

Stretcher vs Table for Operative Hand Surgery

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Background: Starting in October 2021, the Malcom Randall Veterans Affairs Medical Center Plastic Surgery Service began keeping patients undergoing hand surgery on the stretcher in the operating room (OR) as a time-saving initiative. The objective of this study was to evaluate this new process in terms of OR time efficiency, cost savings, and safety.

Methods: A retrospective chart review was conducted for hand surgery cases performed in the same OR by the same surgeon over 2 year-long periods: October 1, 2020, through September 30, 2021, when surgeries were performed on the OR table, and June 1, 2022, through May 31, 2023, when surgeries were performed on the stretcher. Time intervals obtained from the electronic medical record were “patient in OR” to “operation begin,” “operation end” to “patient out OR,” and “patient out OR” to next “patient in OR.” The median times were compared between the periods. The Patient Safety and Employee Health offices were queried for reported patient or employee–patient

transfer injuries. The Inventory Supply department provided the cost of materials used in the transfer process.

Results: A total of 306 hand surgeries were performed on a table and 191 were performed on a stretcher. The median time interval from in-room to operation begin was 25 minutes for the table and 23 minutes for the stretcher. The median time from operation end to patient out of OR was 4 minutes for the table and 3 minutes for the stretcher. Median room turnover time was 27 minutes for both time periods. There were no reported employee or patient injuries attributed to OR transfers during either time period. Supply cost savings was \$111.28 per case when surgery was performed on the stretcher.

Conclusions: Hand surgery can be safely performed on the stretcher while reducing both time and costs. Over the course of a year, these savings can translate to \$57,866 in supply costs and 26 hours of OR time.

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U.S. Department of Veterans Affairs (VA) health care facilities have not recovered from staff shortages that occurred during the COVID-19 pandemic.¹ Veterans Health Administration operating rooms (ORs) lost many valuable clinicians during the pandemic due to illness, relocation, burnout, and retirement, and remain below prepandemic levels. The staffing shortage has resulted in lost OR time, leading to longer wait times for surgery. In October 2021, the Malcom Randall VA Medical Center (MRVAMC) Plastic Surgery Service implemented a surgery-on-stretcher initiative, in which patients arriving in the OR remained on the stretcher throughout surgery rather than being transferred to the operating table. Avoiding patient transfers was identified as a strategy to increase the number of procedures performed while providing additional benefits to the patients and staff.

The intent of the surgery-on-stretcher initiative was to reduce OR turnover time and in-room time, decrease supply costs, and improve patient and staff safety. The objective of this study was to evaluate the new process in terms of time efficiency, cost savings, and safety.

METHODS

The University of Florida Institutional Review Board (IRB) and North Florida/

South Georgia Veterans Health System Research and Development Committee (IRB.net) approved a retrospective chart review of hand surgery cases performed in the same OR by the same surgeon over 2 year-long periods: October 1, 2020, through September 30, 2021, when surgeries were performed on the operating table (Figure 1), and June 1, 2022, through May 31, 2023, when surgeries were performed on the stretcher (Figure 2). Time intervals were obtained from the Nurse Intraoperative Report found in the electronic medical record. They ranged from “patient in OR” to “operation begin,” “operation end” to “patient out OR,” and “patient out OR” to next “patient in OR.” The median time intervals were obtained for the 3 different time intervals in each study period and compared.

A Mann-Whitney *U* test was used to determine statistical significance between the groups. We queried the Patient Safety Manager (Jason Ringlehan, BSN, RN, oral communication, 2023) and the Employee Health Nurse (Ivan Cool, BSN, RN, oral communication, June 16, 2023) for reported patient or employee–patient transfer injuries. We requested Inventory Supply personnel to provide the cost of materials used in the transfer process. There was no cost for surgeries performed on the stretcher.

TABLE. Stretcher vs Table Outcome Data

Metric	Table (n = 306)	Stretcher (n = 191)
In-room-to-start time, median, min	25	23
Stop-to-out-of-room time, median, min	4	3
Turnover time, median, min	27	27
Transfer supply cost, \$	111.28	0
Patient safety incidents, No.	0	0
Staff safety incidents, No.	0	0

RESULTS

A total of 306 hand surgeries were performed on a table and 191 were performed on a stretcher during the study periods. The median patient in OR to operation begin time interval was 25 minutes for the table and 23 minutes for the stretcher. The median operation end to patient out OR time was 4 minutes for the table and 3 minutes for the stretcher. Time savings was statistically significant ($P < .001$) for both ends of the surgery. The median room turnover time was 27 minutes for both time periods and was not statistically significant ($P = .70$). There were no reported employee or patient injuries attributed to OR transfers during either time period. Supply cost savings was \$111.28 per case when surgery was performed on the stretcher (Table).

DISCUSSION

The new process of doing surgery on the stretcher was introduced to improve OR time efficiency. This improved efficiency has been reported in the hand surgery literature; however, the authors anticipated resistance to implementing a new process to seasoned OR staff.^{2,3} Once the idea was conceived, the plan was reviewed with the Anesthesia Service to confirm they had no safety concerns. The rest of the OR staff, including nurses and surgical technicians, agreed to participate. No resistance was encountered. The anesthesia, nursing, and scrub staff were happy to skip a potentially hazardous step at the beginning and end of each hand surgery case. The anesthesiologists communicated that the OR bed is preferred for intubating, but our hand surgeries are performed under local or regional block and intravenous sedation. The table

was removed from the room to avoid any confusion with changes in staff during the day.

