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Cost-Effectiveness of Open Versus Endoscopic Carpal Tunnel Release
Supplemental Appendix

Additional Model and Analysis Details

- Dollar amounts are presented in 2018 US Dollars (USD), inflated to 2018 USD using the Personal Health Care (PHC) Expenditure index[1] where available (through 2016) and the Personal Consumption Expenditure (PCE) index[2] otherwise, per recommendations from the Second Panel.[3]
- For patients experiencing multiple complications simultaneously, we used the multiplicative method (conditioned on the utility for the full function state) of determining utility of joint health conditions.[4]
- Unrelated healthcare costs were assumed to be equal between surgical modalities and were not directly modeled as they were assumed to cancel out.
- Patient lifespan was indirectly modeled through a monthly probability of death[20]. with no difference in mortality between treatment alternatives.
- For the base case we assumed that non-statistically significant (alpha 0.05) differences in rates of complications were equal between Endoscopic Carpal Tunnel Release (ECTR) and Open Carpal Tunnel Release (OCTR), however for the probabilistic analyses we fully incorporate the uncertainty parameter distributions in the probabilistic sensitivity analysis (PSA).

	Costs from Pearl Diver Societal Perspective			Costs from Koehler (TDABC) Paper Societal Perspective			Costs from Pearl Diver Payer Perspective			Costs from Koehler (TDABC) Paper Payer Perspective		
		Age 50	Age 65		Age 50	Age 65		Age 50	Age 65		Age 50	Age 65
Base case parameters otherwise	Endo in Office	1671820	1184066	Endo in Office	1670482	1182728	Endo in Office	1680677	1191003	Open in Office	1679833	1190160
	Endo in OR	1670055	1182301	Endo in OR	1669463	1181709	Open in Office	1680643	1190970	Endo in Office	1679339	1189666
	Open in Office	1668125	1181165	Open in Office	1667315	1180355	Open in OR	1679425	1189751	Open in OR	1679050	1189376
	Open in OR	1666907	1179946	Open in OR	1666532	1179571	Endo in OR	1678912	1189239	Endo in OR	1678321	1188647
		Age 50	Age 65		Age 50	Age 65		Age 50	Age 65		Age 50	Age 65
Use health state durations from Chung et al[5]	Endo in Office	1662495	1174407	Endo in Office	1661166	1173078	Endo in Office	1671352	1181344	Open in Office	1670379	1180373
	Endo in OR	1660730	1172642	Endo in OR	1660147	1172059	Open in Office	1671181	1181174	Endo in Office	1670023	1180015
	Open in Office	1658663	1171369	Open in Office	1657861	1170567	Open in OR	1669962	1179956	Open in OR	1669596	1179589
	Open in OR	1657444	1170151	Open in OR	1657078	1169784	Endo in OR	1669587	1179580	Endo in OR	1669004	1178996
		Age 50	Age 65		Age 50	Age 65						
Wages without accounting for fringe benefits (not including base case 46% fringe benefit)	Endo in Office	1674611	1186252	Endo in Office	1673273	1184914						
	Endo in OR	1672846	1184487	Endo in OR	1672254	1183895						
	Open in Office	1672069	1184254	Open in Office	1671259	1183444						
	Open in OR	1670851	1183036	Open in OR	1670476	1182660						

Appendix Table 1. This table shows various scenario analyses. The values presented are the net monetary benefit ($NMB = WTP * \Delta Eff - \Delta Cost$) for each scenario assuming a WTP threshold of $100,000/QALY. Color coded as follows: OCTR in Office is optimal alternative / ECTR in Office is optimal alternative. The first column shows results use the costs from Medicare Advantage reimbursement data from a large, administrative claims database (PearlDiver Inc; Colorado Springs, CO)., the 2nd column shows the costs from Koehler et al[6] (see Appendix Table 3 below), and columns 3 and 4 use these costs , but adopt a payer perspective. The first row presents results utilizing base case parameters, the 2nd row presents results using health state durations from Chung et al[5] (see Appendix Table 2 below) and the 3rd row presents results for the societal perspective accounting for lost wages without accounting for fringe benefits. The preferred strategy for each scenario is listed at the top and each box is color-coed to illustrate the best strategy for each given scenario. Results are stratified by age and according to the described scenario. From the societal perspective, the results are not sensitive to changes created by scenario. From the payer perspective, due to the relatively lower cost of OCTR in the office setting compared to ECTR in the office setting using the Koehler costing methods vs. the base case costing methods, OCTR in the office is preferred to ECTR in the office. The results are otherwise not sensitive model changes for the scenario analyses presented here. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.

Health State	**Scenarios using Chung health state durations***
Complex Regional Pain Syndrome (CRPS)	Not modeled
Scar Tenderness	6 months
Pillar Pain	Not modeled
Wound Infection	3 weeks
Median Nerve Injury	Rest of life
Neurapraxia	3 months (modeled based on finger numbness health state in Chung)
Persistent Symptoms	Rest of life
Recovery	6 months

Appendix Table 2. Health state durations used for scenario analyses in Appendix Table 1 (above) using Chung et al[5] times. Where Chung did not model health state, we used the base case times from our model.

Costs (2016 USD)	**Comments**
Endoscopic in Operating Room	
$2759.70	Directly from Koehler et al[6]
Open in Operating Room	
$1918.06	Directly from Koehler et al[6]
Endoscopic in Office	
$1396.81	Utilized cost of procedure in operating room but subtracted off operating room costs and the following labor costs: Staff anesthesiologist, CRNA, surgical technologist, operating room clerk, pharmacist, pharmacy tech, anesthesiology technologist
Open in Office	
$826.35	Utilized cost of procedure in operating room but subtracted off operating room costs and the following labor costs: Staff anesthesiologist, CRNA, surgical technologist, operating room clerk, pharmacist, pharmacy tech, anesthesiology technologist

Appendix Table 3. Cost Components used for the Koehler[6] Time-Drive Activity-Based Costing scenario analysis (presented in Appendix Table 1). Adjusted using Personal Consumption Expenditure (PCE) price index[2] from 2016 to 2018 USD. Inflation factor of 1.034 applied.

Procedure 2012-2016 data converted to 2018 USD ($)	**Mean Cost ($)**	**S.E. ($)**	**Number of claims**
Open Facility	1090.91	2.77	34497
Open Physician	397.69	0.78	49142
Endo Facility	1553.11	9.01	6141
Endo Physician	504.42	3.14	9708

Appendix Table 4. Cost of Medicare Advantage reimbursements for physician fees and facility fees obtained from PearlDiver administrative claims database (PearlDiver Inc; Colorado Springs, CO). Data from the years where full-year data was available was used. All costs, other than productivity costs, were inflated to 2018 dollars using the Personal Health Care (PHC) Expenditure index[1] where available (through 2016) and the Personal Consumption Expenditure (PCE) price index[2] otherwise

	Base Case in OR	**Base Case in Office**	**TDABC in OR**	**TDABC in Office**
Endoscopic (ECTR)	2269.23	504.42	2853.53	1444.30
Open (OCTR)	1616.00	397.69	1983.27	854.45
Difference (ECTR – OCTR)	**653.23**	**106.73**	**870.26**	**589.85**

Appendix Table 5. Comparison of procedure-related costs from the base case and from the scenario analysis based on the Koehler Time-Drive Activity-Based Costing analysis (TDABC). Costs in 2018 USD ($). Methods of calculating TDABC costs explained in Appendix Table 3. Base case costs include those reimbursed for physician fees and facility fees obtained from PearlDiver administrative claims database (PearlDiver Inc; Colorado Springs, CO) and also include anesthesia costs for the operating room (OR) setting (see Table 1 in main text).

