

Improving Total Joint Arthroplasty Instrument Setup Time With Use of Double-Tiered Back Table

**Kimberly A, Berland, CST, FA
Jill Jasperson Branson, RN, BSN**

Illinois Bone and Joint Institute

8930 Waukegan Road
Morton Grove, Illinois 60053

TEL 847.324.3953

FAX 847.929.1176

E-mail jbranson@ibji.com

Abstract

Introduction of a new, oversized back table with a second top tier eliminated the need for two back tables during total joint arthroplasty (TJA) procedures performed at one institution with one surgeon. The surgeon's private scrub technologist suspected the new table was streamlining the instrument setup process and actually shortening the setup times between cases. Instrument setup times were prospectively studied with the conventional setup using two back tables versus the setup with the new double-tiered table. Total Knee Arthroplasty (TKA) setups using the double-tiered back table averaged 6.8 minutes faster than with two separate back tables and Total Hip Arthroplasty (THA) setups averaged 2.2 minutes faster. Although these times were not dramatically different, the double-tiered table improved turnover times and offered additional advantages to the scrub technologist and circulating nurse.

Introduction

Opening sterile supplies and setting up instrumentation, supplies and equipment for total joint arthroplasty procedures can be a lengthy, chaotic task. Custom supply setup packs have helped streamline the process, but there remain a large number of instrument trays for the circulating nurse to open and the scrub nurse/technologist to assemble. Most often, two one-level back tables are needed to accommodate the instruments, equipment and supplies. See Figure 1.

Figure 1. Two Back Tables TJA Setup



Conventional back tables can be purchased in several sizes to accommodate these needs, but the availability of a new double-tiered back table has allowed the instrument setup space available on two tables to be contained within the floor space of only one table, which is especially advantageous in small operating rooms. See Figure 2.

Figure 2. Double -Tiered Back Table TJA Setup



Materials and Methods

To validate our observation that setup times were shortened with the new double-tiered back table, we prospectively compared scrub technologist setup times for 20 total joint arthroplasty (TJA) procedures using the same institution; implant instrumentation, scrub technologist, circulating nurse, and surgeon. We studied five TKA and five THA procedures using two separate back tables versus one double-tiered back table.

Setup time began when the first sterile supply was opened and ended when the scrub technologist was done with setup and ready to gown and glove the surgical team. Instruments and power equipment trays were opened and placed on either back table setup in a designated area to maximize efficiency and minimize the amount of moving trays required by the scrub technologist. Acetabular instruments were placed on the left side and femoral instruments on the right side to maintain consistency. Trays were stacked on top of each other as needed and always in a consistent, predictable location. Draping materials were placed on the double ring stand. Two mayo stands – one large and one standard size – were used for instruments to be used for each case.

Results

All setup times were documented and an average was calculated for each of the four groups in Tables 1 and 2. TKA setups using the double-tiered back table averaged 6.8 minutes faster than the two separate back tables, and THA setups averaged 2.2 minutes faster. The scrub technologist identified the following advantages to using the double-tiered back table: less walking required during setup, setup was more compact rather than being spread out over two tables, able to work in smaller ORs when needed, able to remove top tier and the ability to create one large table.

Table 1. TKA Setup Times

	Minutes to Setup TKA with Double-Tiered Back Table	Minutes to Setup TKA with Two Back Tables
	19	25
	17	26
	20	24
	16	28
	21	24
Average Minutes	18.6	25.4

Table 2. THA Setup Times

	Minutes to Setup THA with Double-Tiered Back Table	Minutes to Setup THA with Two Back Tables
	20	22
	22	22
	19	28
	22	22
	21	21
Average Minutes	20.8	23

Discussion

To cut costs in surgery, much emphasis has been placed on methods to decrease turnover times and improve efficiency. Reducing turnover times can improve surgeon satisfaction, and allow surgeons to increase their daily workload in an orderly, organized manner.^{1,2} Surgeons define turnover time from their own point of reference: when a surgeon finishes his or her part of a case until making the next incision.³ Franklin Dexter, MD, PhD at the University of Iowa Department of Anesthesia, has extensively studied OR efficiency and suggests focusing turnover efforts between successive cases performed by the same surgeon.⁴ This situation is often experienced at our institution with TKA and THA procedures.

From a practical standpoint, highly specialized surgical cases such as joint arthroplasty often can best be completed by the nursing staff present on the day shift, so it may be advantageous to complete these cases prior to the arrival of the evening shift staff. Off shift staff are often expected to handle a wide variety of surgical cases and may lack the specific experience required for these procedures. At Rochester General Hospital in New York, their improvement efforts attempt to complete the day's cases so no patient is subject to a change in team members.³

Conclusion

The operating room working environment should help streamline time and cost along with considering staff needs.⁵ Operating room staff have embraced the use of case carts and custom packs to simplify the setup process in surgery.⁶ The double-tiered back table is a new asset to further improve setup efficiency and workflow during total joint arthroplasty procedures, which are often complicated and take place in surgical suites that were designed at a time that did not require the extensive complex instruments and equipment available today. These tables have also provided the circulating nurse with additional space for items as they are opened onto the sterile field. These advantages have improved efficiency during turnover between surgical cases. The top tier of the table can be removed to create one large table that can be used for extra instrumentation that is often needed during revision joint arthroplasty. The double-tiered back tables will likely become more prevalent in surgery and their large surface area may benefit the setup of other complex surgical procedures that require extensive instrumentation and equipment such as spine, cardiovascular, trauma and general surgery. See Figure 3.

Figure 3. Double-Tiered Back Table



References

1. Benchmarking OR turnover times, *OR Manager* 16:1-4, 2000.
2. Adams R, Warner P, Hubbard B, Goulding T: Decreasing turnaround time between general surgery cases: a six sigma initiative. *J Nurs Adm* 34:140-8, 2004.
3. Turnover time. Is all the study worth the effort? *OR Manager* 15:1-2,1999.
4. Why try to reduce turnover time? *OR Manager* 16:1-2, 2000,
5. Hawkins H, Gover R: The design of today's operating rooms. *Today's Surg Nurse* 20:11-15,1998.
6. ORs benchmark activities for the day of surgery: *OR Manager* 16:1-3, 2000,