

# More Than Worth It: The Economic Case for Shifting Minor Hand Surgeries to the Procedure Room

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## INTRODUCTION:

While minor hand surgeries are increasingly performed in the procedure room (PR) setting, there is a lack of population-level comparative cost analyses of minor hand procedures performed in the PR versus operating room (OR) settings. This data can inform accountable care efforts to optimize PR use and reduce costs. In this study, we conducted a population-level comparative cost analysis of minor hand surgeries performed in the PR versus OR settings.

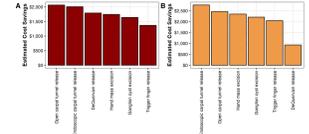
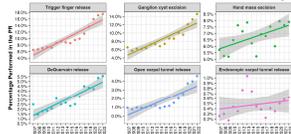
## METHODS:

Using the Truven MarketScan databases, we identified adult patients undergoing minor hand surgery, defined as open carpal tunnel release, endoscopic carpal tunnel release, trigger finger release, DeQuervain release, ganglion cyst excision, or hand mass excision, from 2007-2022. Patients with multiple soft tissue hand procedures on the same day were excluded to obtain accurate per-procedure cost assessments. Procedure setting was then classified as PR or OR based on place-of-service and facility revenue codes. OR procedures were further subdivided by the presence or absence of anesthesia codes. Costs were defined as reimbursements, separated into professional and facility fees. All costs from the day of surgery as well as within 90 days of surgery (non-inclusive of surgery date) were summarized. Cost savings between PR and OR settings were estimated as the difference in mean day-of-surgery costs. We modeled trends in the proportion of procedures performed in the PR setting during the study period using linear regression models.

## RESULTS:

The distribution of costs from minor hand surgery is shown in Table 1. While surgeon fees were higher in the PR setting, these were eclipsed by a substantial reduction in the total day-of-surgery cost for the PR compared to the OR setting (with or without anesthesia), which was driven by the elimination of the facility fee. The mean estimated per-case cost savings from shifting procedures to the PR setting varied by procedure (Figure 1). The largest estimated per-case cost savings was observed with carpal tunnel release, which was associated with over \$2,000 in savings per case when performed in the PR as opposed to the OR with or without anesthesia. From 2007-2022, the proportion of minor hand surgeries performed in the PR setting increased, with the largest annual rates of increase seen for trigger finger release (+7.3 per 1,000 total cases/year) and ganglion cyst excision (+5.2 per 1,000 total cases/year) (Table 2, Figure 2).

**DISCUSSION AND CONCLUSION:** Shifting minor hand surgeries from the OR to the PR setting was associated with significant cost savings. While PR utilization generally increased from 2007-2022, differences in the rate of increase existed by procedure. The increase in PR use for carpal tunnel release was relatively small despite over \$2,000 in estimated cost savings per case, suggesting that a large opportunity exists to further understand how to shift more of these procedures to the PR setting.



**Table 1. Minor hand surgery costs by setting and anesthesia type.**

Procedure	Cost in USD, mean (SD)	
	PR	OR with/without anesthesia
Open carpal tunnel release		
Surgeon fee	\$888 (860)	\$877 (862)
Anesthesia fee	-	\$420 (397)
Facility fee	\$1,576 (1,430)	\$1,513 (1,429)
Total day of surgery cost	\$2,464 (2,313)	\$3,810 (3,688)
Total 90-day costs	\$1,952 (1,798)	\$2,201 (1,648)
Endoscopic carpal tunnel release		
Surgeon fee	\$1,402 (830)	\$800 (882)
Anesthesia fee	-	\$449 (461)
Facility fee	\$2,185 (1,520)	\$2,381 (2,361)
Total day of surgery cost	\$3,587 (2,350)	\$4,610 (3,202)
Total 90-day costs	\$1,951 (1,648)	\$2,794 (1,515)
Trigger finger release		
Surgeon fee	\$842 (508)	\$379 (509)
Anesthesia fee	-	\$401 (480)
Facility fee	\$1,505 (1,525)	\$1,497 (1,365)
Total day of surgery cost	\$2,347 (1,933)	\$2,277 (1,845)
Total 90-day costs	\$1,434 (1,781)	\$1,601 (1,515)
DeQuervain release		
Surgeon fee	\$570 (406)	\$519 (484)
Anesthesia fee	-	\$469 (374)
Facility fee	\$1,466 (1,544)	\$1,818 (1,484)
Total day of surgery cost	\$2,036 (1,810)	\$2,806 (2,332)
Total 90-day costs	\$1,269 (1,718)	\$1,606 (1,433)
Ganglion cyst excision		
Surgeon fee	\$783 (472)	\$525 (488)
Anesthesia fee	-	\$469 (433)
Facility fee	\$1,511 (1,282)	\$1,508 (1,442)
Total day of surgery cost	\$2,294 (2,299)	\$2,502 (2,364)
Total 90-day costs	\$1,162 (1,748)	\$1,189 (1,564)
Hand mass excision		
Surgeon fee	\$764 (508)	\$589 (509)
Anesthesia fee	-	\$434 (407)
Facility fee	\$1,363 (1,338)	\$1,308 (1,524)
Total day of surgery cost	\$2,127 (2,259)	\$2,331 (2,438)
Total 90-day costs	\$1,187 (1,704)	\$1,215 (1,621)

**Table 2. Trends in procedure volume performed in the PR.**

Procedure	Change in Procedures Performed in PR Per 1,000 Cases Per Year	p-value
Open carpal tunnel release	+2.2 (1.4-3.0)	<0.001
Endoscopic carpal tunnel release	+0.1 (0.2-0.4)	0.40
Trigger finger release	+7.3 (5.9-9.0)	<0.001
DeQuervain release	+2.4 (1.7-3.1)	<0.001
Ganglion cyst excision	+5.2 (3.6-6.8)	<0.001
Hand mass excision	+1.2 (0.2-2.2)	<0.001

USD = U.S. dollars. SD = standard deviation. PR = procedure room. OR = operating room. Total 90-day costs are exclusive of the day of surgery cost.