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Age	Annual Wage in 2014 USD ($)*	Annual Wage in 2018 USD ($)**
25	39907	42225
35	51366	54350
45	52749	55813
55	53329	56427
65	41317	43717
75	37300	39467

*Wage tables by age from Neumann Chapter 8 (Basu); does not incorporate labor participation rates per communication with author[3]

**Adjusted using the Consumer Price Index (CPI)[7, 8]. Inflation factor of 1.058 applied.

For the final cost of missed work used in the base case analysis, wages were adjusted (increased) by a factor of 1.46 to account for fringe benefits[3]

Appendix Table 6. Wages used to account for the cost of lost productivity. Wages above were subsequently adjusted for inclusion of fringe benefits by multiplying the above figures by 1.46.

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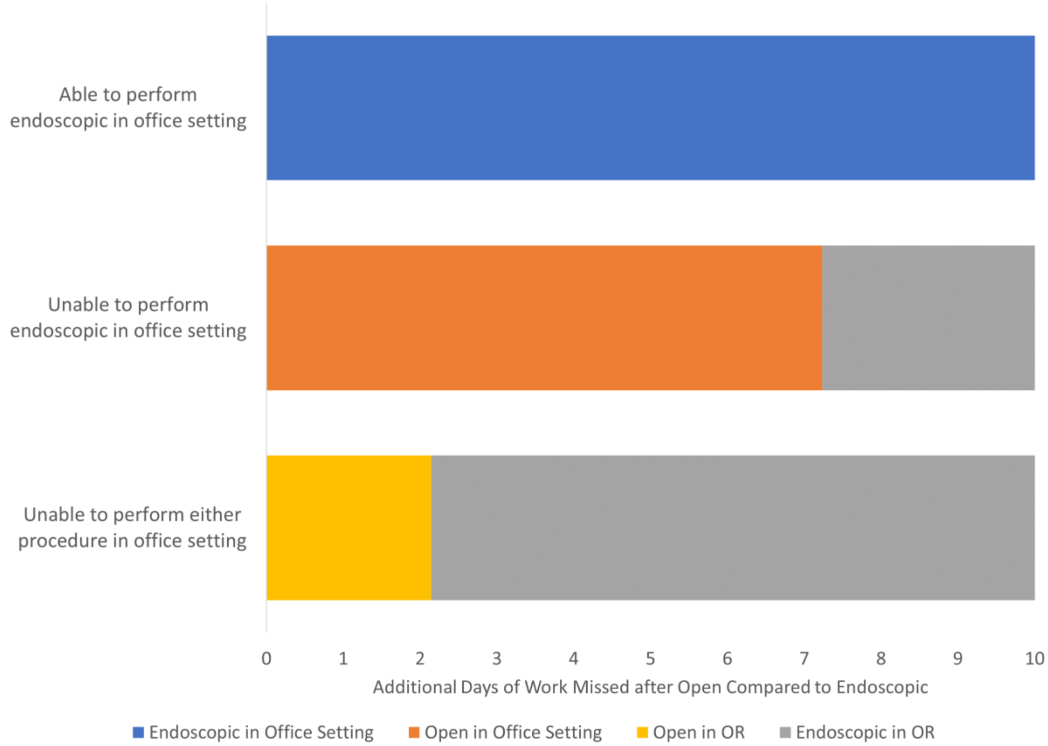
Societal Perspective (Age 50)

Strategy	Cost (discounted)	Incremental Cost (compared to strategy A)	QALYs (discounted)	Incremental QALYs (compared to strategy A)	ICER	NMB
A) Endoscopic in Office	$9,476	--	16.5500	--	--	$1,671,824
B) Endoscopic in Operating Room	$11,241	$1,765	16.5500	--	Dominated	$1,670,059
C) Open in Office	$13,030	$3,554	16.5486	-0.00140	Dominated	$1,668,130
D) Open in Operating Room	$14,249	$4,772	16.5486	-0.00140	Dominated	$1,666,911

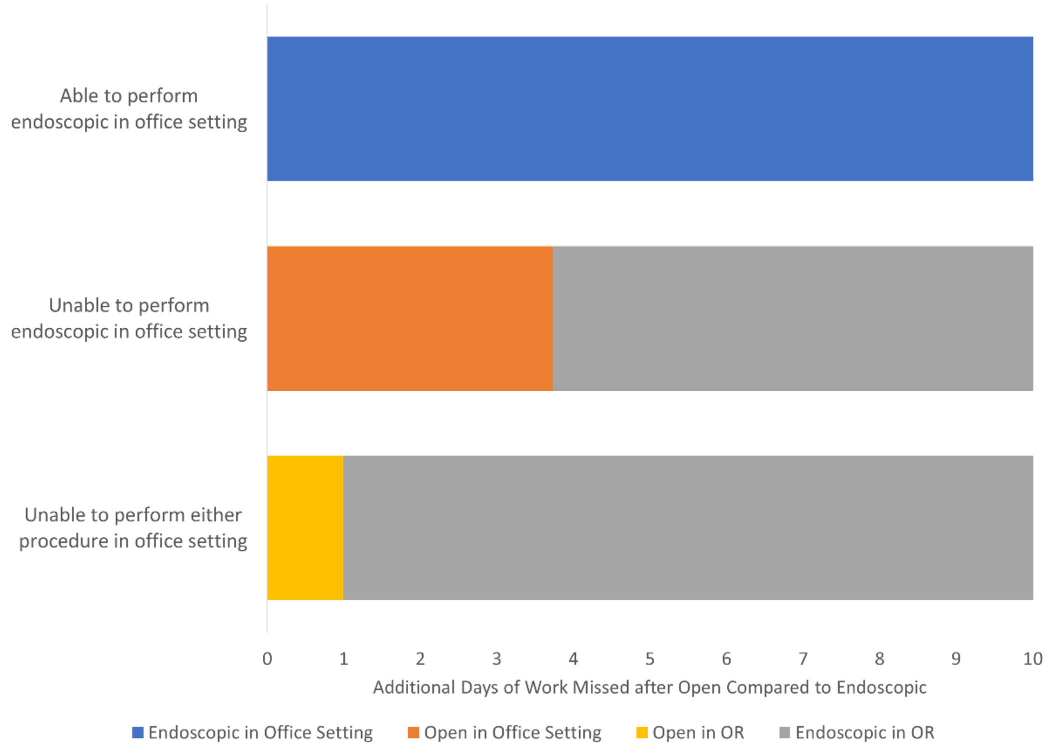
Payer Perspective (Age 65)

Strategy	Cost (discounted)	Incremental Cost (compared to strategy A)	QALYs (discounted)	Incremental QALYs (compared to strategy A)	ICER	NMB
A) Open in Office	$510	--	11.2655	--	--	$1,190,970
B) Endoscopic in Office	$617	$107	11.2669	0.00139	$76,737	$1,191,003
C) Open in Operating Room	$1,728	$1,218	11.2655	--	Dominated	$1,189,752
D) Endoscopic in Operating Room	$2,382	$1,872	11.2669	0.00139	$1,345,616	$1,189,238