Compared with table use, surgery on the stretcher saved a median of 3 minutes of in-room time per case, with no significant difference in turnover time. The time savings reported here were consistent with what has been reported in other studies. Garras et al saved 7.5 minutes per case using a rolling hand table for their hand surgeries,² while Gonzalez et al reported a 4-minute reduction per case when using a stretcher-based hand table for carpal tunnel and trigger finger surgeries.³ Lause et al found a 2-minute time savings at the start of their foot and ankle surgeries.⁴

Although 3 minutes per case may seem minimal, when applied to a conservative number of 5 hand cases twice a week, this time savings translates to an additional 15-minute nursing break each day, a 30-minute lunch break each week, and 26 extra hours each year. This efficiency can reduce direct costs in overtime. Consistently ending the day on time and allowing time for scheduled breaks can facilitate retention and improve morale in our current environment of chronically short-staffed surgical services. Recent literature estimates the cost of 1 OR minute to be about \$36 to \$46.^{5,6}

Lateral transfers, in which a patient is moved horizontally, take place throughout the day in the OR and are a known risk factor for musculoskeletal disorders among the nursing staff. Contributing factors include patient obesity, environmental barriers in the OR, uneven patient weight distribution, and height differences among surgical team members. The Association



FIGURE 1. Surgical preparation on the table using HoverSling Repositioning Sheet and Medline OR Turnover Kit.

of periOperative Registered Nurses recommends use of a lateral transfer device such as a friction-reducing sheet, slider board, or air-assisted device.⁷ The single-use HoverSling Repositioning Sheet is the transfer assist device used in our OR. It is an inflatable transfer mattress that reduces the amount of force used in patient transfer. The mattress is inflated with air from a small motor. While the HoverSling is inflated, escaping air from little holes on the underside of the mattress acts as a lubricant between the patient and transfer surface. This air reduces the force needed to move the patient.⁸

Patient transfers are a known risk for both patient and staff injuries.^{9,10} We suspected that not transferring our surgical patients between the stretcher and bed would improve patient and staff safety. A review of Patient Safety and Employee Health services found no reported patient or staff injuries during either timeframe. This finding led to the conclusion that effective safety precautions were already in place before the surgery-on-stretcher initiative. The MRVAMC routinely uses patient transfer equipment and the standard procedure in the OR is for 5 people to participate in 1 patient transfer between bed and table. The patient transfer device plus multiple staff involvement with patient transfers could explain the lack of patient and staff injury that predated the surgery-on-stretcher initiative and continued throughout the study period.

The inventory required to facilitate patient transfers at MRVAMC cost on average \$111.28 per patient based on a search of the inventory database. This amount includes the HoverSling priced at \$97 and the



FIGURE 2. Surgical preparation on the stretcher using the detachable hand table.

Medline OR Turnover Kit (table sheet, draw sheet, arm board covers, head positioning cover, and positioning foam strap) priced at \$14.28. The Plastic Surgery Service routinely performs a minimum of 10 hand cases per week. If \$111.28 per case is multiplied by the average of 10 cases each week over 52 weeks, the annualized savings could be about \$57,866. This direct cost savings can potentially be applied to necessary equipment expenditures, educational training, or staff salaries.

Hand surgery literature has encouraged initiatives to reduce waste and develop more environmentally responsible practices.¹¹⁻¹³ Eliminating the single-use patient transfer device and the turnover kit would avoid generating additional trash from the OR. Fewer sheets would have to be washed when patients stay on the same stretcher throughout their surgery day, which saves electricity and water.

Strengths and Limitations

A strength of this study is the consistency of the data, which were obtained from observing the same surgeon performing the same surgeries in the same OR. The data were logged into the electronic medical record in real time and easily accessible for data collection and comparison when reviewed retrospectively. A weakness of the study is the inconsistency in logging the in/out and start/end times by the OR circulating nurses who were involved in the patient transfers. The OR circulating nurses can vary from day to day, depending on the staffing assignments, which could affect the speed of each part of the procedure.

CONCLUSIONS

Hand surgery performed on the stretcher saves OR time and supply costs. This added efficiency translates to a savings of 26 hours of OR time and \$57,866 in supply costs over the course of a year. Turnover time and staff and patient safety were not affected. This process can be introduced to other surgical specialties that do not need the accessories or various positions the OR table allows.

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Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

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The opinions expressed herein are those of the authors and do not necessarily reflect those of *Federal Practitioner*, Frontline Medical Communications Inc., the US Government, or any of its agencies.

Ethics and consent

The University of Florida Institutional review board (IRB) reviewed and approved this study (#202301201). IRB.net approval was obtained from the North Florida/South Georgia Research Service (#1760654). No patient consent was needed due to the retrospective chart review nature of the study. IRB/IRB.net protocol was followed.

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