Perspective

Outpatient hip and knee arthroplasty: how is it utilized?

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The demand for joint replacement surgery is increasing significantly [1]. This places a strain on healthcare systems, necessitating cost-efficient strategies for delivering care. Improved efficiency with reduction of length of stay (LOS) and even outpatient arthroplasty have been solutions for cost reduction in joint replacement surgery over the last decades [2].

Outpatient arthroplasty

This is defined as discharge on the day of surgery (DOS) [3] and was first described almost 15 years ago in ambulatory surgery centers (ASC) [4]. Since then, outpatient arthroplasty has gained in popularity and has been described in multiple setups ranging from 15% in unselected patients at university hospitals [5], to almost 90% in ASCs [6].

Current utilization

In recent years, there has been a significant increase in the use of outpatient arthroplasty in both Europe and the United States [7,8]. The nationwide uptake ranges from 0.5% to 15%, depending on the population and region investigated [7,9,10]. Such large variation in utilization can partially be attributed to the differences in how widely outpatient arthroplasty is implemented on a national level, with some institutions routinely discharging a larger number of patients on the DOS, while others do not offer outpatient arthroplasty at all. Nationwide use of dedicated ACSs may also play a role, as DOS discharge may be easier to achieve in a specialized ambulatory setup with selected patients. Financial incitement, with a focus on cutting costs and reducing the number of beds in the wards, together with challenges in recruiting staff for bedded wards with night shifts, further fuels the interest in outpatient arthroplasty. Finally, reimbursement models are also important, with capitation-based models making outpatient arthroplasty more financially attractive – with hospitals receiving the same reimbursements regardless of the LOS [11]. However, if hospitals are being penalized for early discharge, the implementation of outpatient arthroplasty may be challenged and not implemented, regardless of the determination of both patients and clinicians.

Patient selection

Patient selection is key, from both a safety aspect and a logistical point of view. It is evident that not all patients are suitable candidates for outpatient arthroplasty, and there is an ongoing debate on the optimal patient selection criteria. It is possible that a "one size fits all" approach may not be effective, as different logistical setups may require different patient selection criteria. At one end of the spectrum are stand-alone ACSs where close to 100% discharge rate on the DOS is necessary, as there is no bedded ward to which patients can be transferred if discharge criteria are not met. In this scenario, strict selection criteria are essential, which may limit the number of eligible patients for DOS discharge but increase the success rate of DOS discharge. At the other end of the spectrum, and perhaps more interesting from a national perspective, are centers with a bedded ward that also offer DOS discharge. In this setup, broader selection criteria can be applied, and the majority of patients can be viewed as eligible for DOS discharge, with few exclusions for patients with severe comorbidities that require at least 1 overnight stay for observation due to safety reasons. In such a setup, the total number of eligible patients would be much higher, and the total number of patients discharged on DOS would be higher, but with a lower success rate of DOS discharge. The upside of this approach is the large total number of patients who are discharged on DOS, while the downside is lower predictability for successful DOS discharge and potentially "wasted" resources spent on preparing a patient for DOS discharge, which may ultimately fail if the patient does not meet the discharge criteria.

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Key points in implementing outpatient hip and knee arthroplasty

- Identification of eligible patients
- Preoperative information on short LOS/discharge on day of surgery
- Multimodal opioid-sparing anesthesia
- Utilization of partial knee arthroplasty in eligible patients
- Multidisciplinary approach
- Early mobilization with functional discharge criteria

Safety

It is important to stress that improved efficiency should not compromise patient safety and that we "should do it better, rather than faster."

While some have raised concerns about the safety of outpatient arthroplasty, most of the contemporary literature has shown that it can be performed safely in selected patients, with reduced or similar complications and readmission rates compared with more conventional pathways with at least 1 night's stay in the hospital [10,12]. Later on, patient-reported outcome measures (PROMS) and patient satisfaction are not compromised by discharge on DOS, as studies have shown equal or even improved PROMS following outpatient arthroplasty [13,14].

Potential for improvement

There is large variation in nationwide utilization of outpatient arthroplasty. It is important to consider why these differences exist and if uptake could improve.

One explanation for high utilization of outpatient arthroplasty is widespread use of standardized fast-track protocols [15], with a setup enabling the hospital to offer outpatient arthroplasty. A recent multicenter study from Denmark, covering close to 50% of all annually performed arthroplasties, has shown an increase from 6% to 22% in patients discharged on DOS only 6 months after introduction of a standardized pathway for outpatient surgery (Odrun et al., personal communication). It is important to stress that such a rapid increase in outpatient arthroplasty utilization was seen in hospitals with a median LOS of 1 day prior to implementation of the outpatient pathways [16]. Thus, general optimization of perioperative care [17], implementation of fast-track protocols, and reduction of LOS to 1–2 days should be reached prior to implementing outpatient arthroplasty. Optimizing perioperative care with multimodal opioid-sparing analgesia, high-dose steroids, early mobilization, patient information, and a multidisciplinary approach is essential for achieving short LOS.

Another potential for improvement is optimal utilization of partial knee replacement (PKR), as it has been shown that patients are more easily discharged on DOS following PKR compared with TKA [18]. A higher nationwide use of PKR in Denmark compared with, e.g., the UK can potentially explain, at least to some extent, a higher utilization of outpatient arthroplasty in Denmark. This is supported by a recent study reporting a high number of unselected PKR patients being discharged on the DOS [19].

Reduction in costs, especially in countries with capitation-based models, has also been a major driver for increased utilization of outpatient arthroplasty, as outpatient arthroplasty has been shown to be financially superior to more conventional stays with reduction in costs as high as 50%. This is achieved by reducing costs associated with admission but also by eliminating inpatient rehabilitation in some countries [20].

Conclusion

Outpatient arthroplasty with discharge on DOS may offer a safe and cost-efficient solution. It seems, however, that outpatient arthroplasty is most likely underutilized in many countries on a national level. Hospitals with an implemented fast-track pathway and a low LOS should consider offering DOS discharge to eligible patients.

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