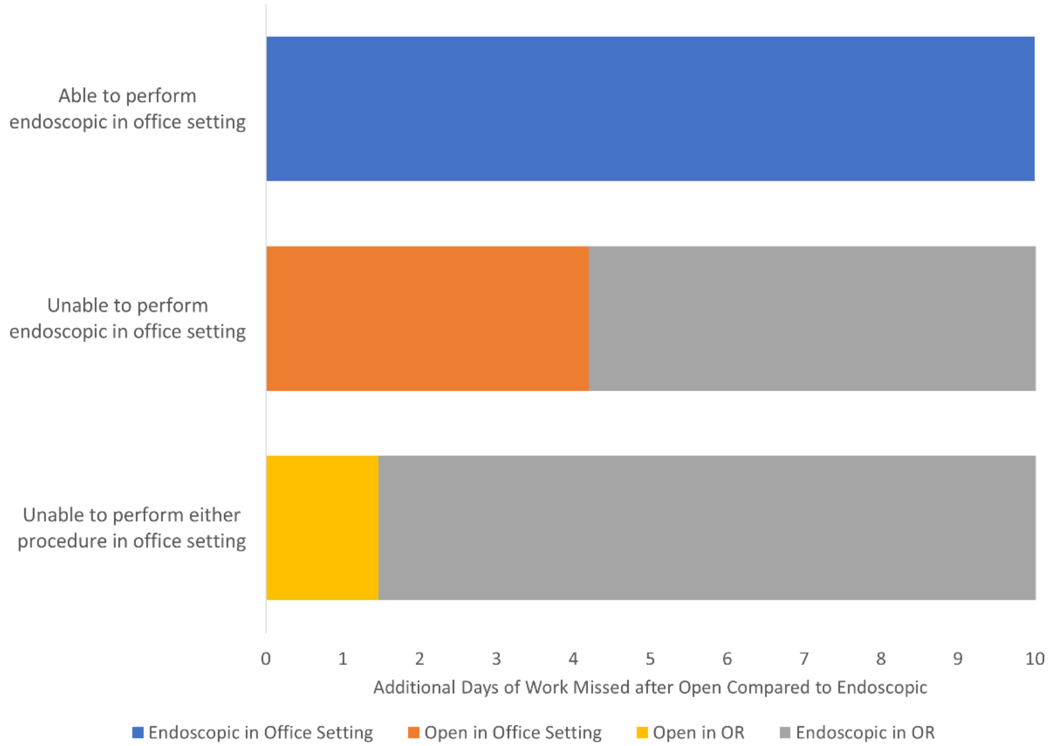
Appendix Table 7. Sensitivity to age-adjusting utilities. In the base case analysis, we did not age-adjust the utilities assigned to full function. This sensitivity analysis for which the results are summarized in the above table utilizes average utilities by age from Sullivan et al[9] for the full function utility which change as the modeled cohort ages. The results are not sensitive to age-adjustment of the baseline full function utilities, likely due to the largely short-term nature of most complication outcomes that differ between the surgical techniques. The results of this sensitivity analysis demonstrate that age-adjustment of the utilities do not change the costs associated with each treatment alternative, with minimal changes to incremental effectiveness (utility) and minimal changes to the incremental net monetary benefits and incremental cost-effectiveness ratios. NMB: Net Monetary Benefit ($NMB = WTP * \Delta QALY - \Delta Cost$) for WTP threshold of $100,000/ QALY.



Appendix Figure 1A. Impact of lost productivity on the societal perspective results. This figure is similar to Figure 2 in the main text, however we do not incorporate fringe benefits in the wages used to quantify the cost of lost productivity. This figure illustrates impact of difference in days of work missed after surgery between open and endoscopic carpal tunnel release (days of work missed after open minus days of work after endoscopic) on the preferred decision from a cost-effectiveness perspective for a willingness-to-pay threshold (WTP) of $100,000 per QALY gained. The color indicates which option is preferred from a cost-effectiveness perspective according to the figure legend. The x-axis indicates the difference in number of additional days of work missed *on average* after OCTR compared to ECTR (baseline assumed 19.86 days). When endoscopic in the office setting is an option, this always dominates across any difference in days of work missed above 0. When endoscopic in the office setting is not an option but open CTR in an office setting is an option, open in the office is the preferred option when the number of days of work missed after endoscopic is less than 7.24 fewer than after open surgery. When the office setting is not an option to perform CTR for either surgical modality, open is the preferred option if it is expected that patients will miss fewer than 2.14 days more after open than endoscopic, on average. These results assume a WTP threshold of $100,000 per QALY gained. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; CTR, Carpal Tunnel Release; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.



Appendix Figure 1B. Impact of lost productivity on the societal perspective results for a WTP threshold of $150,000 per QALY gained. Fringe benefits are included in this analysis. This figure illustrates impact of difference in days of work missed after surgery between open and endoscopic carpal tunnel release (days of work missed after open minus days of work after endoscopic) on the preferred decision from a cost-effectiveness perspective for a willingness-to-pay threshold (WTP) of $150,000 per QALY gained. The color indicates which option is preferred from a cost-effectiveness perspective according to the figure legend. The x-axis indicates the difference in number of additional days of work missed *on average* after OCTR compared to ECTR (baseline assumed 19.86 days). When endoscopic in the office setting is an option, this always dominates across any difference in days of work missed above 0. When endoscopic in the office setting is not an option but open CTR in an office setting is an option, open in the office is the preferred option when the number of days of work missed after endoscopic is less than 3.72 fewer than after open surgery. When the office setting is not an option to perform CTR for either surgical modality, open is the preferred option if it is expected that patients will miss fewer than 0.99 days more after open than endoscopic, on average. These results assume a WTP threshold of $150,000 per QALY gained. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; CTR, Carpal Tunnel Release; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.



Appendix Figure 1C. Impact of lost productivity on the societal perspective results for a WTP threshold of $0 per QALY gained so that only cost is considered and QALYs are not considered. Fringe benefits are included for this analysis. This figure illustrates impact of difference in days of work missed after surgery between open and endoscopic carpal tunnel release (days of work missed after open minus days of work after endoscopic) on the preferred decision from a cost-effectiveness perspective for a willingness-to-pay threshold (WTP) of $0 per QALY gained. The color indicates which option is preferred from a cost-effectiveness perspective according to the figure legend. The x-axis indicates the difference in number of additional days of work missed *on average* after OCTR compared to ECTR (baseline assumed 19.86 days). When endoscopic in the office setting is an option, this always dominates across any difference in days of work missed above 0. When endoscopic in the office setting is not an option but open CTR in an office setting is an option, open in the office is the preferred option when the number of days of work missed after endoscopic is less 4.20 fewer than after open surgery. When the office setting is not an option to perform CTR for either surgical modality, open is the preferred option if it is expected that patients will miss fewer than 1.46 days more after open than endoscopic, on average. These results assume a WTP threshold of $0 per QALY gained. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; CTR, Carpal Tunnel Release; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.

