sure patients are informed and educated about their available treatment options. This limitation can be overcome by creating a transparent team environment that is supportive, collaborative, and patient-centered. By fostering a culture where we can openly discuss divergent opinions, we have all learned from each other and continue to refine our surgical skillsets and knowledge.

Despite its limitations, the team-based scheduling approach has been successful. It has allowed our program to manage unprecedented patient volumes while maintaining OR efficiency and rapidly growing new surgeon practices over a short period of time. For programs experiencing rapid growth in the face of limited OR availability or seeking the value of balanced surgical experiences, the team-based scheduling utilized here represents a meaningful solution. Although there are changes to the doctor–patient relationship, this can be overcome through patient education and support through specific points of contact within the team. We believe the team-based model can provide a viable alternative to surgeon-specific scheduling that results in excellent oncologic and functional outcomes.

FUNDING Winship Cancer Institute.

DISCLOSURE N.C.S. reports research funding from Astex Pharmaceuticals and consulting for Checkpoint Surgical and Sensorion.

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