Hand Surgery in the Ambulatory Surgery Center

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KEYWORDS

• Hand surgery • Ambulatory surgery center • Costs • Complications

KEY POINTS

- A large percentage of hand surgery is done in ambulatory surgery centers (ASCs).
- Use of an ASC is more cost-effective and efficient than surgery in an inpatient facility.
- The complication rates are lower after surgery in an ASC than after surgery in an inpatient facility.
- Adequate postoperative pain control is essential to patient satisfaction.

Outpatient surgery, especially in free-standing ambulatory surgery centers (ASCs), provides a safe, cost-effective option for a variety of surgical procedures and has become the preferred choice over inpatient and hospital-based outpatient surgery for most hand and wrist procedures. According to a 2010 report from the US Centers for Disease Control and Prevention,[1] an estimated 48.3 million surgical procedures were done in hospital outpatient facilities or ASCs; 15% of these (7.1 million) were operations on the musculoskeletal system. Based on Medicare claims, approximately 7% of all procedures done at ASCs were orthopedic procedures.[2] A 2015 survey of American Society for Surgery of the Hand members found that 65% of hand surgeons reported doing most of their surgery at an ASC.[3] In their analysis of carpal tunnel release (CTR) in ASCs, Fajardo and colleagues[4] outlined the steady increase in the use of ASCs for CTR: in 1996, 16% of all ambulatory CTRs were done in freestanding ASCs; 10 years later the percentage was 49%. Patel and colleagues,[5] using data from the National Survey of Ambulatory Surgery, found a dramatic increase in the volume of ambulatory surgery (505%) for upper extremity fractures from 1996 to 2006. In most free-standing ASCs, hand and upper extremity surgeries are the primary procedures.[6] CTR, trigger finger release, tenosynovectomy (de Quervain), and fasciectomy (Dupuytren) are among the hand and wrist procedures frequently done in an ASC. Other, less frequently done procedures include flexor tendon repair, tendon transfers, fracture fixation, and interposition arthroplasty.

COSTS OF HAND SURGERY IN AN AMBULATORY SURGERY CENTER COMPARED WITH A HOSPITAL

One of the drivers of the boom in ASC surgery has been cost. The US Medicare fee schedule indicates that hospital outpatient surgical facilities are paid 81% more than ASCs for the same service.[6] Use of an ASC or office procedure room has been shown to decrease costs of hand surgery. CTR in an ambulatory setting has been determined to cost 25% to 30% less than the same procedure in the hospital operating room (OR),[7–9] in addition to allowing more than twice the number of procedures during a 3-hour

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surgical block time, 9 procedures in the ambulatory setting compared with 4 in the hospital OR. A prospective cohort study of 100 procedures done at a military medical center found a cost savings of 85% for CTR and 70% for A1 pulley release compared with the same procedures done in the hospital OR, for a cost savings of approximately $400,000 over 21 months.[10] Nelson and colleagues[11] compared the cost of fasciectomy for Dupuytren contracture in an ambulatory setting to that in a hospital OR and concluded that costs in the OR were 13 times more than in the ambulatory setting. Bismal and colleagues[12] determined that a "one-stop wide-awake hand surgery service" saved the British National Health Service more than $2 million in the past 10 years. Gillis and Williams[13] determined that the use of the hospital OR for closed reduction and internal fixation of hand fractures was associated with a significant increase in costs compared with an ASC, and Mather and colleagues[14] found that volar plating of distal radial fractures overall was 46% less expensive at an ASC than an inpatient facility, regardless of fracture severity, patient age or American Society of Anesthesiologists (ASA) classification, or use of bone graft. Gancarczyk and colleagues[15] reported that open trigger finger release in an ASC was considerably less expensive than in the hospital, and Webb and Stothard[16] reported that outpatient treatment of Dupuytren disease, wrist ganglia, and trigger finger results in substantial cost savings compared with standard surgical treatment in the hospital. They also found that 12 outpatient procedures could be done in the same time period as 3 procedures in a hospital OR.

EFFICIENCY

ASCs often specialize in certain procedures, which leads to increased volume for these specific procedures and leads to improved patient outcomes.[17] By performing more of the same procedure, these centers become more efficient as staff become more familiar with their routines.[18] On average, procedures done in ASCs take 31.8 fewer minutes than those done in hospitals.[18] Gottschalk and colleagues[19] reported that procedures done in an ASC had a turnover time of 27.9 minutes compared with 36.4 minutes in an orthopedic specialty hospital. Hair and colleagues[20] showed, in an analysis of the 2006 National Survey of Ambulatory Surgery public data, that surgical procedures performed in freestanding ASCs took a mean of 39% less total time than those performed in hospital-based ASCs. Chatterjee and colleagues[7] reported more than twice the number of CTS procedures during a 3-hour surgical block time in the ASC, and Goyal and colleagues[6] reported a mean turnover time of 13 minutes in hand and upper extremity surgery at an ASC. High surgeon volume and specialization also are associated with improved patient outcomes.[17]

COMPLICATIONS

Several reports have shown ASC surgery to have a low rate of complications. Goyal and colleagues[6] reviewed 28,737 cases done at an ASC and found only 58 reported adverse events, for an overall rate of 0.2%. In their analysis of 10,646 patients, Lipira and colleagues[21] reported a 2.5% overall frequency of complications within 30 days of surgery; the use of local anesthesia and outpatient surgery (1.4% complication rate) was associated with a significantly lower risk of complications than inpatient surgery (8.7% complication rate). In 14,106 hand and elbow procedures done at more than 450 ASCs over a 2-year period, 169 (1.2%) had unplanned readmissions, most frequently for surgical site infections (0.02% of all procedures).[22] Readmitted patients tended to be 50 years of age or older and were more likely to be smokers; to have diabetes mellitus, hypertension, chronic obstructive pulmonary disease, congestive heart failure, a history of dialysis, dyspnea, and bleeding diatheses; to be on steroids; to have a lower hematocrit, and to have hypoalbuminea. Infections were less frequent in those with local or regional anesthesia (8%) than in those with other types of anesthesia (eg, general, epidural, and spinal) (13%). The study also determined that readmitted patients had more comorbidities and higher ASA levels, leading the investigators to suggest that these patients might be better treated in-hospital by multidisciplinary teams. Munnich and Parente,[23] however, found that the highest-risk Medicare patients were less likely to visit an emergency room or be admitted to a hospital following similar procedures done in an ASC rather than an in-hospital outpatient facility.

Goyal and colleagues[6] reported no wrong-site upper-extremity surgical procedures after 28,737 cases despite hand surgical procedures being high risk for wrong-site surgery.[24,25] Having the attending physician mark the surgical incision site in the preoperative holding area with the patient awake and strictly adhering to a surgical checklist and time out are effective in reducing complications in multiple health care