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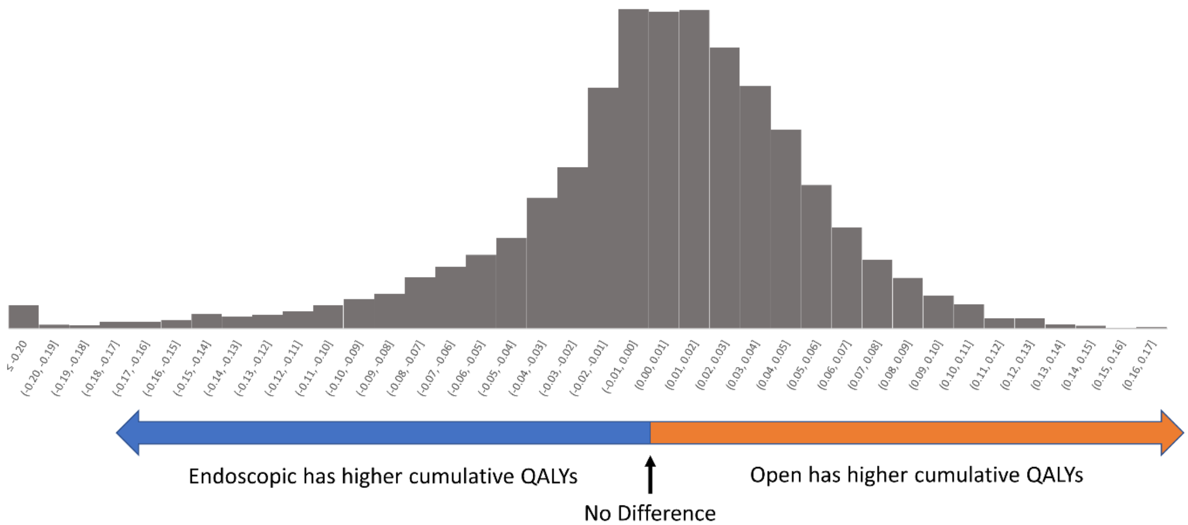

Appendix Figure 2. Distribution of difference in utility (QALYs) between OCTR and ECTR (U_{OCTR} – U_{ECTR}) from the probabilistic sensitivity analysis. The results are from 10,000 Monte Carlo simulations drawing from all parameter distributions simultaneously. The middle 95% of iterations with respect to the difference in utility (U_{OCTR} – U_{ECTR}) falling within the range of -0.11 to 0.09 (OCTR relative to ECTR). QALY, Quality-adjusted life-year; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.

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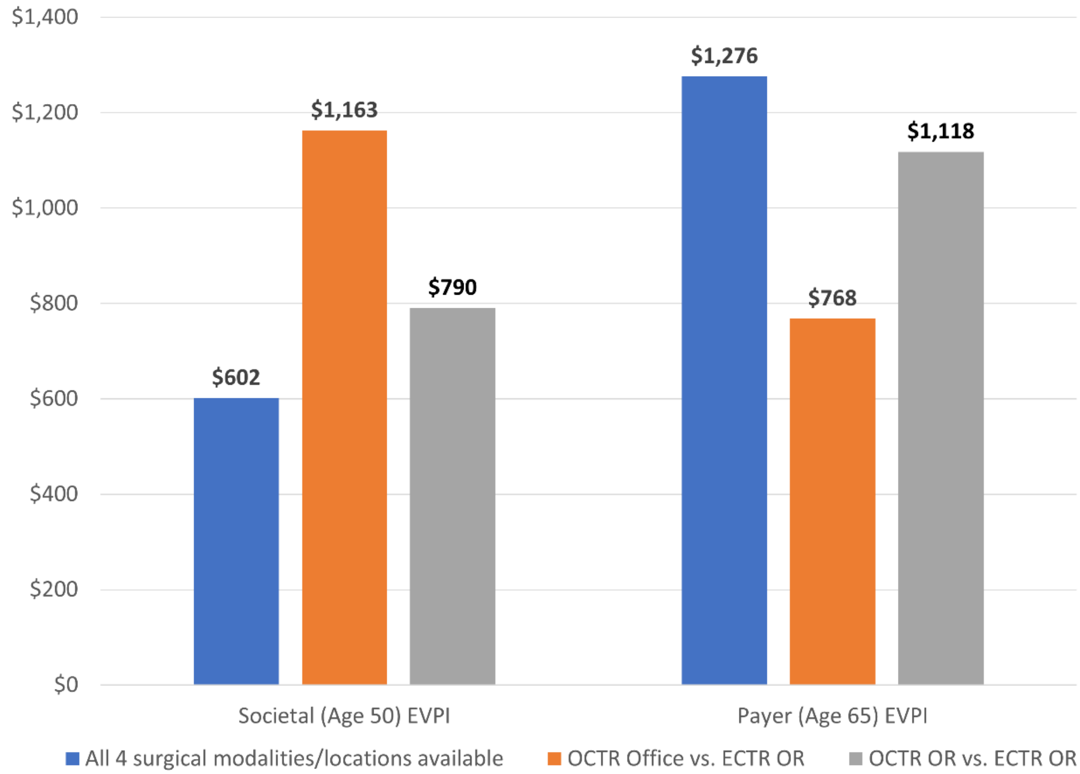
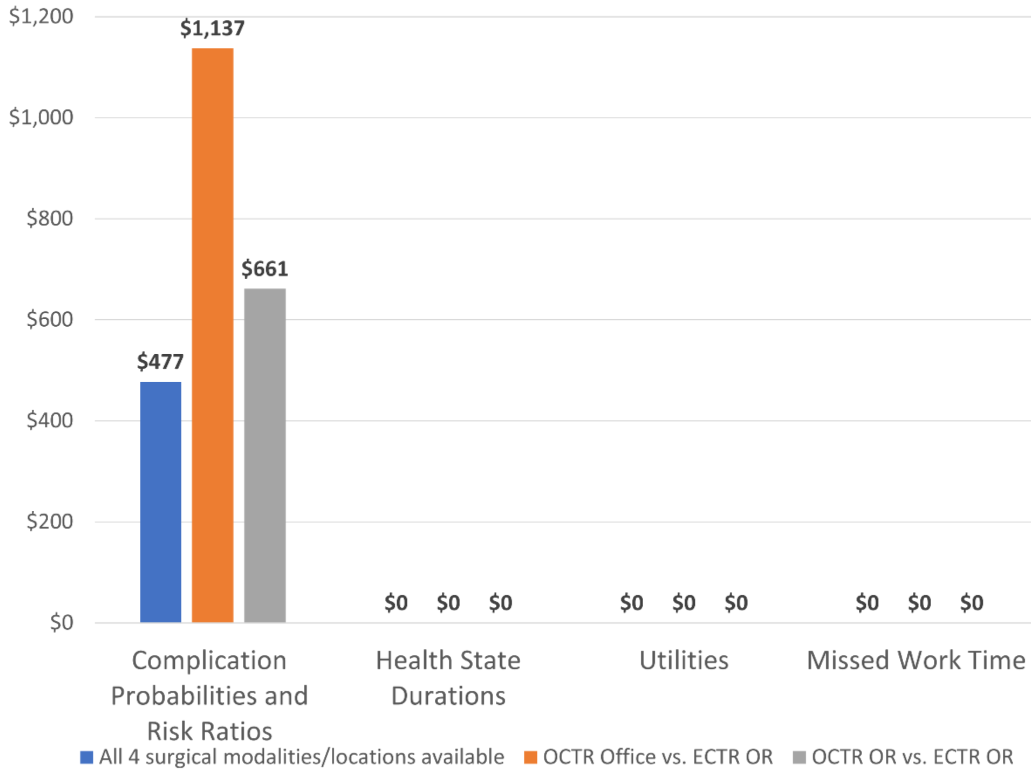
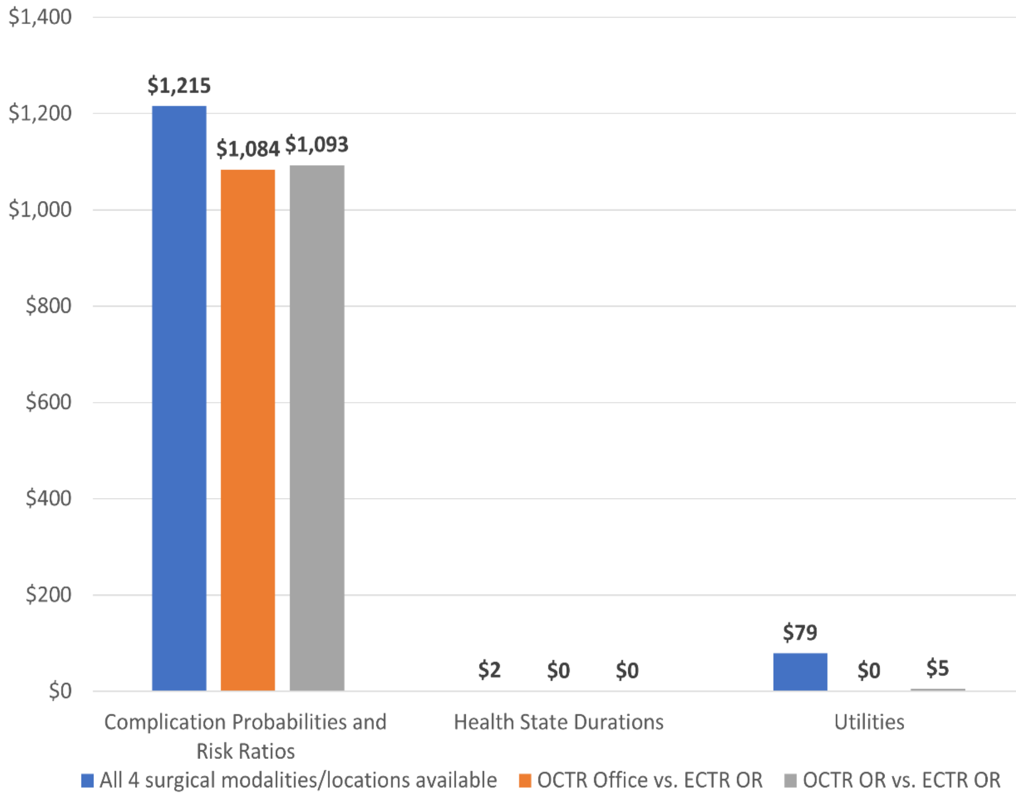


