Hand and Upper Extremity Procedures are Significantly More Cost Effective when Performed in Ambulatory Surgery Centers versus Hospital Outpatient Departments

Shelby Rae Smith, Vincent Federico¹, James Nie¹, John Higgins, Vince Morgan, Xavier C Simcock ¹Rush University Medical Center

INTRODUCTION:

United States remains at the top of the list for countries with the highest healthcare expenditure, and identifying areas of cost-saving is essential. A significant portion of healthcare dollars are dedicated to inpatient services, and transitioning from the inpatient to outpatient setting is cost-efficient.

Orthopaedic surgery has high rate of utilization of the outpatient settings including ambulatory surgery centers (ASC) and hospital outpatient departments (HOPD), especially for elective upper extremity procedures. Cost discrepancies between different outpatient settings has been minimally investigated but may provide valuable information regarding medical resource conservation. We seek to compare costs at these two outpatient facilities, ASC versus HOPD, for hand and upper extremity procedures.

METHODS:

Publicly available data from Center for Medicare and Medicaid Services (CMS) was accessed via the Medicare Procedure Price Lookup Tool and Current Procedural Terminology (CPT) codes were used to identify hand and upper extremity procedures. Data regarding total costs, facility fees, surgeon fees, Medicare payments, and patient payments were extracted for each procedure. Descriptive statistics were used to calculate means and standard deviations. Differences between ASC and HOPD associated costs were analyzed using Mann Whitney U test. RESULTS:

Thirty-seven individual CPT codes were identified and divided into arthroscopy, fracture, arthroplasty/arthrodesis, and other (Table 1). Arthroscopy demonstrated cost savings in total cost of procedure (1,886.00 \pm 58.72 vs. 3,418.00 \pm 58.78; p=0.009), facility fees (1,360.00 \pm 0 vs. 2,892.00 \pm 0; p=0.021), Medicare payments (1,509.00 \pm 47.27 vs. 2,734.00 \pm 47.27 p=0.021), and patient payments (376.75 \pm 11.87 vs. 682.75 \pm 11.87; p=0.021) in ASCs compared to HOPD. Similarly, fracture procedures had significantly lower total costs (3,886.58 \pm 1,527.61 vs. 5,975.92 \pm 1,890.96; p=0.021), Medicare payments (3,109.17 \pm 1,221.21 vs. 4,780.75 \pm 1,511.90; p=0.021), facility fees (3,055.17 \pm 1,503.23 vs. 5,228.67 \pm 1,725.74; p=0.018), and patient payments (776.92 \pm 305.46 vs. 1,194.75 \pm 377.97; p=0.021) in ASCs (Table 2). When CPT codes were grouped all together, there was approximately 35% savings in total cost, 41% savings for facility fees, 36% savings in Medicare payments, and 28% in patient payments for procedures performed at ASCs. DISCUSSION AND CONCLUSION:

Ambulatory surgery centers demonstrate cost-savings across multiple procedures for the hand and upper extremity in a variety of areas including total costs, facility fees, Medicare payments, and patient payments when compared to hospital outpatient departments. These findings are helpful for providers when considering the outpatient setting provided both facilities are equally available to both surgeon and patient.