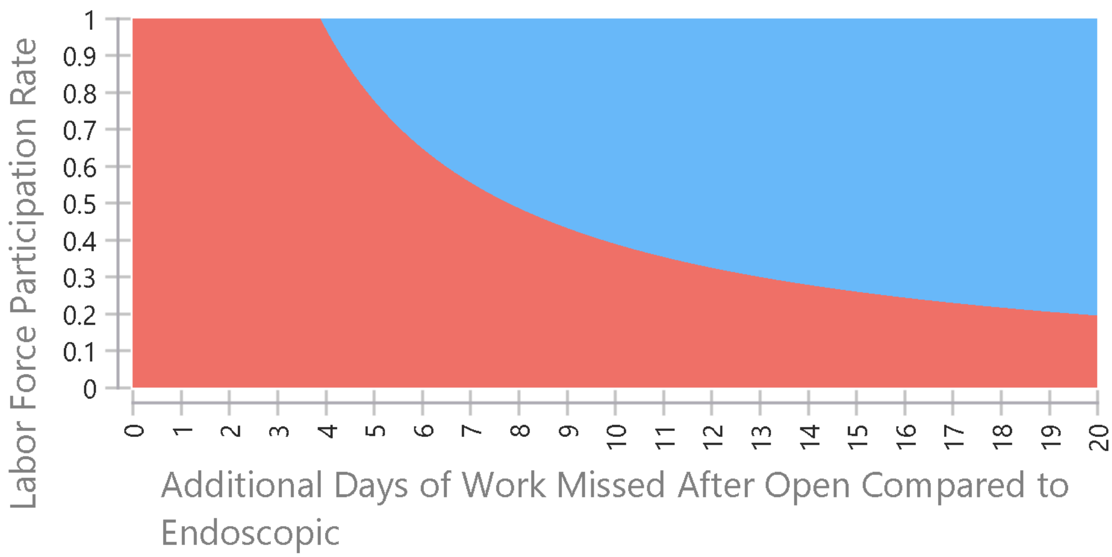
Appendix Figure 3. Expected value of perfect information (EVPI). This figure illustrates the expected value of perfect information, which is the expected value gained, in the context of this decision, if perfect information on all parameters used in the model were available, subject to the prior distributions used for the PSA as outlined in Table 1 of the main paper. 10,000 iterations were performed for this analysis. Results for the societal and payer perspectives are provided. Acknowledging that all combinations of surgical approach and setting may not be available in all healthcare settings, for each perspective, results are presented for various comparisons of surgical approach and setting as described in the figure legend. Dollar values calculated using a WTP threshold of $100,000 per QALY gained. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.



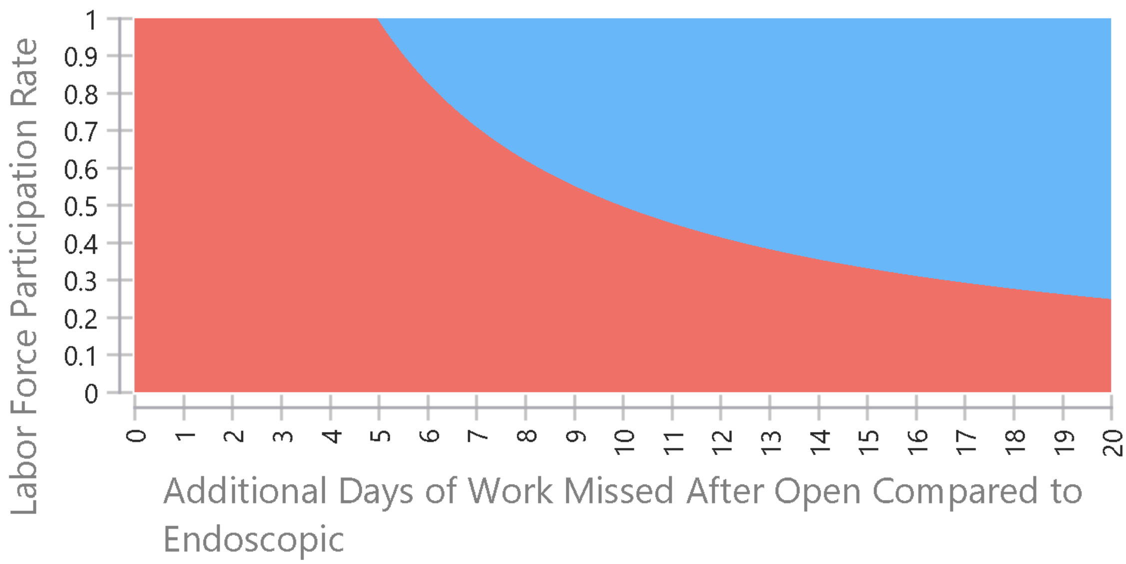
Appendix Figure 4. (EVPPI) Societal Perspective. We performed EVPPI analysis on sets of parameters that could feasibly be studied together (utilities, complication probabilities and health state durations). Results for the societal perspective is presented in this figure. Acknowledging that all combinations of surgical approach and setting may not be available in all healthcare settings, for each perspective, results are presented for various comparisons of surgical approach and setting as described in the figure legend. The results of the analysis vary depending on the availability of surgical setting. However, this analysis indicates that complication probabilities have the highest value of additional research, at between about $477 to $1137 per patient. Dollar values calculated using a WTP threshold of $100,000 per QALY gained. The number of inner loops was set to 1000 and the number of inner loops was set to 200. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release.



Appendix Figure 5. (EVPPI) Payer Perspective. We performed EVPPI analysis on sets of parameters that could feasibly be studied together (utilities, complication probabilities and health state durations). Results for the payer perspective is presented in this figure. Acknowledging that all combinations of surgical approach and setting may not be available in all healthcare settings, for each perspective, results are presented for various comparisons of surgical approach and setting as described in the figure legend. The results of the analysis vary depending on the availability of surgical setting. However, this analysis indicates that complication probabilities have the highest value of additional research, at between about $1084 to $1215 per patient. Dollar values calculated using a WTP threshold of $100,000 per QALY gained. The number of inner loops was set to 1000 and the number of inner loops was set to 200. WTP, Willingness-to-pay; QALY, Quality-adjusted life-year; ECTR, endoscopic carpal tunnel release; OCTR, open carpal tunnel release



A. Age 50



B. Age 65

Appendix Figure 6. Sensitivity of Labor Force Participation Rate. Impact of difference in days of work missed after surgery between OCTR and ECTR (days of work missed after OCTR minus days of work after ECTR) on the preferred decision from a cost-effectiveness perspective at a willingness-to-pay threshold (WTP) of $100,000 per QALY. Open CTR in the office setting is preferred for combinations of labor force participation rate and additional days of work missed for open compared to endoscopic approach in the red colored region, whereas Endoscopic in the operating room is preferred for combinations of labor force participation rate and additional days of work missed for open compared to endoscopic approach in the blue colored region. The labor force participation rate for the U.S. population over age 20 has varied between 71.4% to 74.7% from 2010 through 2019, whereas the labor force

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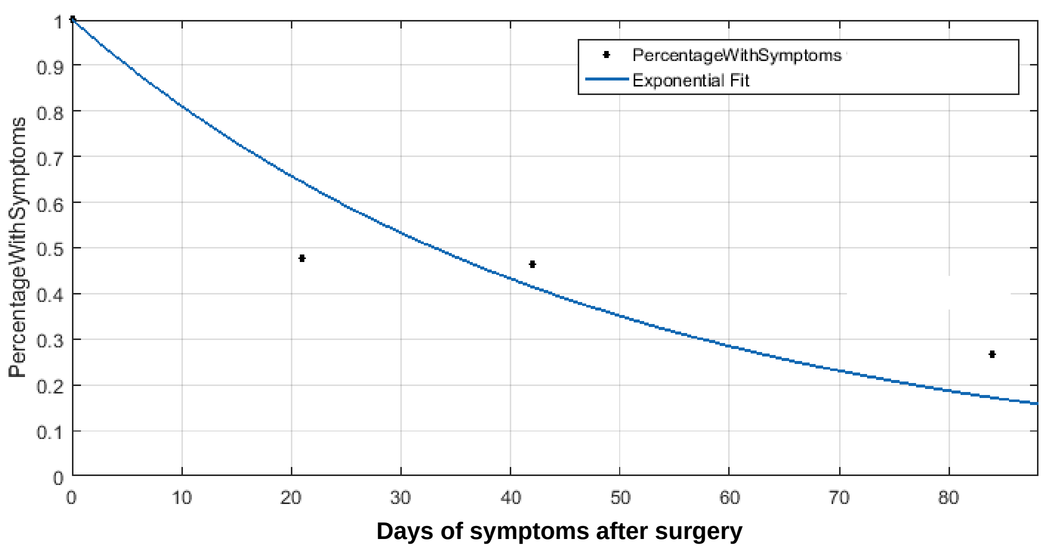
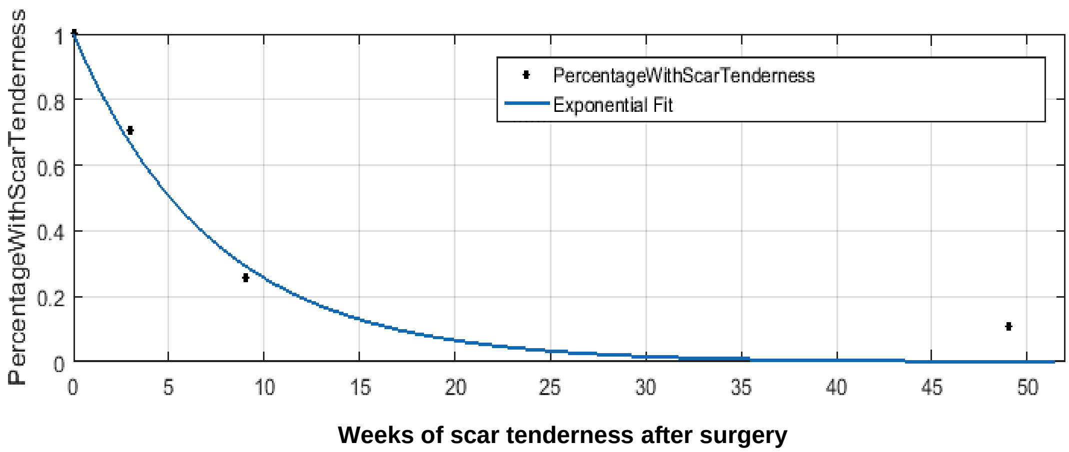
participation rate for the U.S. population aged 45 to 54 years is 87.4%, and 24.7% for those over age 65[10]. For patients, age 50 (6A), for labor force participation rates of 70%, which is similar to that of the U.S. population (71-74% between 2010 and 2019[10]), when comparing ECTR in the OR and OCTR in the office, OCTR in the office is the preferred option when the number of days of work missed after OCTR compared to ECTR is fewer than 5.5 days as compared to 3.9 days when labor force participation rates are not accounted for. We provide a similar graph for age 65 (6B). For labor force participation rate of 25%, when comparing ECTR in the OR and OCTR in the office, OCTR in the office is the preferred option when the number of days of work missed after OCTR compared to ECTR is fewer than 20 days. Distributional and thus equity concerns stem from use of labor force participation rate for this analysis. This approach may undervalue productivity for patients not in the formal labor market. Basu provides a detailed discussion of this issue[3]. This sensitivity analysis does provide data on implications of accounting for labor force participation rate, though due to equity concerns and, we have chosen to model age close to that of the average age of patients undergoing CTR[11].

Description of methods for determining base case health state durations for recovery, scar tenderness, and pillar pain.

For the recovery state, scar tenderness, and pillar pain, we utilized published data describing the number or percentage of patients experiencing post-surgical symptoms of interest to determine the average time in the modeled health states. To extract the data, a digitizer[12] was used to determine the percentage or number of patients experiencing the clinical condition of interest. In cases where data describing numbers of patients is provided and extracted but percentages are needed, we divide the extracted number by the total number of patients at risk. Conversely, where percentages of patients were extracted and numbers needed (for the probabilistic sensitivity analysis), numbers were determined by multiplying the percentages by the total number of patients studied.