CIIIII	es are	equally	avallable	10		DOIN	surg
CPT codes at	ad description of procedure			Table 2. Mean and standard de	viation of costs associated	with ambulatory surgical cer	nters and hospital outpatient
NOT NOT				departments for comm	ASC (Mean ± SD)	HOPD (Mean ± SD)	*p-value
Arthroscop procedure)	py, wrist, diagnostic, with or without synovial biopsy (separate			Arthroplasty			-
Arthrescop	py, wrist, surgical; for infection, lavage and drainage py, wrist, surgical; synovectomy, complete			Total Cost	1,886.00±58.78	3,418±58.78	0.009
Arthroscop and/or join	py, wrist, surgical; excision and/or repair of triangular fibrocartilage at debridement			Doctor Fee	526.00±58.78	526.00±58.78	1.000
Opentreat	ment of radial dusfi fractures includes internal fraction when notformed			Facility Fee	1 360 00+0 00	2 892 00+0 00	0.021
and closed	treatment of distal radioulnar joint dislocation (galeazai fracture)			Madiaara Barmant	1 500+47 27	2 724+47 27	0.021
Open treat	ment of radial shaft fracture, includes internal fixation, when performed,			Bicucate Faynein	1,509147.27	2,754047.27	0.021
dislocation	reatment of distal radiounnar joint distocation (precise, tracture)), includes internal fourion, when performed, includes repair of			Patient Payment	3/6./5±11.8/	682./5±11.8/	0.021
open treat	fbrecartilaze corrolex ment of radial and ulnar shaft fractures, with internal fixation, when			Fracture			
Open treat	; of radius or ultra ment of radial and ultrar shaft fractures, with internal fixation, when			Total Cost	3,886.58±1,527.61	5,975.92±1,890.96	0.021
performed.	; of radius and ultra we dedetal fraction of distal radial fracture or orighneed constation			Doctor Fee	748.08±200.02	748.08±200.02	1.000
Open treat	ment of distal radial extra-articular fracture or epiphysical separation, al frontion			Facility Fee	3,055.17±1,503.03	5,228.67±1,725.74	0.018
Open treat	ment of distal radial intra-articular fracture or epiphyseal separation; al firstion of 2 fracments			Medicare Payment	3,109.17±1,222,21	4,780.75±1,511.90	0.021
Open treat	ment of distal radial intra-articular fracture or epiphyseal separation;			Patient Payment	776.92±305.46	1,194.75±377.97	0.021
Open treat	au insuriori or 5 or more insignents ment of carpal scaphoid (navicular) fracture, includes internal fixation, ormed			Arthroplasty/Arthrodesis			
Percutance	sus skeletal fixation of ulnar styleid fracture			Total Cost	8,105.80±5,794.19	10,734.40±6,643.11	0.347
middle pha	alars, finger or thumb, with manipulation, each			Doctor Fee	992.00±339.47	992.00±339.47	1.000
Percutaneo asty/Arthroi	sus skeletal fourtion of distal phalanzeal fracture, finzer or thumb, each desis			Encility Ena	7 113 8045 497 65	9 742 4046 344 16	0 343
Arthroplas	ty, elbow; with distal buppens and proximal ultar prosthetic nt (gg, total elbow)			Madiagra Bargmant	6 484 2014 625 60	9,742.4020,044.10	0.247
Arthroplas (total wrist	ty with prosthetic replacement; distal radius and partial or entire carpus t)			Detirest Decement	1 620 40+1 160 12	1 447 60: 440 42	0.017
Arthroplas	ty, interposition, intercarpal or carpometacarpal joints is, wrist: controlete, without hone staff (includes tadiocarpal and/or			ration rayment	1,820.40±1,159.15	1,447.00:0440.42	0.917
intercarpal Arthundesi	and/or carpometacarpal joints) is wrist: limited without hope orafi (en_intercarpal or radiocarpal)			Other			
Protocale with miller white our manifer interior of national				Total Cost	1,815.81±686.56	3,181.38±1,343.83	0.003
Tenetorny, album): de	elbow, lateral or medial (qq, epicondylitis, termis elbow, golfer's bridement, soft tissue and/or bone, over with tenden renair or			Doctor Fee	575.19±177.11	575.19±177.11	1.000
reattachme	nt			Facility Fee	1,240.63±551.50	2,606.19±1,212.08	<0.001
Excision o	f ganglion, wrist (dorsal or volar); primary			Medicare Payment	1,452.63±549.27	2,544.75±1,074.92	0.003
Carpecterr	vy; 1 bone vy; all bones of proximal row			Patient Payment	362.44±137.22	635.31±268.69	0.003
Excision d Repair, ter	istal ulna partial or complete (cg. darach type or matched resection) adon or mascle, flexor, forearm and/or wrist; primary, single, each			Overall			
tenden er s	muscle			Total Cost	3.345.00±3.026.81	5.133.97±3.655.54	0.002
Tenden sh Renair or s	eath incision (ea. for trieser finzer) advancement flexor tendos, not in zone 2 digital flexor tendos cheath			Doctor Fee	682.27±246.91	682 27±246 91	1.000
Repair or a	n's land); primary or secondary without fire graft, each tendon advancement, flexor tendon, not in zono 2 digital flexor tendon sheath n's land); secondary with free graft (includes obtaining graft), each			Facility Fee	2,635.70±2,839.89	4,451.97±3,444.87	<0.001
tendon Repair or a	advancement, flexor tendon, in zone 2 digital flexor tendon sheath (QL			Medicare Payment	2,675.92±2,421.41	4,201.32±3,269.12	0.002
no man's la Repair of c	and); primary, without tree gran, each tendon collateral ligament, metacarpophalangeal or interphalangeal joint			Patient Payment	668.41±605.40	931.65±448.62	0.003
Endoscopy Nouvolas Nouvolas arrent Proced	r, wrst, surpcat, with release of transverse carpal ligament goard/or transposition; ubar nerve at elbow goard/or transposition; median nerve at carpal tunnel aral Terminology			ASC = ambulatory surgical cer *p-value calculated using Man	nter; HOPD = hospital outpo n-Whitney U tests. Bolding	tient department; SD = stan indicates significance (p<0.	dard deviation 05).