Time in the recovery state: Brown et al[13] provides a figure (Figure 1 in Brown et al[13]) which shows the percentage of patients with paresthesia or pain following surgery. We combined the endoscopic and open data to create the above data points and using MATLABs curve-fitting tool[14], an exponential survival function was fit to the data points, assuming no censorship. The mean time in the state was determined by integration of this curve. it and integrated this to get the mean time. Using these methods, we determined the mean time in the recovery state to be 47.75 days, rounded to 7 weeks for the mean time in the state.



Time in scar tenderness state: Using similar methods, we used the moderate/severe scar tenderness data points (combining data provided for both open and endoscopic) from Atroshi et al (Figure 2)[15]. The mean time in the scar tenderness state was determined by the integral of the exponential fit to this data and adding 3 weeks (the first point at which the patients were assessed). We determined the mean time in the scar tenderness state to be 3 + 7.34 = 10.34 weeks, rounded to 10 weeks for the mean time in the state.

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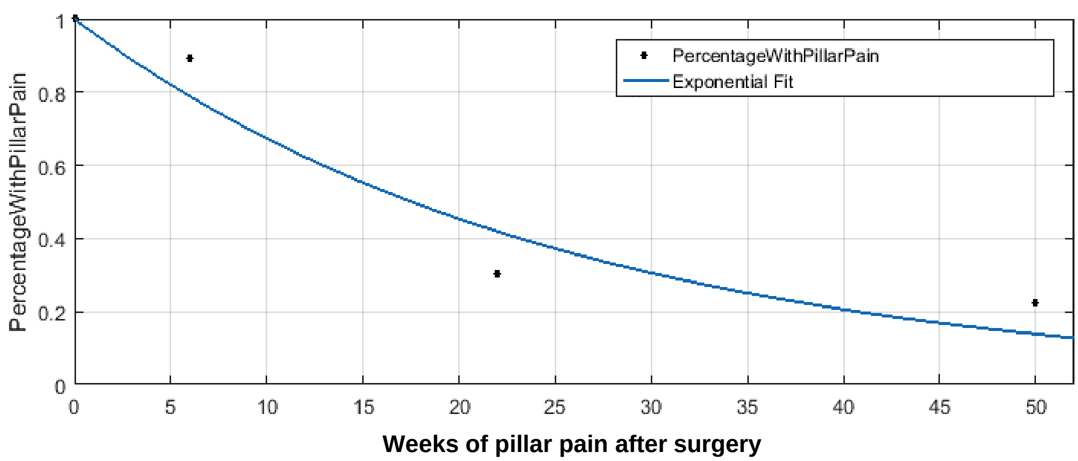
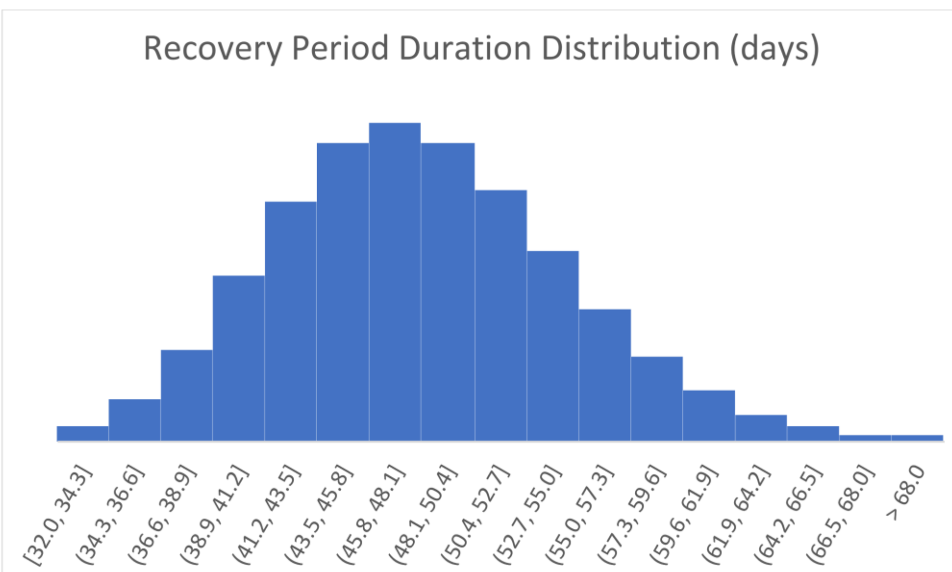


Time in pillar pain state: Using similar methods as explained above (combining open and endoscopic data), we used the Wong et al[16] figure 5b showing percentage with pillar pain following surgery. The mean time in the pillar pain state was determined by the integral of the exponential fit to this data and adding 2 weeks (the first point at which the patients were assessed). determined the mean time in the pillar pain state to be 2 + 25.3 = 27.3 weeks, rounded to 27 weeks for the mean time in the state.

Health state times Probabilistic Sensitivity Analysis (PSA): To determine the distribution of health state times for the PSA, we fit 998 different survival curves to data points representing the uncertainty distribution for patients experiencing the clinical condition of interest. We assumed that each datapoint's uncertainty could be represented by a beta distribution, with α equal to number of patients experiencing the clinical condition at time point t and ß equal to the number of patients at risk of clinical condition of interest (N) minus those experiencing the condition, i.e. those studied but not experiencing the condition (N - α). For each given clinical condition, at each time point, we drew 998 random points according to the described beta distribution. For all time points, we fit exponential curves to the X% of the pdf at each time point, such that no fitted curves cross. Thus, for example, an exponential curve was fit through the 5^{th} percentile (according to cumulative distribution function of the previously described beta distribution) at each time t_1 t_2 and t_3 using MATLAB's curve-fitting tool. The area under the curve for each of these 998 curves were determined (adding 2 weeks for pillar pain and 3 weeks for scar tenderness – the first points at which symptoms were elicited post-surgery) to represent a distribution of mean times in the respective health state. This set of times was utilized as distribution of times in state for each respective clinical condition for the PSA, and for each PSA iteration, for each health state a single time was randomly selected from the array representing the distribution.

Distributions used in PSA for duration of health state noted



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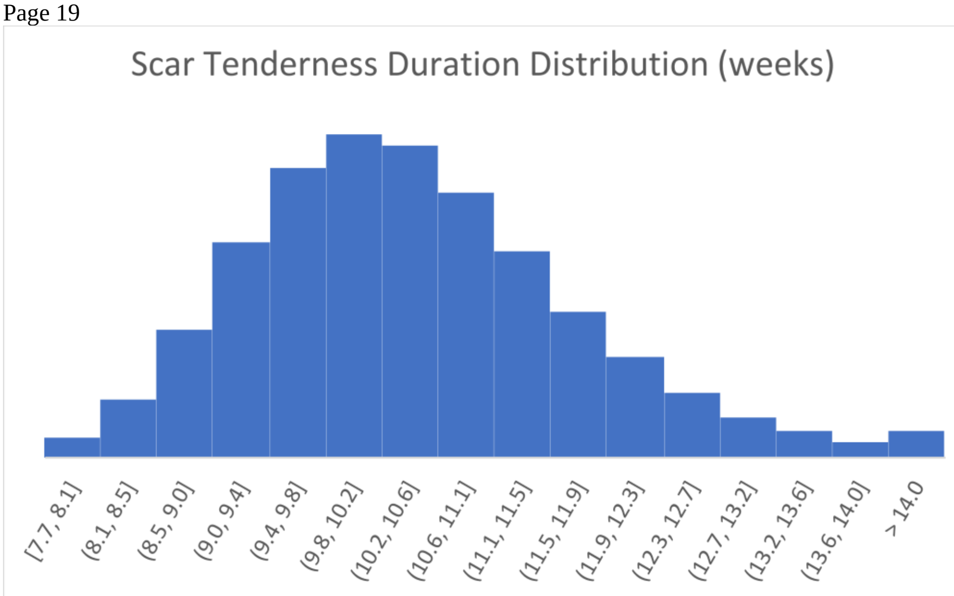

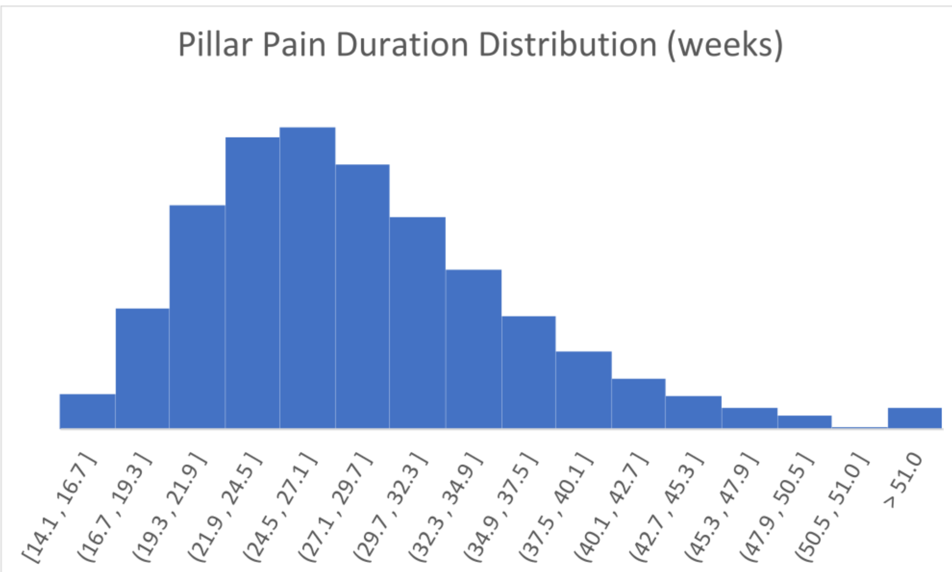

Sector	**Type of Impact** (list category within each sector with unit of measure if relevant)	**Included in This Analysis From Health Care Perspective**		**Notes on Sources of Evidence**
		Formal Health Care Sector	**Societal**	
Formal Health Care Sector				
Health	Health outcomes (effects)			
	Longevity effects	✓	✓	
	Health-related quality of life effects	✓	✓	
	Other health effects (eg. Adverse events and secondary transmissions of infections)	✓	✓	
	Medical costs			
	Paid by third-party payers	✓	✓	
	Paid for by patients out-of-pocket	✓	✓	
	Future related medical costs (payers and patients)	✓	✓	
	Future unrelated medical costs (payers and patients)	✓	See note to right	Assumed to be equal among alternatives
Informal Health Care Sector				
Health	Patient-time costs	NA	✓	
	Unpaid caregiver-time costs	NA		
	Transportation costs	NA		
Non-Health Care Sectors (with examples of possible items)				
Productivity	Labor market earnings lost	NA	✓	
	Cost of unpaid lost productivity due to illness	NA	✓	
	Cost of uncompensated household production	NA		
Consumption	Future consumption unrelated to health	NA		
Legal or Criminal Justice	Number of crimes related to intervention	NA		
	Cost of crimes related to intervention	NA		
Education	Impact of intervention on educational achievement of population	NA		
Housing	Cost of intervention on home improvements	NA		
Environment	Production of toxic waste pollution by intervention	NA		
Other (specify)	Other impacts	NA		

*NA indicates not applicable

Appendix Table 8. Impact inventory from the Second Panel on Cost-Effectiveness in Health and Medicine[17]

Element	Journal Article	Technical Appendix
Introduction		
Background of the problem	✓	
Study Design and Scope		
Objectives	✓	
Audience	✓	
Type of analysis	✓	
Target populations	✓	✓
Description of interventions and comparators (including no intervention, if applicable)	✓	✓
Other intervention descriptors (eg, care setting, model of delivery, intensity and timing of intervention)	✓	✓
Boundaries of the analysis; defining the scope or comprehensiveness of the study (eg, for a screening program, whether only a subset of many possible strategies are included; for a transmissible condition, the extent to which disease transmission is captured; for interventions with many possible delivery settings, whether only one or more settings are modeled)	✓	
Time horizon	✓	✓
Analytic perspectives (eg, reference case perspectives [health care sector, societal]; other perspectives such as employer or payer)	✓	
Whether this analysis meets the requirements of the reference case	✓	
Analysis plan	✓	✓
Methods and Data		
Trial-based analysis or model-based analysis. If model-based:		
Description of event pathway or model (describe condition or disease and the health states included)	✓	✓
Diagram of event pathway or model (depicting the sequencing and possible transitions among the health states included)	✓	
Description of model used (eg, decision tree, state transition, microsimulation)	✓	✓
Modeling assumptions	✓	✓
Software used	✓	✓
Identification of key outcomes	✓	✓
Complete information on sources of effectiveness data, cost data, and preference weights	✓	✓
Methods for obtaining estimates of effectiveness (including approaches used for evidence synthesis)	✓	✓
Methods for obtaining estimates of costs and preference weights	✓	✓
Critique of data quality	✓	✓
Statement of costing year (ie, the year to which all costs have been adjusted for the analysis; eg, 2016)	✓	✓
Statement of method used to adjust costs for inflation	✓	✓
Statement of type of currency	✓	✓
Source and methods for obtaining expert judgment if applicable	✓	
Statement of discount rates	✓	✓
Impact Inventory		
Full accounting of consequences within and outside the health care sector	✓	
Results		
Results of model validation	✓	✓
Reference case results (discounted and undiscounted): total costs and effectiveness, incremental costs and effectiveness, incremental cost-effectiveness ratios, measures of uncertainty	✓	✓
Disaggregated results for important categories of costs, outcomes, or both		
Results of sensitivity analysis	✓	✓
Other estimates of uncertainty	✓	✓
Graphical representation of cost-effectiveness results	✓	✓
Graphical representation of uncertainty analyses	✓	✓
Aggregate cost and effectiveness information	✓	✓
Secondary analyses	✓	✓
Disclosures		
Statement of any potential conflicts of interest due to funding source, collaborations, or outside interests	✓	
Discussion		
Summary of reference case results	✓	
Summary of sensitivity of results to assumptions and uncertainties in the analysis	✓	✓
Discussion of the study results in the context of results of related cost-effective analyses	✓	
Discussion of ethical implications (eg, distributive implications relating to age, disability, or other characteristics of the population)		
Limitations of the study	✓	
Relevance of study results to specific policy questions or decisions	✓	

Appendix Table 9. Reporting Checklist for Cost-Effectiveness Analysis From Second Panel on Cost-Effectiveness in Health and Medicine[17]

Appendix References

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